



### [The National Lightning Owners Club - Lightning's Unleashed](http://www.nloc.net/forum/index.php)

(<http://www.nloc.net/forum/index.php>)

- [Drag Racing](http://www.nloc.net/forum/forumdisplay.php?forumid=431) (<http://www.nloc.net/forum/forumdisplay.php?forumid=431>)

-- [Traction Bar Tech...](http://www.nloc.net/forum/showthread.php?threadid=9651) (<http://www.nloc.net/forum/showthread.php?threadid=9651>)

Posted by HotRod on Dec 1st, 2001 05:03 PM:

#### **Traction Bar Tech...**

Let talk about the differences in the way the two main bars (Rancho and CalTracs)function.

Ive had some questions on this subject for a while, now is the time to ask.

It seems to me, the longer bars on the Ranchos would have more leverage to press the tires into the pavement. The shorter C-Ts might hit harder initially and then unload a few feet out of the hole. Is this true? I feel I need a more overall bite than a quick hit and maybe spin.

Compare the Ranchos to a ladder bar setup. The ladders are 32" long, and they are said to have VERY good traction control. The Ranchos are longer than that, even. Not being an engineer, I dont know if the Ranchos are emulating the ladders or are totally different. The C-Ts seem to be more like a Southside bar on a Mustang. They hit hard and can unload the tire a few feet out.

If any of this makes sense to you guys, please add your input. Im looking to buy a set of bars in about 2 months and want to buy the best, first. How much better will my 60ft times get? Ive gone 1.75 with only the shim trick. Thanks for your input.

-----  
Rod K.

'93 Lightning #1529 NLOC #675

13.27 @ 101.55 Au Natural

12.67 @ 102.52 Kinda juiced..

'98 SVT Contour E1 #5782

'00 Suzuki Bandit S1200 10s??



Posted by crashbach on Dec 1st, 2001 08:43 PM:



I am looking to buy some bars in a few months too but I don't know which ones to get either. I went on Calvert's website who is the guy that makes Cal-Tracs and they look pretty good but I also wonder about their length (I'm no engineer either). Any help on this would be greatly appreciated, I am already having to put a new trans in and don't need anything else to blow up!

-----  
Black 95 # 1356

NLOC # 218  
13.24@99.04 1.78 60'  
There is nothing made  
that can't be sprayed

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*Posted by Don's Bolt on Dec 2nd, 2001 04:35 AM:*



I have had both the Caltracs and the ranch bars on my Gen2 Lightning. The Ranchos are much better. The Caltracs were a pain in the but, on the street they rattled, clanked, loaded and unloaded all the time over bumps even when adjusted properly.

The Ranchos you install and forget. No adjusting for the track and readjusting for the street.

I highly recomend the Rancho bars

<http://public.fotki.com/dhco/lightning/jdmtracbar1.html>



**12.454 @ 109.49MPH**



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*Posted by HotRod on Dec 2nd, 2001 04:41 AM:*



Thats interesting. The Ranchos dont bind up and the CalTracs do?? Thats good to know for a daily driven street machine. They are quiet and dont have any adjustments, too.

-----  
Rod K.

'93 Lightning #1529 NLOC #675  
13.27 @ 101.55 Au Natural  
12.67 @ 102.52 Kinda juiced..  
'98 SVT Contour E1 #5782  
'00 Suzuki Bandit S1200 10s??



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*Posted by JR on Dec 2nd, 2001 08:41 AM:*



I believe Jim's [JDM]short time is 158

I took off the cal-tracs. Ins. JDM ranchos,  
much much better. Like Don said install and  
forget.  
JR



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*Posted by Thundrn\_Lightning on Dec 2nd, 2001 04:11 PM:*



Rod,

The CalTracs use a solid bushing in the leaf spring, thus all the clanking and general noise and vibration. That alone has steered me away from them. The Ranchos use urethane bushings and swing through such a broad arc that there is very little bind in the motion - better for the street scene.

Also, it has been suggested that the geometry of the Ranchos somewhat make the rear suspension act like a 4-link. I have not gotten out my chassis books to study that yet (yes, I *am* a geeky engineer ) , but I will check it out. Like I said above, I bought my Ranchos simply on the notion of not having solid bushings. Solid bushings = bad on a street vehicle. 

I will get back with ya on the Rancho geometry thing.

Hope that helps.

-----  
- Kevin  
Black '94 #907

[This message has been edited by Thundrn\_Lightning (edited 12-02-2001).]

