



HORIZONS



Holiday Issue - 2002



"I know, but the sun's shining - somewhere!"

visit Gordon's website to enjoy more great cartoons!
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You'll have a whalin' good time at the
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Saturday, December 14
at the **Chart House Suites**
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The cost is **\$15.00** per person

(\$5.00 will go towards our selected charity, the
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The beach is just a short walk away and
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Call Jonathan (424-9683) or

Kathy Davis (415-0479) or email us -

jonathan@sunriders.com or kathy@sunriders.com

We have to have a headcount to prepare
the meal! RSVP by December 7

Note from Jonathan: For those who are interested in staying overnight at the Chart House on Clearwater Beach the night of the party, (Saturday, December 14th) the Hotel has given us a discount rate of \$69.00 for a regular room, or \$99.00 for a suite. A limited number of individuals may also be able to sleep over in the penthouse for a small fee, if they don't mind sharing the space with others. **CONTACT JONATHAN IF YOU WOULD LIKE TO PLAN TO STAY IN THE PENTHOUSE.**



Nov 16th Tech Session a damp success! By K Morrison

In spite of persistent showers we had about 10 cars at Just Miata this morning for our tech session. Donuts and coffee were consumed and lots of tech talking was done. The rain put a damper on doing very much wrenching, but we did put several cars up on the lift for inspections and Stuart gave a very good synopsis of all of the little 'trouble spots' to look for on Miatas of different model years. Paul Shaffer learned how to mount and balance his new tires and Loren repaired his holed Potenza S-03. I took some parts from the race car over so we could compare them to known good parts, so I could try to figure out what my problem is. Results were inconclusive. I'll have to put it back together tomorrow and see if everything fits right.



COURTESY MAZDA OF TAMPA



Club meeting 11/19/2002

We completed the voting and officers were nominated.

50/50 drawing for our chosen charity, the SPCA netted a whopping \$84!

(The winner of the drawing, Vinnie Lucido, rolled his winnings back into the charity!) We collected a couple of dog bowls and a bag of dog food to really get our "gift" giving going!

Other items to bring for the SPCA:

(these can be brought to any event or meeting) *dog food, cat food, chew toys, money, treats, stuffed animals, bones, collars, leashes and old towels.* Visit the SPCA web site for more info. (spca.org)



Performance Driving School

The Sunriders hosted a Performance Driving School in October to better learn how to drive and handle their cars. The one on one time spent with instructors (pictured above) from local area police departments was fun and informative.

Elections 'R' Us

By Loren Williams, Balloting Chairman

Okay, so our election wasn't without flaws, but it still went more smoothly than any other recent election in the state! Things got off to a rough start when it was brought to my attention about a week before the October meeting that the slate of officer nominees was to be announced at that meeting. I remembered someone telling me (thanks, Kathy) that I had been drafted as the Balloting Chairman, but really hadn't been given much info on it until then.

So I put a request out for committee members to help me find guppie... er... um... nominees for all of the elected positions. Thankfully, volunteers were readily available for the "tough positions": President, VP, Secretary and Treasurer. It would have been nice to have choices for those positions, but just knowing that the positions were filled was enough for me. Be sure to thank Bill, Don, Kathy and LoAn next time you see them.

That left committee members Ed Simon and Mike Benishek with three board member positions to fill. Again, volunteers were pretty readily available, and we could have just gotten our three and left it at that. But what's the point of having an election if people don't have choices? So we kept beating the bushes until we came up with a total of six nominees. Those who accepted nomination were: Doro Anderson, Mike Benishek, John Keeler (brand new member!), Kevin Morrison, Maggie Seymour and myself.

Designing, printing, addressing and mailing of the ballots was the usual thankless task. But I had plenty of time to put that all together, so it wasn't a challenge. Unfortunately, as someone put it, I wasn't forceful enough in asking the board to review the ballot prior to printing and mailing. As a result, the ballot was not proofed by anyone other than myself, and errors were present. The biggest one was that the candidates for Secretary and Treasurer were swapped. Because both positions were unopposed, this wasn't such a big deal. We handled it with manual voting at the November meeting. Both Kathy and LoAn could have been off the hook... but one vote was all it took to lock them in! The other errors that went unnoticed by most were the date of the membership meeting (and date for returning ballots) was a week early and the misspelling of Linthicum.

