

GMC Western States

Tech Center Number 44 – May 1, 2005

A Note from Jerry Work



Did you know your GMC design was patented?

In 1973, shortly after the design team completed the body design for our GMC Motor Coaches they felt it was unique enough to patent. The four lead designers names appear on the patent document shown below which were issued on June 4, 1974. I received an original copy from one of them, Kent Madill, whom I met by chance when I saw him walking around the Albuquerque rally last year. He now lives there and happened to see all of us parked at the fair grounds so came in to take a look. A very shy person, he did not want to be identified there but was willing to talk. He said he might still have some "stuff" stored away somewhere and said he would send it if he could find it. A few months later an envelope showed up with this patent document and an original 2-74 four color four page brochure.

Design patents are issued for a 14 year period which is long expired for this one. The patent document is three pages long showing views from all angles. The back page of this Tech Center shows the front page of the patent document. Jerry Work

**Superstition Mtn Rally
Tech Notes by Donna Prishmont
and Frank Condos**

Propulsion Systems, April 5, 2005

Frank Condos, Emery Stora, and Mark MacNeil of The DynoShop

GMC Motorhome Engine System

Ideas to make your GMC perform like a rocket!

Frank Condos presented a detailed description of the original cooling, carburetion, and engine system as built. This included the different specifications methods to identify the 455 big block and the 403 small block engine, cylinder heads, crankshaft, intake manifold, radiator and water pump. Practical options for improved performance and alternative engines were listed. Emery Stora presented the Rochester Carburetor seminar that was developed by Dick Paterson and presented by Dick at the GMC International rally in Fort Meyers, FL The presentation covered the basic functions of the Quadra jet carburetor and its operation. Frank then continued on with other performance options for the GMC engines. This includes cam changes, cylinder head modifications or new Edelbrock aluminum heads. Engines changes included the 502 Chevy, 500 Cad, 454 Chevy, 8.1L Chevy (Dynosource), the Koba 455 (Jim Bounds), and Diesels.

The pinnacle of the propulsion system seminar was a discussion of dynamometer tuning by Mark MacNeil from The DynoShop in Santee, California. In preparation for the seminar, Frank Condos stopped in Santee to have his coach tuned, review the process, and get some pictures.

Frank: We arrived around 9am since the diagnostic and tuning process could take much of the day. I was greeted by Derrick the service writer who took all the necessary information required by the California Bureau of Automotive Repair including a price estimate. Mark than interviewed me for any particular problems. In my case I had two noticeable symptoms. First, I had a tendency to ping at partial throttle from 2000 to 2500 rpm. The second, because I am running fuel injection, the computer would not go into the closed loop mode much of the time, meaning it would run slightly rich. We also discussed what I would like in performance such as maximum fuel economy or all out performance. Since I

have a mildly modified engine with an improved performance cam, I said I would like good economy under light throttle cruise but good performance at full throttle. With this interview completed Mark gave instructions to his tech, Al. Following a visual inspection, looking for dirty or cracked ignition wiring, vacuum hoses and throttle body, Al checked the initial ignition timing and compression. Had this been a carbureted engine he would have inspected it for dirt and leaks.

The vehicle was then placed on the dynamometer with the driving wheels on the "Dyno" rollers. It is tested in gear under various speed and load conditions. During this test they monitor the engine performance by horsepower to the drive wheels in relation to engine vacuum. The wide band infrared gas analyzer monitors the air/fuel ratio during this run. If it were a carburetor, the primary and secondary circuits would be checked under varying load conditions. In my case, confirming that the EFI would not go into closed loop, Al was back in the trouble shooting mode soon to discover a faulty ground to the computer. Then he installed the proper heat range of spark plug geared to the particular use or application. In my case he used a slightly cooler plug to help reduce the pinging. The distributor was removed and placed in a Synchrograph distributor test stand to check the advance curve. Mine was re-curved in the mid range to improve engine responsiveness and pulling power and reduce the ping. The vacuum advance was set to provide maximum gas mileage. Next came the power tests and burning a new computer chip to control the EFI. For a carbureted engine the primary circuit would be tuned using the proper jet size and power piston spring. The Dyno Shop's experienced staff can read the data and quickly make these changes without lots of repetitive runs.