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*Posted by HotRod on Dec 2nd, 2001 05:04 PM:*



Yeah, thanks guys for the input. I am wanting to get as much info on this subject as I can. I just have the feeling the longer Ranchos have the upper hand in the ability to plant the tires. Kevin, thanks for doing the research for us. I dont really know where to look for something like this. You cant go by what the companies tell you, their product is always the best.

-----  
Rod K.

'93 Lightning #1529 NLOC #675  
13.27 @ 101.55 Au Natural  
12.67 @ 102.52 Kinda juiced..  
'98 SVT Contour E1 #5782  
'00 Suzuki Bandit S1200 10s??



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Posted by MO351 on Dec 3rd, 2001 07:59 AM:



I've never seen a price for the Ranchos (or even the Cals). How much are the Ranchos???

How will they affect handling on the road?

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Adam B.

[1994 Red SVT Lightning #2019](#)



[A few more L pics](#)

[This message has been edited by MO351 (edited 12-03-2001).]

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Posted by FMOS Racing on Dec 3rd, 2001 08:40 AM:



Let me see if I can save you a little time, Kevin, since I'm another geeky engineer and did pour over this quite a bit.

This may wax long, so take a deep breath, get a soda, and have a seat. LOL!



::Fires up the Robert Palmer MP3s::

Ok, first the basics about what we're trying to prevent by using traction bars. I'm sure you've all at one time or another felt the rear end of the truck stutter step and shake when you've made a hard launch. What you're feeling is called "wind-up" or "axle-tramp" and is caused by the axle loading and unloading the leaf springs around the axis of the axle.

What happens is that as the driveline transmits torque to the ground, the axle has to react in direct opposition to that - Isaac Newton decided that for us. That equal and opposite reaction causes the axle to rotate opposite to the direction that the wheel turns and as it does it bends the leaf spring into an "S" shape, arcing the forward portion of the leaf upward and the rear portion downward (see the diagram).



When this happens, the axle and differential rotate out of position and that changes the angle that the driveshaft meets the differential at. This can lead to u-joint binding and failure, pinion failure, spring failure, etc etc.

Eventually the energy stored in the "wound-up" spring has to be released. When this happens, the

axle "snaps" back into place, usually lifting the tire off the ground when it does. As you can imagine, this isn't particularly good for traction and can also damage other rear end components like the axle gears because of shock and movement. Again, not a good thing. So, in history or racing, some creative methods have been invented to reduce or eliminate axle tramp. These include everything from the simple - stiffer springs and snubbers - to the elaborate - 4-link rear suspensions. The two gizmos we're most interested, the Calvert Racing Cal-Tracs system and the Rancho Torque Arms, lie in-between.

John Calvert came up with the Cal-Tracs system for drag racing. He raced in NHRA "stock" classes that mandated certain suspension components and tire sizes. Only bolt-on options are usable in these classes and prior to Calvert's work, that limited the class to stiffer leafs and snubbers. What Calvert came up with was radically innovative and I personally admire the simplicity and effectiveness of the piece.

Physically, the Cal-Tracs consists of three pieces - a connection to the bottom of the axle, a pivot around the front spring perch, and a bar that links the two together.

The Cal-Tracs works by taking the rotational energy of the axle and using it to hold the spring straight. Again, the axle tries to move opposite the rotation of the wheel with equal and opposite the force of the wheel pushing against the ground. The Cal-Tracs takes this force from the bottom of the axle and transfers it forward. Part of the force is turned about the pivot at the front of the spring to push back against the spring itself and prevent it from winding up. The rest of the force is used, like a ladder-bar or 4-link, to enhance weight transfer. The downside here is that only part of the force is used and the lever arm is only as long as the front half of the leaf spring.

They work great. They're compact and hide inconspicuously behind the rear wheels and against the leaf springs. Great pieces of work.

The Rancho Torque Arms are originally from the Rancho 4x4 suspension setup and as far as I know, my truck pioneered their use on Lightnings. They're just an adaptation of the tried-and-true torque arm suspension components that are used in everything from road racing to offroading. I'd stop well short of calling them a "handling improvement" on the Lightnings, but they certainly work perfectly as a traction enhancer.

The Torque-Arms work by taking that rotational force from the axle and transferring it to the frame of the vehicle. Rather than working back against the spring to keep it from bending, they simply form a rigid lever against the axle's rotation so that there is simply no way the axle can wind up. All of the rotational force (multiplied somewhat by the offset of the tube mount from the bottom of the axle) is transferred via ~4' long torque tubes to the frame of the vehicle, which enhances weight transfer.

The tubes pivot at each end and their length is matched to the vehicle so that the rear suspension will continue to move through it's normal arc with no binding.

They work amazingly well. They're a bit more in-your-face and take up considerable real estate under the truck compared to the Cal-Tracs.