Ballots were counted by three diligent impartial volunteers at the November meeting with close counts (but not close enough for a recount!) resulting in the following members being elected as your officers for 2003:

President: Bill Bullington

Vice President: Don Reese

Secretary: Kathy Davis

Treasurer: LoAn Nguyen-Linthicum

Board Members: Mike Benishek, Kevin Morrison and Loren Williams

Thanks to all who were willing to accept a nomination and to all who serve the club in both elected, appointed and purely voluntary ways!

DADE CITY CRUISE IN ADDED TO EVENT CALENDAR!!!!!!!

Dec 7th!!

Meet at McDonalds 4 pm Dec 7th (Saturday), Rt 54 and 41 for a drive in Pasco County to the Dade City Cruise In. See about 250 classic cars, wonderful shops, antiques. Dine with the group at Kokopeli's.



John and Karen Lavigne in the Mini

Who ARE these people????

It's none other than Joe and Ilona! Coordinators of the Dade City event and our merchandising couple.

THIS is a trip down memory lane!



Dave and Diane Tietz in their MG

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A trip to Clearwater Marine Center to learn more about our local “wet friends”. A private boat tour after a trip thru the museum was vastly enjoyed by the gang. The tour guide, Teresa, was knowledgeable about the museum and its inhabitants and made the experience fun for all of us!



Miata Suspension 201: Simple Bolt-Ons

By Loren Williams (reviewed by people with more knowledge than him, proofread by people smarter than him)

This is the third of four articles in this series. In the first article we discussed the basic parts of the Miata suspension and what they do. The second covered the details of alignment. This time we're going to go talk about some common bolt-on suspension modifications and what to expect from them.

Okay, so you've gotten familiar with your Miata's suspension, you've bought a killer set of tires and you've tweaked the alignment to maximize cornering ability... but you're still not quite satisfied. Something isn't right. But what is it?

Well, let's get one thing straight right here and now... there's nothing inherently "wrong" with the Miata suspension as it comes from the factory. When it comes to competition, as long as the tires are the same, a good driver can drive a bone stock Miata just as fast as he can one with a highly modified suspension, though it may (or may not) be easier to do so in the modified car. THE TIRES are the biggest factor. You can put as much money into your suspension as you want, but if you don't have the tires to back it up, the car will not be capable of generating any more G's than it was before.

But... you might have noticed that your Miata has an awful lot of body roll built into it. Some of us find that to be distracting. Again, let me reiterate that it's all in your head... I chose to "fix" mine, anyway... but it's really just a matter of personal preference. So, what do you do about it? Ah, now we get to the meat of this article!

Shocks

The Miata factory shocks are pretty good, especially the Bilstein performance shocks that came on the M1 R models and the M2 Sports. In fact, if you have worn standard factory shocks and are looking for an upgrade, if you can find a set of good used "take-off" Bilsteins for cheap, that's not a bad way to go. If you can put up with a little firmer ride over the bumpy stuff, stiffer shocks can eliminate some of your body roll, or at least CONTROL it better. (remember, that's all those shocks really do is control the motion of the springs)

Good shocks are a must for good handling, but don't assume that stiffer is better. (you'll hear that statement again) Ideally, shock damping rates should be matched to the spring rates. For this reason, you really "need" to upgrade your shocks if you are putting stiffer springs on the car. There are some good options available for stock or "mild" lowering springs, like the Bilsteins and Tokico HP's.

