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## DeLorean Club of Oregon News & Information



June 1, 1997

### Mount St. Helens Eruption Anniversary Tour

by Knut Grimsrud

Conditions could not have been better for the Mount St. Helens tour. Unknown to me, luck would have it that the tour coincided with the 17<sup>th</sup> anniversary of the eruption and all park access was complimentary and all the various exhibits were well manned by knowledgeable park personnel at all the areas we stopped at. Also,

this marked the opening of a new visitor center just a few miles from the crater area.

Being the anniversary of the eruption and a park open-house, we soon discovered that we were not the only motoring club to head for the mountain that sunny Sunday. The Viper club seemed to stay ahead of us most of the day and we shared the road with a large M/C club as well.

After the cruise up from Portland, we gathered at the base visitor center to share the trip plans and to brush up on some eruption basics in the learning center. A short and scenic drive up the canyon led us to Hoffstadt Bluffs for lunch and a beer on the deck with a view of the mountain and surrounding areas. After months under a cloudy sky, the sunny skies were a treat, although I soon discovered that my fair skin was not faring well in the bright sun.



From Hoffstadt Bluffs, the terrain became increasingly stark and the evidence of the forces at work in this area were evident. Even after 17 years, most of the areas look like “basket weave” from a distance as a mesh of fallen timber covers the ground. Some areas on the leeward side of ridges still harbor standing trees leading to a strange contrast with the barren surrounding areas, and the timber in some areas had been salvaged revealing only a sea of stumps.

The Coldwater Ridge visitor center afforded the next opportunity to learn more about how the habitat was recovering and to admire the awesome view without endangering myself and my wife by staring at the view while driving (a real temptation). After a tour of the center and a couple of ice cream cones, my wife and I realized we had allocated insufficient time with our sitter for the day – one could easily spend a couple days in this park. Although others continued on, we unfortunately had to get pointed in the homeward direction.

We really enjoyed ourselves and the company of fellow club members. If you have an opportunity to tour the Mount St. Helens national monument, I absolutely recommend it, and there’s no better way than in your DeLorean!



## **Happenings - Tech Session**

by Knut Grimsrud

We have had two events since the last newsletter. The first was the tech session sponsored by Foreign Car Specialists in Forest Grove.

The shop was immaculate and had clearly been prepared for our arrival and several lifts had been cleared for our use. Since we had such clear access to the underside of the cars afforded by the lifts, most of the time was spent on the underbodies and various undercarriage systems.

Chris Myers generously shared his expertise and troubleshooting skills in going over several aspects of the car. Chris covered speedometer

angle drive lubrication and preventative maintenance procedures (this is a common failure item and maintenance was added in a service bulletin to dealers). Failure of the angle drive is so common due to poor maintenance that it is becoming hard to replace these units anymore.

### **Message from your Coordinator**

You may have noticed that this issue of the newsletter as well as the previous event notice did not have the usual logo and title on the front page. Several months ago, during the regularly scheduled board meeting, the DeLorean Owners Association board of directors unanimously voted to abolish Chapter 41 and all other local chapters. Although the board has yet to officially notify local chapters of this action, I recently discovered information about this move on the Internet.

In the interest of DeLorean enthusiasts in the Oregon area and the members of the previous Chapter 41, the current defunct chapter board has volunteered to reestablish a local DeLorean interest group essentially the same as the former Chapter 41. Per the DeLorean Owners Association’s apparent wishes, this new group would no longer be affiliated with the DeLorean Owners Association, although individual members may choose to maintain whatever memberships or affiliations they wish. Provided there is sufficient interest to warrant a local DeLorean interest group, a new election of officers will be held as soon as some preliminary issues are ironed out.

If you would like to see a new regional DeLorean interest group catering to the social and technical needs of owners and enthusiasts in and around the Oregon area, and in being affiliated with such a group, please complete the enclosed membership application card (enclose no money as there is no organization established yet). If sufficient applications are collected to support a local interest group, a new organization will be established in place of the abolished Chapter 41.