It's my opinion that the superiority of the torque arms come from two things - the length of the arms and the rigid (along the axis of force) mounting. They work basically like ladder bars without the downside of the ladders - the rough street handling. They're definitely not in the same league as a properly tuned 4-link, but I don't think many of our trucks are in need of that league either! (\$\$\$\$)

Anyway... that's my take on the subject.





-----  
Later!  
Jeff S.  
NLOC #025, VP Gen 1s  
Lightning #74 in '95 - Stroked and soon to be blown  
Lightning #582 in '00 - Traded  
1999 SVT Contour  
1993 Probe GT - **15.36@89.7** stock daily driver

[This message has been edited by FMOS Racing (edited 12-03-2001).]

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Posted by HotRod on Dec 3rd, 2001 11:10 AM:



Thanks a TON, Jeff.  What you just stated were my thoughts exactly. The Ranchos are better because, Well, Yeeeahhhhhh.  I do think the Ranchos are going to find their way under the Big Red Machine in the spring.

-----  
Rod K.

'93 Lightning #1529 NLOC #675  
13.27 @ 101.55 Au Natural  
12.67 @ 102.52 Kinda juiced..  
'98 SVT Contour E1 #5782  
'00 Suzuki Bandit S1200 10s??



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Posted by CATMAN on Dec 3rd, 2001 02:51 PM:



If you are going the track alot I would go with the Cal-Tracs,you may find a slick track one of these nights and with the power we are making now you need to be able to put a little more pre-load in them.I don't have mine anymore kinna got out of racing for a bit but I did it for a living back a few years ago. If you are not going to the track on a regular basis then use the one you are most comfortable with.

---

Posted by sstock on Dec 3rd, 2001 04:27 PM:



Yeah what Jeff said, lol!  
Nice engineering lesson.  
I followed suit and put mine on last winter, I have only one regret, and that is that it should of been my first upgrade, before exhaust,before blower etc.. I learned the hard way and had Jeff's

engineering lesson taught to me through my wallet! To make the long story short, axle windup then release causes the dreaded hop. When your truck goes to the hop it is cycling between axle windup and unloading of the tires which causes severe fluctuations of the pinion angle at the rear yoke. This can and will cause u-joint failure in short order, and if unlucky like me you will replace the spicers, input, and driveshaft, ouch. If your truck is lowered with hangers it further worsens the effect with even poorer pinion angles. BTW if you have lowered your truck with hangers make sure you spend the \$9 and put the shim kit in.

Remember if you like holeshots and dragstrip action get some kind of traction device.

BTW, I paint matched mine and I like them alot. Have had many people ask me about what those bars do, I grin and tell them, it keeps me from poppin a wheely.

Later  
Steve

---

*Posted by Thundrn\_Lightning on Dec 3rd, 2001 04:30 PM:*



Thanks Jeff!!! 

-----  
- Kevin  
Black '94 #907

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*Posted by FAT on Dec 3rd, 2001 08:52 PM:*



My next purchase!!!!!!!!!!

-----  
2001 WHITE XXX LIGHTNING  
BD 02-19-01 #1045  
RD 02-26-01  
JL diablo chip  
JL Lower pulley stock belt  
JDM filter kit  
BASSANI headers and catbacks  
NGKTR6 PLUGS  
FRPP single blade throttle body  
FRPP 2" drop all around  
FORD 4x4 tranny pan

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*Posted by MO Lightning on Dec 4th, 2001 09:41 AM:*



Thinking more and more about selling the Cal-Tracs...

But they are such a pain to take off...

-----  
Brendon Hale  
Black '94L #620 born Thursday, February 24, 1994 NLOC #662  
Green(ish) '84 Bronco II-hoosiermobile  
'86 Honda CR125R MX'er

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*Posted by Don's Bolt on Dec 4th, 2001 06:54 PM:*



quote:

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**Originally posted by MO Lightning:  
Thinking more and more about selling the Cal-Tracs...**

**But they are such a pain to take off...**

**</font>**

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Taking them off isn't the tough part. The tough part is pressing the stock bushings back in.

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*Posted by MO Lightning on Dec 5th, 2001 07:05 AM:*



That's true.

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*Posted by lightngsvt on Dec 5th, 2001 09:52 AM:*



Guys, I have the Caltracs on mine, but its not a daily driver. I can honestly say that mine do not clunk, rattle or make any noise. But I do have special hangers fabbed by a fellow NLOC member and they are one of a kind! The sides of the leaf are shimmed and think this makes all the difference. I honestly dont think it rides any worse, but it is a bit stiffer, but not much. Maybe this person will reply with his theory of why the Cal-tracs are better for the strip???