If you're going to do any competition, or you intend to use stiffer springs, or you just want to give yourself more flexibility, adjustable shocks are the way to go. The most common off-the-shelf units are "single adjustable", they allow you to easily adjust the rebound damping of the shock. The most common choices are the Koni Sport, Tokico Illumina and KYB AGX. My choice is the Koni, it has been very popular among Miata racers for a very long time. Its advantages include durability, infinite adjustability (no preset adjustment points), and adjustable spring perch height (with which you can lower or raise the car about 1/2 inch). The only disadvantage is that the adjustment is done from the top of the shock, which makes the rears difficult to adjust. The KYB's are a little less expensive and fairly new on the market. I've heard no major complaints about them, though most racers still seem to prefer the Koni's. The KYB does not have the adjustable spring perch, but does have the benefit of having the adjustment on the bottom, which is a little easier to get to. (however, being on the bottom also exposes it to the elements.. a bit of a compromise) They have 8 distinct levels of adjustment, which may help you keep your adjustments consistent. I've not heard a lot about the Illumina's other than that they may be a little less durable than some of the other choices.

SO... body roll elimination step 1: stiffer, preferably adjustable shocks. Now, remember what I said about not assuming that stiffer is always better? You can test this theory if you have a set of adjustable shocks. Go ahead and crank them up to full stiff and find yourself a nice autocross course. Make it a rough asphalt one with some bumps in it. You'll quickly learn what "too stiff" means. With shocks that are too stiff, your suspension doesn't get the chance to comply with the bumps in the road and you end up skittering across the top of the bumps. Personally, I first made this observation on a fast freeway interchange ramp at about 80 mph. Don't do that.

What you really want is to set your shocks as soft as possible without allowing the springs to "bounce". This is a lot more obvious with stiffer springs. For instance, with my Flyin' Miata springs and my Konis set on full soft, if I hit a good bump while I'm cruising down the highway, I can feel the car bounce when it hits the bump. The ride is more comfortable, but feels a lot less controlled. You feel the bump, and then another oscillation of the springs after the bump. With this particular spring/shock combo, all it takes is 1/2 turn on each shock adjustment to eliminate the bouncy feeling and still maintain the suspension's ability to keep the tires in contact with the road. I've gone full stiff with them, too... but it's really only good if you're autocrossing someplace incredibly smooth like one of those military taxiways.

Sway Bars

Ah, yes. Everyone's favorite "bang for the buck" modification. This is the one that separates the drivers who really push their cars to the limit from the drivers who REALLY push their cars to the limit? Why do I say that? Well, look at it this way: The Miata comes to you from the factory with a suspension that is tuned to just barely understeer and transition into mild oversteer with prudent application of power. In other words, it's pretty darned neutral. Time to get into a little of the "black art" of suspension tuning.

Aside from their obvious duty of reducing some of the car's body roll, sway bars are critical in tuning the "balance" of the car. They work a little backwards of what you might think, too. Without getting deep into the how and why, if you stiffen the bar at one end of the car, you will increase cornering grip on the OPPOSITE end of the car. Conversely, if you soften a bar, it will increase cornering grip on that end. Remember, the sway bars have zero effect when the car is going straight, only cornering grip is changed.

Back to the question of why swaybars tend to separate the drivers from the DRIVERS. It's simple. Your favorite aftermarket company (Racing Beat, Jackson Racing, Flyin' Miata, whoever) sells these swaybars in a kit. The kit is designed to virtually eliminate body roll when used with the stock springs, and it does a great job of that. Really, I'm not kidding. A \$200 set of bars will take the lean right out of your car and turn it into a flat-cornering machine. This is very cool for the average street driver who never really pushes the car past 80% of its ability. For those of us who venture out to the far side of prudence, either in our daily driving or on an autocross course will quickly learn that the combination of bars we have been sold has turned our car into an oversteering beast!

I've talked to a few people who disagree with that and say that they can get around just fine with the bars they purchased from RB, JR or FM. These bars are typically a 24-25mm front bar and a 16mm rear bar. Compare that to the stock 20mm front and 11-12mm rear. Notice that the front bar is 20-25% larger and the rear is 33-45% stiffer? Consider that the actual stiffness of the bar is calculated using the 4th power of the diameter, so 20% more diameter means a lot more than 20% more stiffness. Look at those numbers again. What have we done? We have taken our neutral-handling Miata and increased the rear swaybar stiffness MUCH more than we did the front. Oversteer is exactly what we should expect when we do that.

