Drivers will gravitate to tracks with no sound restrictions

01-05-2010, 01:25 PM #45

earlrichards
Member
Join Date: Jun 2006
Location: Fredneckburg
Posts: 2,300

> Originally Posted by **RacerBowie**
> *Why haven't we voluntarily reduced Club Racing cars' noise output down below 100db at 50 feet yet? Seriously.*

An even better question IMO is why haven't the tracks where sound is an issue (RA, NJMP...) intstituted their own restrictions? Do they believe groups will quit using the track because they have sound restrictions?

Reply | Reply With Quote

NE area motorsport tracks sound limits, distance in miles from NYC

Watkins Glenn, NY- 99 decibels, 242 miles
Lime Rock Park, CT- 86 db, 112 miles
Thompson Speedway, CT 100 db, 174 miles
Liberty Bell Racetrack, PA- not opened yet
Monticello Motor Club, NY- self imposed 103 db, 97 miles
Pocono Raceway, PA (Tri-oval track)- no limit, 103 miles
New Hapshire Motor Speedway, NH- 99 db, 276 miles
Summit Point, WV-103 db, 279 miles
Mt. Tremblant, Quebec, Canada- 92 db, 457 miles
Calaboogie, Ontario, Canada- 92 db, 441 miles
NJMP, Millville, NJ, no limit, 134 miles

Drivers wanting to race and doing what it takes to adhere to the noise limits of track.

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09-24-12, 06:37 PM #1

beefhole
Boosted. I got BLOWN!!!

Help? Exhaust noise restrictions (on my FC at Lime Rock)

Not sure where to post this, I figured the "track people" would know more about this than anyone.
Next month I am looking to do an HPDE event in my turbo FC at Lime Rock park. This track has a strict 86db limit.
My car has a BNR stage 1 turbo upgrade, a racing beat 2.5inch downpipe and presilencer. The rest of my exhaust has generic stock sized pipes and mufflers. It's definitely quieter than other rotary cars, but still loud for a road car.
Does anyone have any idea how loud this car is going to be? Anyone know how/where do I test before hand? I'd hate to show up and not run (and not get a refund!) due to being too loud

I've seen other cars at previous HPDE events (on this course) that are obvious track cars; souped up and somewhat noisy, and they were able to run.
However, I've also seen some cars with the "beehives" sticking out the exhaust, or steel wool jammed in the pipes.

I haven't seen too many rotaries at this track: Only a 2nd gen NA track car (it had the beehives), and a 3rd gen. But this was two years ago and I can't recall the noise levels then.

09-07-2012, 01:03 PM #1

Jenner
Addict
Rennlist Member

Join Date: Jun 2003
Location: 1 hour from Lime Rock Park, CT
Posts: 483

GT3/GT3 RS exhaust db options at Lime Rock Park

With the db limit coming down what seems like every year I wanted to get a feel for what others are running at LRP with PCA or SCDA etc.

Sport mode on with stock exhaust acceptable?
Sharky center muffler bypass acceptable only in normal mode or with sport mode on?

Thanks for any help you can provide!

09-09-2012, 09:52 AM #4

Jenner
Addict
Rennlist Member

Join Date: Jun 2003
Location: 1 hour from Lime Rock Park, CT
Posts: 483

I was thinking about doing the carnewal remote switch with a sharky bypass but I think the best option for me is a side muffler bypass and removal of the flaps.

Costs less, loses more weight, and more importantly loses more heat from the engine/exhaust and is quieter than sport mode with the bypass. I know it won't sound as good, but I doubt I can use the center bypass with sport mode on at Lime Rock and pass the sound check where I am pretty sure I can if others are passing sound check with sport mode on with the stock exhaust as the db should be about the same.

Jenner
1993 **RS America** #123 FOR SALE
2012 **A3 2.0Tq** APR Stage II
2014 **S4 3.0T** APR Stage II+

01-05-2010, 12:51 PM #33

CRX Lee

I secretly want a Miata with a Jeep body on it.