As the final run was completed and they were satisfied that they had achieved the type of performance requested, I was given a computer plot showing horsepower and torque vs. mph. and tune up specifications. In my case the dyno tune achieved 225hp at the road at 86mph. Not bad for an engine originally rated at 210hp at the flywheel. Fuel economy is up, around 10, but I need more tanks to average it out. The cost? Around \$250-\$300 plus parts depending on the work required. Is it worth it? ABSOLUTELY, whether stock or modified.

Mark finished up with a good technical question and answer session. Several attendees planned to use his service. Since then, Kerry Tandy stopped off for a tune with remarkable results. Mark can be reached at:

Mark Mac Neil

10042 Prospect Ave.
Santee, CA 92071
619-562-3933
www.thedynoshop.com

Suspension Systems, Wheels, and Tires - April 6, 2005

Chuck Botts and Miguel Mendez

Chuck Botts discussed the GMC suspension system: suspension, tires, and alignment combined. This entire seminar is on the GMC Western States website: <http://gmcws.org/Tech/TireSafety/index.html>, then download the PDF file for tire loads, etc. This was developed by Michelin for the GMC group. A survey was done on the GMC group about the current tires they were running during the Western States Temecula rally.

Problems such as air pressure, sidewall cracking (check if its 1/32 deep, pitch if its 2/32 deep) due to Ozone and direct sunlight were discussed. There was a discussion on when to replace tires (normal warranty is 6 years) and tire rotation (include your spare in the rotation and you can rotate in-line or cross).

Steel vs. fabric sidewalls were discussed where steel is more commercial and more robust. They can be recapped multiple times. Steel usually costs about \$30 extra and weighs approximately 10 lb more.

Chuck discussed tire basics such as DOT designation and size, issues such as rut sensitivity, load/psi recommendations and tire conditions. For more in depth information please view the website listed above.

Miguel Mendez took over the GMC repair shop in Ontario, CA, from Bob Lamey about a year and a half ago. Miguel spoke to the many differences between GMCs. He uses the specs in the GMC manual for alignment and it works for him. Many others have done alternative changes and it works for them. Go with what works for you.

Tires and rims: One customer had a problem with vibration at 55. At Miguel's suggestion he removed steel wheels and put on Aluminum wheels. That corrected the problem. The remainder of the session was question and answer for individual problems with the participants.

Miguel is no longer located at Bob Lamey's old shop site in Ontario, CA. His permanent site is under construction

and is located temporarily in Upland, CA. He can be contacted at:

MGM-GMC
909-982-7747

Lifestyle Systems - April 6, 2005

Jim Bounds www.gmccoop.com

Everyone has a choice of what they choose for the interior of their GMC. It usually fits their lifestyle. The value of your GMC is what it would cost to replace it. The purchase of an entry level, quality, 21 foot RV (SOB) costs about \$100,000. You can get yourself a wonderful GMC, exactly what you want, for under \$100,000.

Go to Jim's website and see what he is doing with new technology in his custom restorations. He installs TracVision and runs 14-2 power wire into every cabinet. Reuse the old double sink. Just clean it up a little with soap and steel wool. It will look great. Buy a nice faucet from Home Depot or Lowe's and you have a new look. For lighting, choose the lighting for the area with brighter light in the kitchen. Incandescent bulbs use more energy while LED and fluorescent lights use less. For water lines use plastic (Flare It).

In seating areas, you can use sofas, dinettes or captain chairs, whatever is comfortable for you. For headliner materials, you might consider Pleather – a vinyl material with a felt back that stretches. Leather is very expensive and the headliner takes about 20 yards. That would be quite expensive if you were using leather or suede.

For insulation against heat use bubble foil insulation from Home Depot or Lowe's. For sound and heat insulation use ½ inch thick leaded foam on the floor over the engine compartment and steps.