As much as "understeer sucks", too much oversteer can be dangerous in an emergency maneuver, and is definitely not the fastest way around any race course. Believe it or not, you'll find that a lot of racers will put a larger front bar on their Miata and leave the rear bar stock. (the stock class autocrossers do it because they aren't permitted to change the rear bar) The resultant understeer can be tuned out with alignment (a little more negative camber in front), and the big benefit is being able to flat-out accelerate using all available power out of just about any turn. Ooooooh, that feels good! I mean... sure, tail-wagging oversteer is fun, but knowing that the car is firmly planted and that you can just GO is awesome!

CONTINUED ON NEXT PAGE...

So... body roll elimination step 2: stiffer sway bars. Well, that just depends on your goals, doesn't it? Stiffer bars front and rear just MIGHT be all you ever want. If you're serious about competition or you know you're the kind of driver who would find that oversteer... what do you do? Well, a stiffer front bar will eliminate SOME of the body roll, but it's really that super-sized rear bar that does most of it. Without that, you'll have noticeable body roll. What to do? What to do?

Springs

If you haven't figured it out yet, the primary purpose of a swaybar (the rear one in particular) on a Miata is to tune the balance of the car. To stiffen things up and eliminate body roll WITHOUT corrupting the balance of the car, you need to stiffen the springs. BUT (and I can't make that but big enough), you really need to pay attention to the rates of the springs that you get! There are a lot of aftermarket spring sets out there and when I started shopping around, I was utterly amazed at the differences in them. I'm not just talking about "this set is stiffer and that set is shorter", I'm talking about WILD differences in front-to-rear spring rate balance. Why would there be such differences? I'm glad you asked.

Two reasons, really. First (and probably foremost for the larger companies) is the same reason that most car companies sell cars that understeer: liability. They don't want to sell you a set of springs that's going to make your car oversteer (and since their swaybars already tend to do this, a spring set biased in that direction would make things REALLY bad) because they don't want you to go out and kill yourself and your spouse sue them. The other reason is that you may want a different front-to-rear balance depending on the speed of the activity you choose to pursue.

It took me a long time to come to terms with this, but a racer friend of mine finally explained it to me pretty simply. If you're tuning your car to handle at its best in the slow stuff (autocross) at say 40-60 mph, you want the front of the car to recover from the bump that the car just hit right before the rear hits that bump to keep the car from becoming "upset" and rocking front-to-back. Obviously, if you're going twice that speed, the rear of the car is going to hit that bump that the front just hit much quicker than it would if you were going 60. It is for this reason that "road racers" tend to have much higher front spring rates than you would use on the street. They tend to make the car understeer a bit more in a slow turn, but VERY stable at high speed. Similarly, you will find some ridiculously high rear spring rates on cars that are set up for autocross. This will make them very eager to turn... almost oversteer... which is exactly what the autocrosser wants.

Now that I've explained that, let me share some of the data that caused me to ask that question in the first place. This is the info I found readily available on the Internet regarding stock replacement spring sets (with a few coil-overs thrown in for comparison) that were available for an M1 Miata in 2001. The "rear bias" figure represents the rear spring rate as a percentage of the front rate. "X stiffer" indicates how much stiffer the front springs are compared to stock.

Springs	Price	Front	Rear	Rear Bias	X Stiffer
Stock	\$0.00	153	94	61.44%	
Stock R	\$0.00	153	105	68.63%	
Bill James (autocross coil-over)		400	325	81.25%	2.614379
Spec Miata (race coil-over)		700	325	46.43%	4.575163
FM	\$219.95	342	228	66.67%	2.235294
Racing Beat Street	\$170.00	203	111	54.68%	1.326797
Racing Beat Race	\$182.00	226	124	54.87%	1.477124
Ground Control street setup		375	250	66.67%	2.45098
Randy Stocker (race coil-over)		375	185	49.33%	2.45098
Max-5/Apex (PBC)	\$199.95	175	110	62.86%	1.143791

As you can see, cars set up for high-speed racing use stiffer front springs, the rear rates are a lesser percentage of the front rates. Cars set up for autocross use stiffer rear springs. Notice that the R model springs are stiffer in the rear? Hmm... a little more nimble at the speeds we're most likely to notice it, ya think? (it's not often that you see such a fine combination of marketing and engineering) And the clincher: Ground Control, one of the most respected names in coil-over engineering for racing and autocross recommends rates for street use that put the bias almost exactly where the R model rates are. Did you notice that Flyin' Miata's rates were almost identical to that? I did. Guess what's on my car?