Join Date: Apr 2006
Location: Northern KY
Posts: 6,174

Most of you guys never met John Herman who raced a very competitive red (and later white) ITS Olds Calais 442 Quad 4 in CenDiv. Good guy, good driver and lots of wins. John is/was an engineer with Bosal Exhaust just outside Detroit. His car was always one of the quietest cars around by far even before the SCCA max. noise level was dropped to 103db. John's comment is that a powerful exhaust does not have to be super loud and he was able to find his highest power levels much quieter if the exhaust was smarter and not just louder. He did have easier access to a dyno back in the days before regular people did so he could do more testing. When I first started building the FP car years ago, he offered to help me test and develop a new exhaust system for it. He explained that he would put together lots of different pieces in trials and come up with some very surprising results. He said that in early testing, he'd run it out the front or side of the car just to get some baseline and not really focus on getting it under the car tidily. Once he had the right ballpark of power and sound, then he'd make it fit under the car. An open mind and trials were his answer to a quieter, more powerful car.

I would absolutely support a reduced max noise level if everyone had to play by the same rules and it meant making track neighbors happier and maybe keeping tracks longer. Waterford Hills has raced for decades in very close neighborhood proximity with very, very restrictive sound limits. Yes it is a PITA to change your system back and forth if you run there and elsewhere that allows louder cars but you can still race and drive there. It is a non-issue for those that run there alone. Those are the rules and you get to play there if you obey them.

I do beleive that a lifetime of racing noise exposure has had some effect (but not necessarily all the blame) on my diminishing hearing quality in my mid 40s. I don't think that it really would hurt any of us to have some more restrictions especially if it keeps some tracks open for use. Pretty small accomodation IMO if it means that we get to keep playing there.

11-10-2010, 09:53 AM #5

Greg Amy

I get unreasonably upset when people make fun of VWs.

Join Date: Apr 2006
Location: CT
Posts: 10,923

> Originally Posted by **solo-x**
>
> *Racers - It's in our own best interest to voluntarily put mufflers on your cars.*

I agree. Even I would get tired of that noise if it were every day.

We really should work to make our cars collectively quieter. - GA

01-05-2010, 11:51 AM #11

Greg Amy

I get unreasonably upset when people make fun of VWs.

Join Date: Apr 2006
Location: CT
Posts: 10,923

> Originally Posted by **RacerBowie**
> *Why haven't we voluntarily reduced Club Racing cars' noise output down below 100db at 50 feet yet? Seriously.*

Kirk and I were discussing this exact topic while watching the ARRC racing this past year. There is no valid reason why we need to have cars driving around at 103 db.

Folks will complain that it affects the competition. True. but, with some limited exceptions (e.g., rotaries) everyone has to play with the same rules, same as now, and to claim that the Borgwaard will suffer more with a muffler than the Civic is kinda silly; no one knows that.

Personally, I'd like to see limits in the low 90's.

11-10-2010, 10:38 AM #11

solo-x

I like to be different just for the sake of being different.

Join Date: Apr 2006
Location: Trying to get in front of a BMW...
Posts: 6,020

> Originally Posted by **hoffman900**
> *I think this could fall under people in the racing community ("experts"?) making recommendations on what could be done, can be used against the track.*

Or it's a case of raising awareness in the racing community that we should take action ourselves instead of waiting for litigation to commence. I'm not commenting on the litigation, shortcomings real or imagined by any party, or any of the such.

01-02-2010, 10:07 PM #6

Niles Patel
I suck at autocross

Join Date: Nov 2008
Location: Cleveland, OH
Posts: 382
My Cars: 325is, 330CiZHP

At solo nationals there was debate over the setup of the sound meter. Turns out the settings you use can have a big effect on the readings. I'm not saying she's right or wrong. Hopefully some sort of track noise restriction is sufficient as a solution. Lots of places have 89db or something like that in effect. Of course some people think it's cool to be loud anyways and just point dump tubes away from sound meters, but it's a start.

tpwalsh

Slightly Overconcerned With Other People's Titles

Join Date: Jun 2007
Location: Cigarette-Central, NC
Posts: 2,962

> Originally Posted by **RacerBowie**
>
> > Originally Posted by **Sean O'Gorman**
> >
> > *Believe nothing I say, I am an idiot.*
>
> *Fixed.*

+1 Sorry Sean, but having driven an uncorked miata 1.5 hours from an event, and paying for it badly the next day in ringing ears says to me that louder is not the answer. I've since taken out a bunch of disks in the supertrapp.