Laminates can cover a lot of mistakes. The floor has to be very flat for a vinyl floor. Carpet covers imperfections. Buy the best carpet. Buy expensive flooring whether it is carpet or wood as you aren't buying much. Use hi temp glue. Dap Weldwood Landau Top adhesive (don't sniff the glue). Use for vinyl, laminate and carpet. Five gallons - comes in a blue and white can.

Electrical System Overview – April 7, 2005

Duane Simmons

Duane did a comprehensive seminar on the GMC Electrical System. He accompanied his talk with a handout that is available on the website: <http://gmcws.org/Tech>, then click on Duane Simmons' Electrical System Overview.

The highlights of his talk covered a primer on alternating current (AC) shore power, where it is and how you access it (Your AC power comes in through a circuit breaker box in the back closet area. Royales can have this located in other places. Know where it is. Power comes in through a 30 amp or 50 amp cord. Duane does not recommend adapting a 30 amp service to a 50 amp power source. It is ok to go down in amperage when adapting (i.e., 30 amp services adapted down to 20 amps).

Other tips include always starting and shutting off the Onan generator with no load to avoid electrical transients. The living area 12 volt system was explained along with battery charging and maintenance.

The seminar continued with critical electrical preventative maintenance (Duane suggests purchasing an A/C D/C mode volt meter at Harbor Freight) and upgrade items. This includes battery cables, electrical terminals/fuse holders, coach ground straps, engine battery ground cable, clearance/tail lights common ground connection, and dash lights out tip.

Duane closed with a discussion of electrical components including the battery isolator, engine alternator, AC to DC converter/charger, inverters, AC power transfer switch, and solar panels.

Copies of the presentation will be placed on the club web site. Printed copies can be obtained by contacting Frank Condos, Secretary.

Technical Stories

Story 1 by Donna Prishmont

Mechanical Fuel Pump Remove/Install
Impromptu Seminar, April 9, 2005

Chuck Aulgar, Mike Cherry, Frank Condos, Dwight Bare, et al.

Remembering a suggestion by Steve Ferguson at the Question and Answer Seminar to smell the dipstick to see if you could smell gasoline in the oil, I did just that when I stopped for fuel following my early morning departure from the Superstition Rally. I definitely smelled gas, and just to make sure I wasn't imagining this, I opened a new quart of oil to compare. Sure enough there was gas in the oil.

I had been chasing down a heat/lean/ping problem for quite a while. After much necessary preventive maintenance done on the coolant system and carburetor without a significant change, the mechanical fuel pump was a suspect (and replacement was suggested by Miguel Mendez). But, as I have an electric fuel pump as a backup and I had not noticed a higher level of oil on the dipstick (mentioned by Bob Cook), I didn't think there was any hurry in replacing the mechanical one. Not so. As I learned at the seminar, a failing fuel pump can allow gasoline into the crankcase, which destroys the lubricating properties of the oil in the engine.

This knowledge left me with three options: (1) Head for home (Tahoe-800 miles) and hope I make it. (2) Head for Miguel's shop in Upland 200 miles away. (3) Or turn around and drive 10 miles back to the rally where all those GMC experts were probably sleeping in. I figured the third option was a no-brainer, and turned around.

I told Chuck Aulgar what the problem was and everything started moving from there. While Dwight & Ginny Bare (the rally masters who probably thought all the work of that wonderful rally was over) headed home, Dwight picked up a new fuel pump, oil and filter. Waiting for Dwight's return, Chuck proceeded to remove the right front tire and wheel-well cover for easier access to the fuel pump located on the front, right side of the engine. He then removed the fuel pump and dumped the engine oil in a pan provided by Mike Cherry. Mike decided that he could take over for Chuck on the installation of the new pump, allowing Bernie and Chuck to begin their delayed journey home.

About that time Dwight arrived with the parts and oil. Mike installed the new pump, while I installed the new oil filter and added the oil (it's hard to stand around and do nothing!). Mike and I put the old oil in containers and Dwight offered to drop it for recycling for me. Frank Condos replaced the wheel-well cover and tire. I was back on the road in no time, thanks to so many wonderful people.