Without proper maintenance, they have a lifespan of about 15000 - 20000 miles.

Chris next identified the fuel accumulator, some of the symptoms associated with failure of this item, as well as access, and service procedures. The accumulator is often the culprit in cars suffering from "Back to the Future" hard starting syndrome, especially in cases where the car fails to start when warm after having been sitting for a few minutes (like at a gas station while filling up). In addition to the accumulator, Chris identified the fuel filter and replacement procedures.

The infamous trailing arm bolts were identified and techniques for inspection and servicing of these common failure items. These bolts under fairly normal conditions will bend with potentially hazardous consequences. Also, the negative battery connection to the frame was identified at the same time as well as some tips for improving starting performance and intermittent electrical problems by keeping this ground connection free of corrosion.

By the time Chris had finished showing parking brake adjustment procedures (which seem pretty trivial on the DeLorean), Russ had gathered sufficient confidence in servicing his own car that he had the top T section of the roof off and was asking for a power drill to pop some rivets out of the top of the door with. We helped reassemble his car before calling it a day.

Our sincere thanks to Foreign Car Specialists for generously providing their facilities and to Chris Myers for donating his time and expertise. I was disappointed to see that more people did not take advantage of the generous services offered to our club.



## **The Great VIN Mystery**

by Knut Grimsrud

There has been some debate recently of the number of DMC-12's actually manufactured

during the two year production (spanning three model years) of the car. Although various numbers are cited in the publications, the most common production estimate is 8583 (reported in several publications although all likely derived from a report in DeLorean World magazine, a publication of DeLorean Owners Association). Unfortunately, none of the publications cite the source of the production estimates, making them impossible to either verify or dispute.

In order to gather information on the DMC-12 production volumes in the absence of good documentation, DMCNews initiated a survey some time back (see the excellent WEB page at [www.dmcnews.com](http://www.dmcnews.com) created by James Espey of the former Chapter 43) to tally the VINs and build dates of as many DeLoreans as were represented by the group. The resulting data represents over 100 cars or a little over 1% of the assumed production run of the cars. Although this population is fairly small, it is sufficient to perform some statistical analyses with reasonable margin of error.

By making the assumption that the VINs reported to the list are random in the issued VIN range, basic statistical analysis of the data results in conclusions quite different from those reported previously. Of the 102 VINs listed, plus the 14 I know of in the Oregon area, 76 are model 81, 18 are model 82, and 22 are model 83. With reasonable margin of error, this implies that about 65.5% of the produced cars are 81's, 15.5% are 82's, and 19.0% are 83's.

By making some additional assumptions and taking the build date from the VIN plate into account, the rate at which the cars were produced and the total number of cars manufactured can be estimated. The estimated number of cars should agree with the previous data on the expected number of cars in each model year.