01-05-2010, 11:53 AM #13

RacerBowie

Spinning Triangles? Wat?

Join Date: Apr 2006
Location: Reset button - Engage!
Posts: 13,155

> Originally Posted by **DILYSI Dave**
>
> > Originally Posted by **RacerBowie**
> >
> > *Why haven't we voluntarily reduced Club Racing cars' noise output down below 100db at 50 feet yet? Seriously.*
>
> *Amen. I can hear Road Atlanta clearly from my house. It's about a mile away as the crow flies. About 3 miles by road. I'm an enthusiast and I still occasionally get annoyed.*

You know what? In March I'm going to check the sound readings for the first time in years to see what my car actually makes. Last time I checked it was around 97 or 98 consistently... and frankly it is pretty fucking loud. The ONLY reason it isn't ~90db is that I'm afraid of losing some of my already lacking HP, but if it was the rule...

Maybe I'll mess with that and see if I can't develop a proper ~90db exhaust that doesn't cost me any more power.

08-22-2010, 03:03 PM #30 (permalink)

fzust

Elise Guru

SITE SPONSOR

Join Date: Oct 2003
Location: Tempe, AZ
Posts: 2,308
SPONSOR

We're working on something for you guys.... My SuperSpecial BWR/BOE exhaust on my XP car reads at 86-89dB taken at 50', with A-weighting(what humans hear), and slow response(1 second averages of sound). Bear in mind this is a Supercharged well over 300HP with 2" primaries on the header.

Although I mostly agree with everyone, I have heard some cars that were so loud, I was worried for some of the course workers. As we keep growing population and rubbing up against our neighbors, something has to give. Time and again it has been proven that 100 complaining housewives wins out against 100 racers.

---

fzust
2008-2011,2013 X-Prepared SCCA Solo National Champion
Lotus Performance Parts and Accessories
Blackwatch Racing

Quiet HORSEPOWER

MUFFLERS/EXHAUST

Phase 9 Silencer Exhaust System

Why the Phase 9 Silencer Exhaust System?

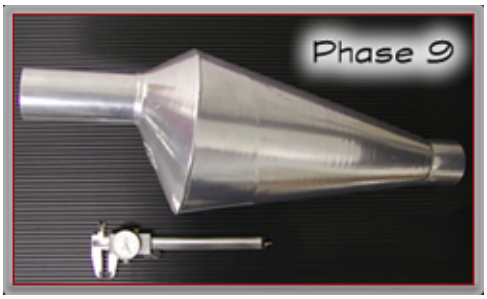
A race prepared Porsche 911 engine with straight pipes produces about 115 decibels of terrific noise at full song. Unfortunately, some folks (especially those living near race tracks) aren't as excited about this music as the racers are. A pair of Phase 9 Silencers alone reduces this noise to approximately 105db with no significant power loss. By adding the Phase 9 Cross Chamber, the db level is further reduced to 87-95db at 50' with negligible power loss.

Until now, a stock muffler was the only practical method of reducing a 911 race car's db level enough to legally race at tracks such as Laguna Seca and Sears Point. The Phase 9 Exhaust System is the product of hours of engineering by automotive designer and engineer William Beekhius; hours of dynamometer testing by Porsche engine specialist Jerry Woods, and final design, fabrication, and packaging by Pete Weber. This system comes complete with all the necessary mounting hardware to allow 914-6 and 911's race within sound levels permitted by the SCCA. And let's face it, there is nothing more disappointing on race day than getting a mechanical black flag for noise!