My truck is also lowered with the Belltech 3"/4" kit. Here are a few questions, will the Rancho clear on a truck with a 4" rear drop (yes I have the pinion angle shims)? Is a lowered truck capable of hitting a good 60'? I mean I havent broken a 2.2 60'!! I know my diff is shot, but still... Does lowering effectively kill the weight transfer in these trucks?

Hot Rod, why do you need traction bars? If you are already hitting 1.7 60's, I dont think you'll improve on that. Is it just for wheel hop?

-----  
Chuck P  
1993#3951 (24k miles, mod'ed and lots of custom parts)  
NLOC#138  
NLOC Michigan area Regional Representative  
MiLOC#10



00 Focus ZX3  
99 GT conv  
91 GT (race/show car- in hibernation)

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*Posted by HotRod on Dec 5th, 2001 11:09 AM:*



Hey Chuck. I have no wheelhop. I just cant hit the juice right off the line right now, and I think I might be able with the Ranchos. My 1.75s could be 1.65s or 1.60s. Im not hitting the juice until around 1 trucklength from the line. That extra length might do wonders for my 60ft.

-----  
Rod K.

'93 Lightning #1529 NLOC #675  
13.27 @ 101.55 Au Natural  
12.67 @ 102.52 Kinda juiced..  
'98 SVT Contour E1 #5782  
'00 Suzuki Bandit S1200 10s??



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*Posted by crashbach on Dec 6th, 2001 08:51 AM:*



Looks like I will be getting a set of Ranchos! I spray mine of the line and don't want anything to go bang! I want them more as a safety and support device.

-----  
Black 95 # 1356  
NLOC # 218  
13.24@99.04 1.78 60'  
There is nothing made  
that can't be sprayed

---

Posted by Abby Normal on Dec 6th, 2001 10:58 PM:



Where Y'at Jeff, Just thunkin' out loud here. I read a lot of guys having trouble with Ranchos & lowered Ls. Can they be mounted to the top of the axle & run to the back? I'm sure it would take lots of fab work but would that work upside down & backwards while leaving room to drop the L. I'm not looking to try it either. I'm think about slapper bars my-own-self.

I'm not a Geeky Eng. just a Smart \*\*\*.



-----  
Abby Normal  
'92 F-150 302  
Ford Performance Association Member  
49 Cubes short of a full load!

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Posted by HotRod on Dec 7th, 2001 07:45 AM:



Thats something I didnt think about. My L is lowered 1.5" and 3". Will this affect the Ranchos?? I hope not.

-----  
Rod K.

'93 Lightning #1529 NLOC #675  
13.27 @ 101.55 Au Natural  
12.67 @ 102.52 Kinda juiced..  
'98 SVT Contour E1 #5782  
'00 Suzuki Bandit S1200 10s??



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Posted by FMOS Racing on Dec 7th, 2001 09:46 AM:



I've never seen a single thing about anyone having problems with the Ranchos, so I honestly can't comment.

I've got a 2" drop on the back of my truck (just hangers) and it doesn't effect them a bit. The front brackets don't hang any lower than the tranny crossmember does, either, so it's not really a clearance issue.

Running them backwards would mean sticking them out of the back end of the truck somewhere. These things are pretty long! It'd also defeat the weight transfer benefits.

All that said, if you can't run the Ranchos because of lowering (if you've done a flip, I don't think

they'll work), then your next-best option is without a doubt the Cal-Tracs.

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*Posted by JR on Dec 7th, 2001 02:58 PM:*



Hot Rod

My 99 L is lowered 2 in. I don't have any problems. I installed the JDM torque converter, removed the cal-tracs, installed the JDM rancho bars. I leave the line on the juice. I think the cal-tracs would B ok on a lighter veh. Just my opinion.

JR

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*Posted by Abby Normal on Dec 7th, 2001 08:31 PM:*



Where Y'at Jeff, You see what happens when you stay up late posting on the board. I think the complaint about the Ranchos was the side exhaust not lowered Ls.(DOE) I finally seen a good pic of a set of ranchos. Yeah you right, they're Long. I thought they mounted at the spring eyelet. Now to get them out of the way for side exhaust, what about mounting the Ranchos above the axle like the '65 Shelby over-ride Traction Masters? I'll let somebody else figure out how to do it. Now has anyone tried an air bag over the right rear? Maybe I'll save that for another post. Later On.

-----  
Abby Normal  
'92 F-150 302  
Ford Performance Association Member  
49 Cubes short of a full load!