They say it takes a village to raise a child. It also takes a great GMC club to keep our vehicles healthy and on the road. Thank you so much Bernie and Chuck, Dwight and Ginny, Freddie and Frank for delaying your journey home in order to help me. Thank you Judy and Mike for delaying your Superstition hike. And, thanks to all of you who have given me so much help, information and advice over the years (Duane Simmons, Manny Trovao, Bob Cook, and Chuck Garton, just to name a few). I wouldn't be here without you. Thanks, also, to Fay Curtis for making me a new T-shirt and Jim Kanomata for bringing a new Alcoa wheel to the rally for my blowout damage. That's another seminar!

I am ecstatic to report that I drove all the way to Tahoe with a terrible headwind yet still got over 9.5 mpg (honest) and didn't have a single ping or abnormal heat, even while traversing those mountain passes. Arriving to winter once again, my winterizing process was a breeze with a new valve for the fresh water tank drain. Thank you Michelle and Emery Stora! I look forward to seeing everyone in Estes Park and Mt. Rushmore!

Sincerely, Donna Prishmont

Story 2 by Jerry Work

The words to an old song, something about "shimmy like my sister Kate," kept echoing in my head as we pondered our situation. We were part way into that vast nowhere between Reno and Las Vegas on our way to the GMCWS rally in Gold Canyon, AZ, when the front end shimmy in our '78 Royale progressed from irritating to "what might fall off.. We have traveled over 20,000 miles in the last couple of years with no issue other than the need to replace the old tires that were on the coach when we purchased it. It simply runs and drives like a mid 70's Suburban on steroids. But, I guess that was to be expected since it only had 44,000 miles on it when we bought it, interestingly from one of the people I had asked to be part of the seminar schedule for this rally, Mark MacNeil.

We first felt a similar, but much lighter, shimmy on up hill acceleration last summer. A quick change out of the inner constant velocity joints fixed that. This trip started off just as uneventfully as all the others. Mad scramble at the last moment to finish that yet one more furniture piece that had been promised for delivery before we left. Then toss some clothes, tunes, food and beverage into the rig, do the preflight checks, lock up the building and

head out. Two "go backs" later we were on our way. About 60 miles from home we felt the first inklings of a shimmy now and then. We thought it was road surface, or maybe just these old bent up steel wheels that we can't bear to replace yet - remember the replaced tires. The Chancellor of the Exchequer says, "no new wheels until these tires wear out!" Damn, sure wish they built tires like they used to that wore out in 15,000 miles instead of who knows how many these days.

Anyway, the shimmy got a little worse as we passed through the mountain stretches of southern Oregon and northern California, but it was intermittent, there some of the time and not others. Check the lug nuts to make sure they are tight. Rock the coach back and forth to make sure nothing clicks or feels loose. Feel all around all the tires to make sure there are no bulges or breaks. All seems just fine. By Reno we could feel the shimmy more frequently, but it was not enough to cause alarm. By near Fallon, NV, that had changed to the point we were alarmed and just had to find out what was wrong. The first stop was a Les Schwab tire store. Out over the front end alignment pit with two guys poking and probing around the pronouncement is, "we can't find anything wrong except this bearing on the output side of the differential seems loose to us". "We don't do that kind of work so try RW Transmissions down the road a bit in Fallon". Off to find RW Transmissions.

Fortunately for us the owner was a knowledgeable guy willing to jump right on our issue. Out over his pit, lots of poking and probing and the pronouncement is, "nothing obviously wrong so lets put it up on jack stands, have you put it in gear with the engine running and look again". We did and could induce the shimmy, he could feel it but could not pinpoint the root cause. Sure seemed to be coming from the driver's side but even that was not certain. Best guess would have been the inner CV joints but those were replaced only a few thousand miles ago. The lower A-arm bushings were a bit loose but not enough to look like the smoking gun. Next best guess was wheel bearing even though we could not feel much play by grabbing the tire upper and lower and shaking it. There was a little play, just not much. But, being in Fallon on a Thursday morning the best course of action seemed to be to have a wheel bearing set sent out from Reno that afternoon. Seems everything in Fallon comes from Reno either that afternoon or the next morning.