Quiet Horsepower for your Porsche 914-6 and 911 system includes:

- Equal length headers
- High gas flow collectors
- Heavy gauge (.065) mandrel-bent tubing 304 stainless or mild steel
- High efficiency Phase 9 Silencer mufflers that are packed with stainless steel to resist corrosion and deterioration
- Phase 9 Cross Chamber System with the optimum volume for maximum performance.

The Mufflers are sized/designed for a specific HP requirement.



These mufflers shown above are ceramic coated. This coating is not on the standard mufflers, which come with SST in and out tubes. Housing is mild steel.

- 2 1/8" Phase 9 for the Porsche 911 ($305.00 each)
- 2 ¼" Phase 9 for Sports 2000 and engines around 200 HP ($315.00 each)
- 2 ½" Phase 9 is popular for Formula Atlantic Series, and engines approaching 225HP-250HP ($315.00 each)
- 3" Phase 9 is for engines using a 3" diameter secondary pipe ($500.00 each, made only in Stainless).
- 2 1/8" and 2 1/4" Phase 10 ($295.00).
- 2 1/2" Phase 10 ($315.00).
- Historic Porsche Container ($275.00).

You can see some Mounting Tips within our Pictures Page!

EMRA Forum March 16, 2011 Topic: LRP Noise limits

civicminded on Wed Mar 16, 2011 6:01 am

Competing at LRP has always been a pain in the arse. The lower noise levels will make it even worse. The combination of stricter noise requirements, and higher entry fees than other tracks, makes it puzzling as to why 3 events were scheduled there this year. What happened to Pocono East and South, Thunderbolt, and the usual Summit Point start to our year?

wreckerboy on Thu Mar 17, 2011 5:27 am

Thanks Roger for posting that comprehensive description with regards to sound at LRP. It IS possible to make decent/good/lotsa power at LRP and meet noise restrictions. When we ran the Trans-Am series there we had to meet noise restrictions as well. We were able to get 650-700 HP down to limit with some work in advance (a four or five inch system with some serious mufflers). It can be done. WE DID NOT WAIT UNTIL RACE DAY TO KLUDGE SOMETHING TOGETHER!

Plan in advance and it can be done. A few years ago EMRA had several Spec Miatae that had all sorts of trouble making sound because they insisted on running their usual exhaust systems, and many others that had no trouble because they planned ahead. LRP is what it is, they have very few, if any, unmuffled days and those are all for their big ticket weekends now, and race dates in the northeast are limited.

c355n4 on Thu Mar 17, 2011 8:30 am

http://www.randypobst.com/index.cfm?template=magazine&mag_id=19159

This article always resonated with me. I remember when I was taking flight lessons that my instructor was partially deaf because of the drone of the engine. I didn't think they were even that loud compared to some of the cars I hear.

turboxr4 on Thu Mar 17, 2011 10:53 am

at what distance is this 83db measured at? in my experience most turbo cars will be louder not under boost due to more turbulance, is that taken into consideration since on the track it wouldnt be as loud?

civicminded on Thu Mar 17, 2011 5:38 pm

Entropy Racing wrote:

Just a couple of points, First of all, we have 2 trials and one race at LRP

Can't help with the noise limits, sorry. I agree that the Vtechs are a problem, but as to competitive, we have seen lap records set with some pretty quiet cars in the past couple of years.

As to Dana, we all love him but on the other hand, I was paddocked next to him at Pocono and couldn't wait for his car to break. after hearing that car, I understand the complaints. No offense Dana, I know you love the noise you make.

we do have 2 NJMP lightning events and a Pocono North and very much hope you join us there.

Lastly, LRP is not picking on EMRA. NASA has the same restrictions, and Skippy has muffled their cars down to 83d and less and, amazingly, they still run

While it is a chore to get a muffler that works there, it is not impossible. we spend

countless hours and countless thousands to make our cars better, so what is the big deal about spending $50 on a muffler and an hour to figure out how to hang it off the back of the car for an afternoon?
Come and have fun, we ALL have to be quiet so the handicap is pretty uniform across the board.
Personally, I like quiet cars. makes the track a friendlier place for friends and family.
Charlie, please let me know where I can get a $50 muffler for the rotarys/Vtecs that can pass tech at LRP. $250 is a lot of money to waste if a competitors car is not in compliance.