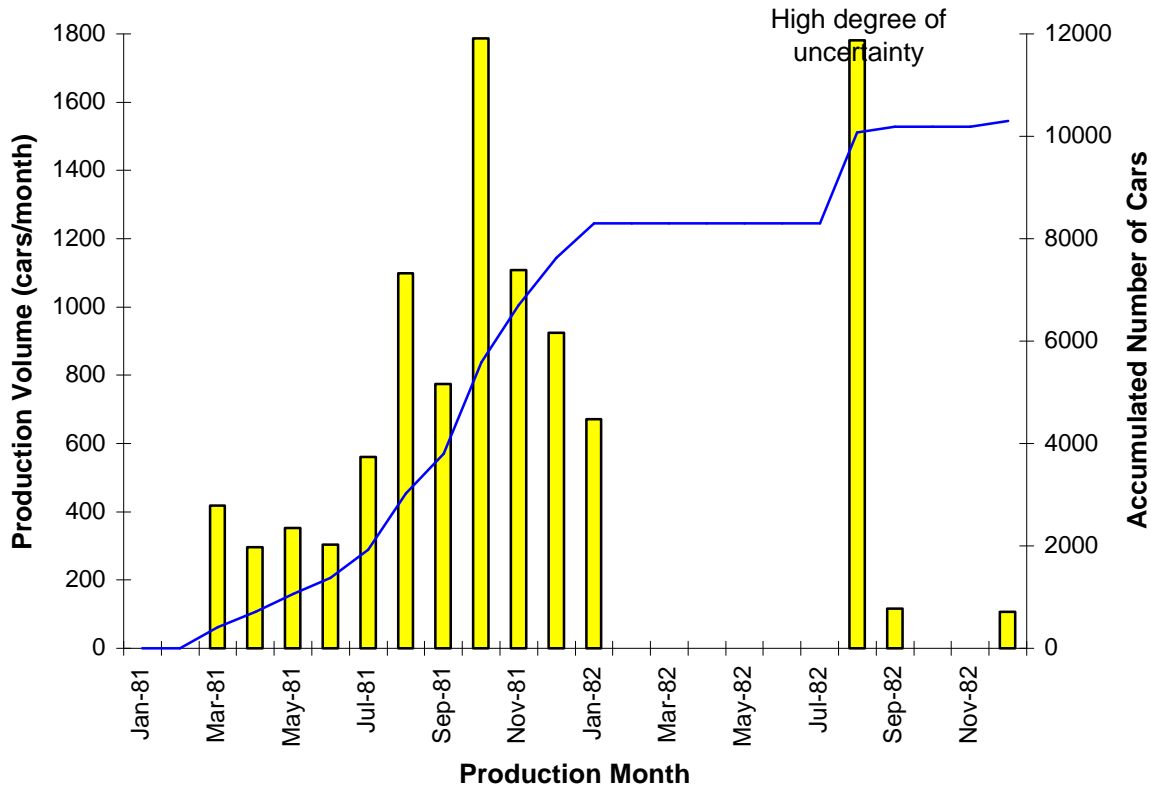
The figure indicates the estimated number of cars assembled each month during the DMC-12 production period. The following assumptions were made for the estimate:

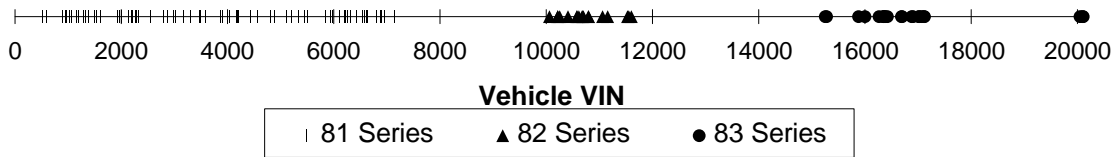
- There are no skips in the VINs except between series (between 81's and 82's, between 15000 and 16000 series, between 16000 and 17000 series, and between 17000 and 20000 series). Although several people have indicated there are skips in the VINs (especially for the 83's) no hard data on this is available, so no assumption on skips is made for the graph.
- Cars were manufactured at a constant rate from the last car manufactured in one month (as indicated by the survey data) to the first car manufactured in the next. Although this assumption is poor, it is the best that can reasonably be made. Also, with the number of cars represented in the survey data, there were very few from the end of one month to the beginning of the next not included in the survey results, so the introduced error is relatively small. Finally, this assumption has no effect on the estimate on total number of cars manufactured, only on when they were manufactured.

As indicated in the graph, production started relatively slowly and then increased sharply toward the end of 1981. Temporary plant closures and re-starts are evident by the periods in which no cars were produced. From this graph, the number of cars manufactured can be estimated at 6700 model 81's (including the first 60 which were pre-production cars not generally marketed), 1594 model 82's, and 2004 model 83's. The number of 81 cars agrees with the number cited in a DeLorean Motor Company memo to dealers requesting warranty service on all 81 model cars.