After lunch the first of what turned out to be a parade of just graduated from high school parts runners arrived, each with at least one wrong part. Right bearing but wrong seal. Wrong bearing, right seal. Wrong everything, right nothing. Take your pick. They all

occurred until at last by judiciously keeping parts that seemed to be right ones a full set of what we needed was in hand. The owner correctly agreed with me not to start disassembling anything until we did have in hand what we thought to be a full set of what we needed. Off came the driver's side front tire and axle nut. Then the brake calipers and those pesky three bolts that hold the hub to the steering knuckle. A couple of yanks and the hub and bearing assembly appeared. Bearings feel just fine. Out comes the large bearing puller. Not the coffee table sculpture puller that vendor Darrin Paget designed and made available to us, because I never thought we would ever need it, right? Wrong.

Now comes the struggle. This large puller is perched properly to grab the bearings. A couple of, "this baby will yank those bearings right off in no time" admonitions and the fun begins. First just turn the puller with the ratchet handle until it won't budge any more. Then out comes the breaker bar, grunting, groaning and calling of the other workers in the shop over to help. Now there are three people trying to get those bearings to budge. Ok. Where is the heat? Soft flame with the torch will heat the bearings enough to make them expand and come right off. Wrong. Lots of heat and still no budge. Ok, where is that 600 psi air wrench? With that the puller still just sits there straining but not budging the bearings. Time to bring out the large brass hammer to whack the top of the puller shaft while two others use an even longer breaker bar. Ping! What was that? Did the bearing stack finally give? Yup, it finally did and off they came. All three looked at one another and said something less repeatable than, "wow, that is the tightest set of front wheel bearings we have ever seen."

The new seals and bearings went on without further incident while the sun set. Nice owner asks whether we want to spend the night inside or outside his shop or in an RV park. We elected the RV park but settled for the Wally World we passed on the way.

The next morning we did a short test drive and things seemed okay. So, we thanked him, paid the bill, and began the 400 or so miles to Las Vegas. By 60 miles out the shimmy was back and so were our questions about the wisdom of proceeding. By 80 miles it was clear that we were going no where but back to Fallon. We arrived a bit before noon. The owner dropped everything to drive the rig. Yep, there was the shimmy. Find a deserted road (not hard to do in Fallon) so he could stand outside as we drive past. Forward, reverse, turning, straight. The only thing evident was a snapping sound coming from the driver's front wheel. Back to the shop and out over the pit again. Those lower A-arm bushings really look loose now and the lower ball joint on that side squeaks

loudly as two guys jump up and down on the front bumper. We already have missed the "that afternoon" Reno parts run and it is Friday afternoon. He plans to go hunting at 2:00 and nothing is going to disrupt that schedule. So, anything we want done has to be done by 2:00 and from parts already in Fallon. An elderly couple show up to take the owner and his wife to lunch, likely parents of one or the other. Off they go while Sharon and I hold a strategic summit meeting.

After prolonged discussion of alternatives that must have lasted fifteen seconds the decision was limp home the 400 miles rather than setting off through the vastness of Nevada to Las Vegas and the still remaining miles to Phoenix on Friday afternoon. The trip home was slow but uneventful as we varied our speed with terrain and road conditions to minimize the shimmy. We called Jim Bounds and had him ship new lower A-arm bushings, ball joints and a passenger side wheel bearing set along with a Darren Paget wheel puller. Once home it was back to the local mechanic in our three stop light town. Don't you just love small town America? Where but in places like Fallon, NV, and Cave Junction, OR, would you find the owner of a shop willing to drop everything to help out someone passing through in a nearly 30 year old motor home. Or a competent local mechanic named, "Joe", who calls his shop "Kar Kare".