racedayvinyl on Mon Apr 11, 2011 12:11 pm

Is there any contingency if we get up there, and cannot pass tech. I.e. if we don't put a wheel on track, can we pull our entry fee and use it towards a future TT?
We will be driving close to 7 hours up from DC to make the first event. Going to take the precautions we can to stay within their limit, but as was said before, it can be a crap shoot! Just want to see if there is any contingency plan for us who registered and cannot make the new noise cut (and don't put a wheel on track). I've read some bone stock cars cant get under the limit up there.

racedayvinyl on Mon Apr 11, 2011 1:26 pm

Excellent. Thanks for the reply. Picked up a DB meter from radio shack a few hours ago. We will do some testing to see how bad it is going to be.
If anyone in the DC metro wants to test their exhaust i have 30 days before i need to return this thing.

Flyinglizard

01-12-2010, 12:16 PM

Less noise= less pissed off neighbors. (PON)
So, your sitting around your barby, having a beer, while the freakin race track is running. Does it matter that it has been there 20years? No. The noise is a bother. Do your next door folks think the same thing??

Noise is about the only thing that can unite a neigbhorhood. If you want to have race tracks for racing,not golf, then the tracks should not piss off the locals. IMHO.

Karl Bocchieri

01-20-2010, 09:54 PM

As a guy that lives on Long Island and used to race at Bridghampton all the time, and now have to go 3 hours to Lime Rock the next closest track, you should all be woried.

A few very vocal, organized and politically active people can gain enough support to, restrict the sound level, number of days or operation, ect.... untill like Bridghampton it becomes financialy unprofitable, then it becomes a golf course. I hate golf.

From Coper Stadium racetrack forum-

don't care much for oval track racing, but I am a race fan. I own a race car that makes about 94db at 50ft at wide open throttle. It would make 108db if it did not have mufflers. But I use mufflers because my racing series limits cars to 98db at 50ft. You will find that many (but not all) race tracks have some kind of noise limit (like the 95db limit proposed for Cooper Park).

Any car, including race cars, can use mufflers, so assumptions that "race cars are loud" is about as true as "White men can't jump." The reason a racer will not use a muffler unless he needs to is because it reduces power. He will only add a muffler if the track requires it, like at Cooper Park.

IT.com Forums (www.improvedtouring.com)
Topoic: Noise complaint group at NJMP

StephF 01-05-2010, 12:56 PM
Just ran across this on another site.
http://trackracket.org/
Looks like they are getting fairly organized. Hope there's no major trouble coming. :(

Mossaidis 01-05-2010, 02:57 PM
That site has been available for a while... I know 'they' have reached out to folks around monticello and Palmer to inform residents about 'us'.

Callard 01-05-2010, 03:01 PM
Hmm.. the airport has been there since before WW II with unmuffled aircraft taking off and landing but suddenly it got noisy. Nothing mentioned on the website about planes bothering the neighbors.

Greg Amy 01-05-2010, 03:24 PM
Nothing mentioned on the website about planes bothering the neighbors.
Unfortunately, not true. From http://trackracket.org/Myths_and_Truths.html:
TO THOSE WHO SAY WE HAVE NO ROOM TO COMPLAIN FOR THE AIRPORT IS LOUDER:
The airport noise is intermittent, it comes and goes and last from 20 seconds to less than five minutes. The airport does not impede normal, recreational and necessary activities we perform in our residences. The noise produced by the Air Show is for only one weekend per year. Period. As to the noise produced by the testing of engines from Airworks- this happened intermittently and for only a few minutes at a time. Jet fuel is very expensive and testing was kept to a minimal length of time to save money. It was a sad day when Airworks packed their bags and said good-bye to Millville, tossing many dedicated workers out on the street. The bright side of the loss was that the noise stopped. The quality of live improved tremendously for the surrounding neighborhoods. Why would we want to go backwards?
For those who contend that once you have something that creates noise (airport) that you should just put up and fancy more? Suppose you go into a restaurant with a stain on your tie. Waiter comes, and while clearing the table, grabs your tie to wipe some grease from his hands. You are not amused, to put it mildly, but the waiter back in the kitchen says: “I found it ironic that he complained about the grease, when the tie was seriously stained to begin with.”