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*Posted by LightningJoe95 on Dec 8th, 2001 10:24 AM:*



guys im working on fabbing up a wishbone locator set up for our trucks. my main reason for doing this is that im getting a dual 3 inch cat back bent up that will empty in front of the rear wheel and i know that the ranchos wont clear it and the cal tracs are awesome bars but i just dont want them. now the advantages to a wish bone setup over the ranchos are that 1 it will serve the same purpose and work as the ranchos but offer more clearance on trucks with the side exit setups and 2 in my opinion and personal use i find them to be a better way to hook the rear then 2 seperate bars. im also toying with fabbing in built in driveshaft loops on the wishbone. i would be going with 2 loops one at the front and one at the rear. we all know what the one in the front would be good for. the one in the rear would hold the shaft in place in the event of a rear u joint failure. ive seen to many cars and trucks snap the rear u joint and damage the back end of things from it slamming around plus ive always been afraid of the side tank getting slammed when the shaft would flail about. this will all be out of milled tubing and be linked to heim links front and rear ill keep posted on it as i get to fabbing it.

-----  
Joseph Sinkiewicz  
LightningJoe95<http://hometown.aol.com/lightningjoe95/>

(the next J Brown turbo stroker warrior)



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*Posted by HotRod on Dec 8th, 2001 12:30 PM:*



Hey, Keep us posted Joe. That sounds like a really good idea.

-----  
Rod K.


'93 Lightning #1529 NLOC #675  
13.27 @ 101.55 Au Natural  
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'00 Suzuki Bandit S1200 10s??



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*Posted by FMOS Racing on Dec 8th, 2001 11:31 PM:*



Abby, the Ranchos work fine with both the Bassani and the Borla side exits. Sounds like Joe's will be a little big, though... 

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*Posted by Don's Bolt on Dec 11th, 2001 06:16 PM:*



Some new pics of my traction Bars.

Just had them Painted to match the truck,

<http://images.fotki.com/free/1d35/1/10840/19271/silvertractionbars-vi.jpg?1008127742>

<http://images.fotki.com/free/1d35/1/10840/19271/Sivertractionbars2-vi.jpg?1008127543>

<http://images.fotki.com/free/1d35/1/10840/19271/Silvtracbar1-vi.jpg?1008191192>

I fixed the links

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**12.454 @ 109.49MPH on stock F1's**



[This message has been edited by Don's Bolt (edited 12-13-2001).]

[This message has been edited by Don's Bolt (edited 12-21-2001).]

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*Posted by HotRod on Dec 12th, 2001 02:24 AM:*



Those look real good Don.

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Rod K.

'93 Lightning #1529 NLOC #675

13.27 @ 101.55 Au Natural

12.67 @ 102.52 Kinda juiced..

'98 SVT Contour E1 #5782

'00 Suzuki Bandit S1200 10s??



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*Posted by Speedy on Dec 13th, 2001 04:03 AM:*



Hot Rod,

Here is my take on this. Caltracks were specifically made for drag racing, Ranchos were not. Like stated before they were originally part of a 4x4 kit. Yes they do work, but that is not what they were made for. This is not a flame to anyone.

Anytime you introduce a solid bushing into the suspension you are gonna get some vibration and possibly noise. I havent heard or felt anything unacceptable in Struck Bys truck. The Caltracks are adjustable and to me look better ,not so in your face! They also have great customer service.

Rememeber too the role weight transfer has in this complete picture. You are trying to make a truck hook hard, a tough job to do. Good Luck

Louie

-----  
<http://www.gnttype.org/carofthemont...comdetails.html>

*Louie Lopez*

**1995 Lightning**

*Pulleys, K&N, No times*

**1987 Buick**

**Grand National**

*GN 1 heads & intake, 1.65 T&D's, 210/210, JC TE-45, TH DP, V2 IC, PMAC, PI 9.5 LU, Stage Right, 72# MSD, Dual intank pumps, Max Effort, Hooker Exhaust*

*11.28 @ 119*

**436 hp 549 ft tq**

*@ 19 psi, 100 octane, 20deg*

**One rusty car trailer**

---

*Posted by CATMAN on Dec 13th, 2001 09:26 AM:*



Like I said if you race often you may need the adjustability of the Cal-Tracs. I ran my truck in Mobile Al one night and I think they were using soap for a traction compound. I twisted a little more preload in her and hooked her up. This is not my first rodeo, just a different horse, lol. Just like a four-link you run them to have a chance to hook up on a slick track, that's not to say they are as good as a four-link pro suspension, there not but they work good.

[This message has been edited by CATMAN (edited 12-13-2001).]

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All times are GMT -8 hours. The time now is 07:28 AM.

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