The estimated production volume computes out to 65.1% model 81's, 15.5% model 82's, and 19.5% model 83's which agrees surprisingly well with the original estimate and is certainly within the margin of error. The survey data therefore indicates that there were far more than 8583 DeLoreans manufactured and the data suggests

**DMC-12 Estimated Production Volumes by Month  
Based on VIN Survey Information and Best Known Data**





that the actual number is closer to 10300. As additional information becomes available, these estimates will be refined and posted on the DMCNews WEB page.

I finally graphed the VINs reported to the survey to see if there were any obvious skips apparent in the data. The figure indicates clear skips between the model years, but there are no clear skips within the various model years. Note that with the number of samples used for this graph and the randomness of reported VINs, one would expect minor gaps in the samples reported caused by normal reporting variation.



### News Flash

The DeLorean Parts Depot at KAPAC (formerly Consolidated, which purchased the remains of the bankrupt DeLorean Motor Company) has sold its complete parts inventory to Stephen Wynne at DeLorean Motor Company in Houston Texas.

Transfer of the entire inventory will take some time, but orders are being filled during the transition. The transfer will also likely result in numerous new discoveries of parts as the previous parts depot had not been completely catalogued. The move will probably not affect the availability of parts which can still be obtained through the regular channels.

### Planes, Trains, & Automobiles

Well, maybe no trains. I recently received the following notice that may interest enthusiasts in the Portland area. I am planning on attending and hope to see other fellow DeLorean enthusiasts there.

“We would love to have DeLoreans in our show. On June 22 at the McMinnville Oregon Airport starting at 7:00am, the McMinnville Lions Club will be serving breakfast. You do not have to purchase a breakfast to be eligible for the People’s Choice Award or the Long Distance Driver or Oldest Car Awards. You do have to purchase a breakfast and show a car to get one of the 150 dash plaques to be given out and be eligible for door prizes. The People’s Choice ballot box will be open from 8:00am until 11:30am, with the winners announced at about noon. You register when you arrive. There will be signs directing the show cars to register and park. The Bouncing Baby Boomer Band will play, weather permitting, starting at 11:00am. The breakfast is all you can eat, pancakes, eggs, ham, coffee, juice, and milk at \$4.00 each for adults, and \$3.00 each for kids under 10. Also with each breakfast purchased is one People’s Choice ballot, so one breakfast equals one vote. There will also be other activities, such as the Yamhill County Chapter of The Oregon Pilots Assoc. Will be having an airplane wash. The FAA Flight Service Center will be giving tours. Plus there should be lots of old airplanes there and more.”

Lou Kinnman  
Chairman

## Tech Notes

by Knut Grimsrud

My rear suspension project is on hold for the time being as I am too dependent on my car at the moment to allow me to engage in a multi-day project. For the next few issues I will instead approach a variety of small projects and experimental analyses to provide some insight into the operation of some of the common systems of the DMC-12. Note that I am not a substitute for good judgment on your part and will in no way be liable for your damaging your DMC or yourself.

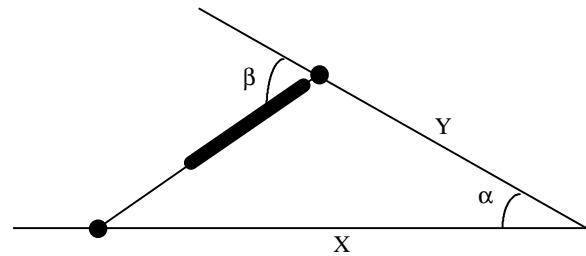
### Door Strut Geometry Analysis

I have often heard that the DeLorean torsion bar is only responsible for raising the door partway and that the struts take over the lifting action at about halfway up – hence the recommendation to replace your struts rather than adjusting the torsion bar if your door does not open fully. In order to better understand the action of the door, I performed a simple geometric analysis of the function of the door strut.