My personal opinion is that the Flyin' Miata spring set at \$220 (along with a set of good adjustable shocks, but you already have those, right?) is the most bang for the buck suspension mod for the Miata. The car retains the same balance that it came with, it's just a little lower (about 2") and quite a bit stiffer. But still not obscenely harsh to drive on the street... unless you set the shocks really stiff.

Oh, and the other thing that changing out springs will do is give you a lower ride height. Most aftermarket spring sets lower the car between 1.5 and 2.5 inches. The Miata is already pretty low with most of its weight down low, but this still makes a difference. Once again, without getting into all of the whys, lowering the car's center of gravity is yet another way to improve its cornering ability.

Other Simple Bolt-Ons

I've talked a lot about body roll and how to get rid of it. One of the other things you might notice if you push your car really hard, especially if you have an early M1, is some chassis flex. You know, when you dive into a turn and you feel your feet and your hands and your butt going in slightly different directions at the same time? What can you do about that?

Well, after 1994, Mazda had made most of the bracing you need standard equipment. If you have an earlier car, do a little research and you'll find that you can get those braces either from an aftermarket source or a salvage yard. They bolt right on.

Beyond that, the addition of a front shock tower brace might help a little bit. This is a topic of debate among most people, but the fact that it became standard equipment on the M2 Miata (which is known for its increased chassis rigidity) has to mean something. Be sure to get a good sturdy brace, not just one that's made to look pretty. Installing a roll bar (not a style bar, but a real 4-point roll bar bolted to the frame) makes quite a difference, too.

There are a lot of other bolt-on parts, but I'm drawing the line here as to what is "simple". The final article in this series will talk about some of the more "hard-core" modifications. Look for it soon!

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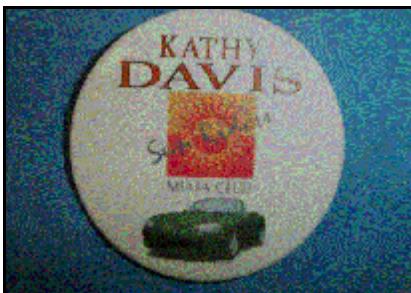
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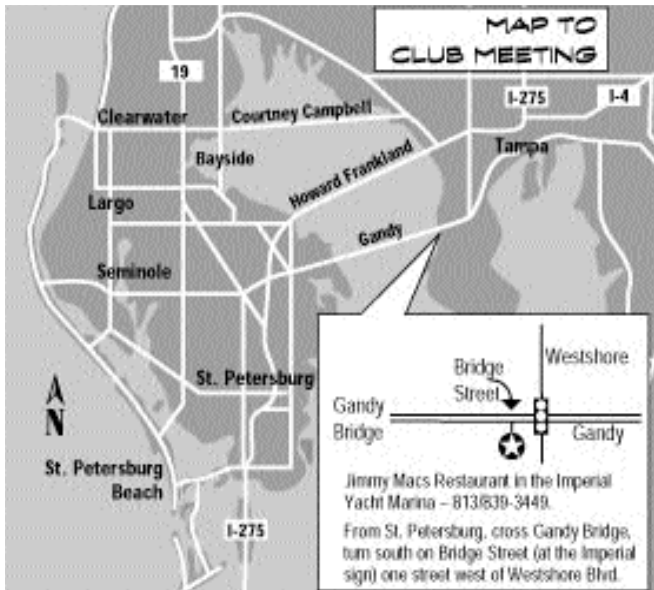
Join us at our club meetings...

We meet the third Tuesday of each month. Currently our meetings are being held at Jimmy Macs Restaurant, tire kicking starts at 6:30 and the meeting begins at 7:00pm.

For more information visit the web page at:
www.sunriders.com

If you received this newsletter and are not a member of our club, please consider this an invitation to join.

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