Does this seem like the end of the story? Not! New A arm bushings and lower ball joints helped but did not solve the problem. And, they were a bit of a chore to get off since, as it turns out, they were the originals! The lower ball joints were still riveted in place as they originally had been by the factory nearly 30 years ago. So, replace the inner CV joints yet again, this time under warranty, right? Wrong. The manufacturer who provided those to the supplier who sold them to Joe is out of business. The supplier will replace them under warranty, but only if Joe sends the whole axle sets to them! Now what? So, the saga continues and I will let you know how it turns out.

I am grateful for the many who pitched in to pull off the seminars without a hitch in my absence, but Frank Condos deserves the hero of the western world award for his unscheduled leadership. As you will read elsewhere, we were not the only ones who didn't make it to this rally. Thanks, Frank.

Jerry Work

Story 3 by Charlie Kanenbley

THE SAGA OF THE EXTENDED GMC RALLY

We have had our GMC for 20 years. We have traveled to the East coast, the Northwest, Southwest, Midwest, Mammoth Mountain...all a dozen times, and to Canada 2 months after buying it, as total greenhorns. The old puppy never complained, never missed a lick. Maybe we sometimes took her for granted. She drives like a dream and her handling qualities can't be beat.

The dream ended and the sky fell enroute to the Gold Canyon Rally. We departed Anaheim and fueled up with cheap, \$2.40 a gal, gasoline on the AZ side of the river. We cranked up, drove a couple miles, and there began the damndest howling. There just happened to be a rest area ahead so we wheeled in, to the vacant stares of other wayfarers. I, the master mechanic, diagnosed the problem. It was either the generator, the A/C, the power steering pump or the fan belt idler pulley...Or maybe the water pump?

We made our decision. This is like the Gobi Desert and we do not desire to be here. We will limp on. 225 miles to Phoenix. We started limping. 50 miles...the noise quieted some. 100 miles, the transmission temp jumped up a notch. Uh Oh! Now we knew the bad news. 50 more miles. The transmission temp is up two more notches into the caution zone. We limped on. Slowly. One of our kids lives in Glendale...five more miles. The stop and go traffic is wretched. Transmission is slipping now and smoking and the temp is approaching the red, self destruct zone. We limped on. Just as the warning signal began beeping and the red light came on, we coasted down the block and parked in front of our son's home and shut down. Thank God we made it! We beat the odds. When the chips were down, the old girl kept walking. We didn't know then, but that was the easy part.

After dinner, with a jugo de vino, we mark all the Phoenix area GMC members in the Western States directory and began calling. Who knows a transmission shop that can do a GMC hydro? We called Ginny Bare and advised her that we may not make it to the rally. Two GMC members told of Newton's Automotive in El Mirage. One just had his tranny done there and was happy. It was only 6 miles from our son's home.

The next morning was Monday, 1st day of the rally. Patricia and I drove to Newton's. He said, "Sure, I can do that." He was working on a GMC when we arrived. "It will take 3 days, maybe 4. You go on to the rally and bring it in next Monday at 8:00 AM. It'll make it to the

rally and back. Just remember, keep adding fluid...and limp." We did.

What a great rally!!! We thank Ginny and Dwight for the most unique gathering we have attended. The Apache Trail to Roosevelt Dam; the Cowboy Cookout. It was all pure Arizona. Please do it again in 5 years. I talked to the people that know GMC's best, BeBe, Mike, Jim, Manny, Frank, Dwight, Emery and others.