In order to better understand the role that the door strut plays in raising the door, I decided to analyze the force the strut transfers into raising the door (actually the force goes into *rotating* the door, not lifting it). Although the force the strut exerts is a function of the strut itself (and of its extension since struts usually exert a greater force when completely compressed), in the case of the DeLorean, the amount of that force transferred into a rotation motion of the door varies with the position of the door. When completely closed, the strut exerts a force on the door directly toward the centerline of the roof, pushing the door inward and not upward – transferring no force into raising the door, only in pushing it inwards towards the hinge.

I define the *force transference factor* as the fraction (or percentage) of the force exerted by the strut that goes into rotating the door. If the transference factor is 1, the entire force of the strut goes into rotating the door, while if it is 0.5, only half of the strut's force goes into rotating the door. I used the diagram at right for the analysis which illustrates the basic relationships in the door strut geometry.

In addition to the strut force transference, several other factors influence the operation of the door including the force exerted by the strut as a function of its extension, the force exerted by the torsion bar as it unwinds, as well as the shift in the weight balance as the door rotates open. For this study, I will only examine the force transference factor as a function of the changing door geometry as it opens.



In the diagram, the door hinge angle is labeled **a**. When the door is completely closed, this angle is zero, and with the door fully open this angle is close to  $90^\circ$  (the door does not quite open to the fully perpendicular position). The angle the strut makes with the top of the door is labeled **b**. Maximum force is transferred into rotating the door when beta is  $90^\circ$  and when the door is completely closed  $\beta$  is zero and the strut only pushes the door inward and no force is transferred into rotating it.

The distance from the hinge point to the strut attachment point on the body of the car is labeled **X** and the distance from the hinge to the mounting point on the top of the door is labeled **Y**. With values for X and Y (about 14.5" and 5.0" respectively), it is possible to compute the angle  $\beta$  for any angle  $\alpha$  and from this angle the force transference is readily computed.

The angular relationship is represented by:

$$b = a + \tan^{-1}\left(\frac{Y \cdot \sin(a)}{X - Y \cdot \cos(a)}\right)$$

The fraction of force transferred to the door as a function of the strut to door angle is:

$$F = \sin(b)$$

Using these relationships, the force transferred by the strut into rotating the door can be graphed as in the figure.

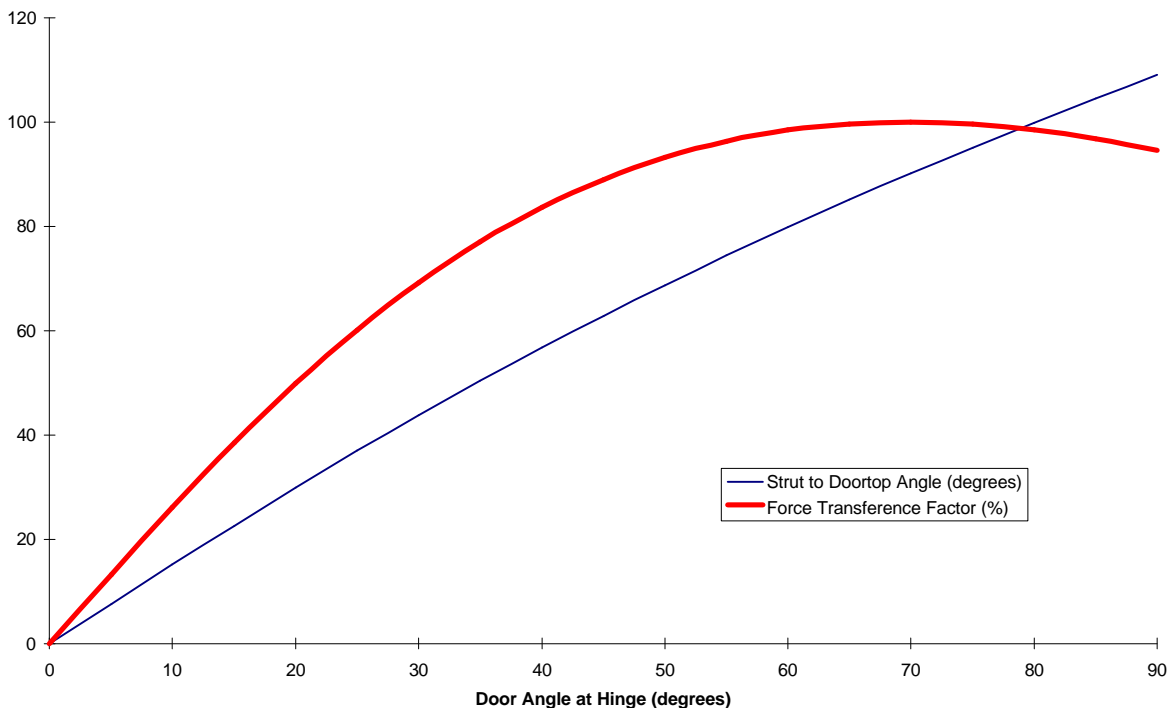
Several interesting observations can be made based on the graph. Notice that when the door is completely closed (door angle zero) the strut plays no role in rotating the door. As the door is opened, the strut transfers an increasing amount of force into rotating the door. When the door is about halfway open (about 45 degrees), the strut is transferring a significant amount of force into rotating the door. The transferred force continues