On Monday, exactly a week later, we left our Royale at Newton's. On Thursday I phoned. "It will be ready Monday. I just took it for a test drive and broke the low band clutch." Monday, I phoned. "It will be ready Tues. I just took it for a test drive and reverse doesn't work." They phoned Tues. and announced it is ready. We paid, with trepidation: \$2,300, 6 month and 6,000 mi. warranty. We headed west at a rather casual lope. Forty miles into our 350 mile journey, a long haul trucker gave us the thumbs down and motioned us to the side. There just happened to be an off ramp. We parked and found the transmission blowing oil and smoke out the left side. We limped back. The transmission is running hot again. Newton's is closed. We drive to relatives in Sun City. Tues. night. I venture a call to BeBe Pettit in Prescott. No answer. My heart sinks. He and Nancy are probably in Texas or somewhere for a month. I phone Mike and Judy Cherry and leave a message for help. We were down and almost out when Mike called back. BeBe and Nancy are painting a rental and will be back about 6:00. YES!! "BeBe, we are almost out of aces. If we show up at your doorstep tomorrow, will you trade your spare tranny for a well used and cooked original? And maybe install it to boot?" He said, "Aw, come on over and we'll take a look at it. How you going to get here?" "I'm going to limp there," I say.

Next morning I phone Newton's and ask what kind of deal we can work out. He said, how about a complete refund. So now we are on the trail again, 75 miles to Prescott. Limping along at 55 MPH, running a little hot and smoking a little. Almost halfway there we encounter this ugly grade. Seven miles long, 12%, crooked and nowhere to rest and cool. As we crest the grade, crawling at 10 MPH, in the red zone, cooking and smoking, there appears a rest area. We fall into the off ramp and veer right to an open area. We are sunk. Transmission fluid is boiling out the filler tube and vent.

We regroup and collect ourselves for about a minute. Call the auto club. Send a flat bed for our GMC. What model is it, they ask? It is a 26 ft. GMC. They all look the same, I say. An hour later Robert phones. "I'm just about there, have to gas up so I don't run out of gas hauling you to Flagstaff." Don't want Flagstaff, want to

go to Prescott. Do you have a flat bed? Flat bed? Why do I need a flat bed? I can tow anything with my truck. We asked for a flatbed, we insist. An hour later auto club calls. Can you explain why you need a flat bed? Because front wheels up drags the rear and breaks the shocks loose. Hour later....we have flat bed coming from Phoenix. Will cost \$600, minus the \$200 that auto club pays for. I call BeBe. He says, pump up the rear suspension and don't raise the front wheels very high. Don't bump and bounce around. Make the tow truck driver go slow. (yeah, sure)! We call auto club back...don't want flat bed, send Robert back. He went back to Phoenix an hour ago they tell us.

Four hours after our first call, Robert hitches us up and we are off at 75 MPH. Ten min. later we get a call from flat bed driver from Phoenix who says he will be with us in just a few minutes. Patricia says we are already in tow. So sorry they did not communicate that to you. Robert is elated.

It had taken all day, but we got to BeBe and Nancy's at dark, intact, with no damage. They were at the curb waiting for us waving a flashlight or was it a halo?

The next day BeBe, with help from Mike Cherry and Ron Richmond, another friend of theirs, had the old transmission out and the new one in. All this without removing the trans axle/differential unit. Yes, you can do that. 4:30 on the second day we drove to Quartzsite. Not a drip, not a drop. The next day, Sat., we drove home, three weeks to the day from when we left Anaheim. We were to return the 11th, but what the heck, this little detour was a humbling experience and brought us face to face with the true ANGELS AMONG US! All things happen for a reason, we believe, and we thank God for the adventure and the wonderful, gracious, caring people he put in our path along the way.

Note: Technical seminars and other technical articles printed in this newsletter are provided for information only. What you do to your coach and how you do it is your responsibility.

Please send your comments and ideas for the Tech Center to:

**Jerry Work, Technical Vice President
24108 Redwood Hwy, P.O. Box 3193
Kerby, OR 97531
541-592-5360, E-mail: glwork@mac.net**

GMC Western States

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United States Patent Office

Des. 231,731
Patented June 4, 1974

231,731

VEHICLE BODY

Paul H. Deesen, Rochester, Michael W. Lathers, Bloomfield Hills, Kent W. Madill, Oak Park, and Pierre Ollier, Bloomfield Hills, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 20, 1972, Ser. No. 308,265

Term of patent 14 years

Int. Cl. D12-08

U.S. Cl. D12-100