to increase as the door continues to open until it reaches about 70 degrees (not quite completely open). At a door angle of 70 degrees, the strut meets the top of the door at a right angle and pushes it at best efficiency directly in the direction of rotation. The force tapers off slightly from there as the strut to door angle increases past 90 degrees and again become less perpendicular.

Based on the observations, I would agree with the common diagnosis that most drooping car doors require new struts and not torsion bar adjustments. The torsion bar is primarily responsible for rotating the door the first halfway of its travel and the strut the rest. If your door opens easily but does not stay in the fully upright position well, your struts are likely the culprit. If on the other hand your door is difficult to open, but once it is raised halfway it lifts itself the rest of the way you may be in need of a torsion bar adjustment.



**Strut to Door Top Angle and Strut Force Force Transference Factor vs Door Angle**



## DeCO Events Calendar

### **Saturday, June 21**

Tech session & pressure wash with the Pacific Northwest DeLorean Club in Olympia, WA. Contact Knut for details if you would like to attend.

### **Sunday, June 22**

McMinnville Airplane & Auto Show w/ Breakfast – see details in the sidebar earlier in this newsletter.

### **Sunday, July 6**

Tour of Heirloom Roses rose display garden outside Newberg with Master Gardener Melinda Mathiesen.

### **Sunday, July 20**

Rally down Highway 53 to Nehalem for antiques, art, & jewelry shopping and a riverside BBQ. This has been rescheduled to coincide with the art and crafts fair held in Nehalem July 19<sup>th</sup> and 20<sup>th</sup>.

### **Saturday, Aug. 30**

All British Field Meet at Portland International Raceway. I have yet to verify the date and obtain registration details from the ABFM sponsors. This is usually held around Labor Day weekend.

### **Sunday, Aug 31**

All British Field Meet swap meet and slalom race on the PIR track. Test your DeLorean driving skills.

### **Sunday, Oct. 19**

Regional winery tour.

## For Sale & Wanted

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*Advertisement of DeLorean related items is provided as a service to club members free of charge. Commercial advertisements available at negotiated rates and at my discretion.*

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*For Sale: '81 (VIN 4514) DMC-12 w/ 41K miles. Manual/gray maintained by car collector. \$15000*

*Contact Tom H:631-8898*

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*For Sale: DeLorean dealership sign (1/2 with back and lighting, 11'4" x 36"), service manual and bulletins, new heater fan. Offer.*

*Contact Knut for reference H:649-8053 W:264-8419*

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*Wanted: DeLorean with damaged or missing engine for project car.*

*Contact Knut H:649-8053 W:264-8419*

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