Quadzjr 01-05-2010, 04:24 PM
how old is NJMP? how long have the neighbors been there?

Greg Amy 01-05-2010, 05:24 PM
NJMP opened in early 2008 (or was it late 2007?). I recall our first Regional at the first (or two) tracks was '08, anyway. Neighbors have pretty much been in the area for years before that.
Attached is a KMZ file for you from Google Earth. Download it, rename it from .txt to .kmz, then open it with Google Earth. While these satellite photos do not yet show the track (current data is from August 2006, indicating just how new the track is), NJMP takes up the area southeast of the airport between it and that road intersection to the southeast. Thunder track is along Buckshutem Road, and Lightning is east of that along Co Rd 555.
According to someone on RRAX, the majority of the complaints are coming from the neighbors to the west.

dj10 01-05-2010, 07:01 PM
Is the track in compliance with zoning & sound laws? If so end of discussion.

Knestis 01-05-2010, 08:09 PM
That might be "right" but it's ultimately a losing proposition.
I'll be the first to say it in this forum, although Greg beat me to it elsewhere: There is precisely NO reason why our racing cars shouldn't be a lot quieter than they are. Not that this would make all of the complainers go away, but we aren't doing everything we can to be good neighbors.

JoshS 01-05-2010, 08:14 PM
Totally agree Kirk. The only real issue with noise rules compared to the other sorts of rules we already build to is that compliance can only be measured ON THE TRACK, which is an expensive way to do it. Not to mention the weather variations.
Still, I'd be all for tighter noise restrictions. I watched the videos on the site complaining about NJMP and I'm very sympathetic. That track needs noise restrictions or its going to be shut down.

dickita15 01-06-2010, 06:30 AM
Having been thru the task of permitting a track I could not agree more that we would be better off if we ran at a lower sound level. It does not hurt the quality of racing one bit and make survival of our sport much easier. NHMS forces us to run at 100 dB so we went with that limit for our new track.

When you start running numbers on sound it is amazing how far it travels. By the way background measurements of sound levels in rural Palmer were 42dB. Sound barriers are problematic because to be effective they must be very close to the sound source compromising safety.
When I built a new exhaust for my Rx7 about six years ago I tried to see how quiet I could go. With presilencers the car never was over 89dB, now that the system in older it has come in as high as 93 at some events. For another data point when the Busch cars ran at Lime Rock a few years ago we measured then at 120dB.
There is no reason we could not be racing at 85 or 90dB. I would rather pay for mufflers and testing that to have to tow an additional 5 hours to race.

JLawton 01-06-2010, 08:00 AM
The fiirst race we went to in 2008, everyone we talked to in the area was very excited about the track and what it would do for the local community. Millville is not exactely thriving economically.....

Greg Amy 01-06-2010, 08:14 AM
The "community" as a whole supports the track, Jeff. It's just a few local-to-the-track folks that are upset about the noise. Problem is, those locals tend to be pretty noisy themselves about the issue, get in peoples' faces, and cause action. "Squeaky wheel" and all that.
The Sandbox has some links to the woman driving the issue, and she's no idiot. Don't expect any changes short-term but also don't expect this issue to go away any time soon...

quadzjr 01-06-2010, 10:55 AM
In her example it seems to me that it is the GT cars on track. the sound of a 500+ hp v8 is pertty distinguishable.

StephenB 01-06-2010, 11:18 AM
I see that as one of our big concerns. If the track is forced long term to only allow a certain amount of non-muffled events. (Like limerock) I bet we will end up paying more to keep those dates and again like other tracks our entries will need to go up. Quieter cars and doing our part as Good neighbors isn't a bad idea and maybe something we should start to look into. ..

callard 01-06-2010, 02:11 PM
Prior to SCCA introducing their first noise limits (108 Db) I was running around 112 with megaphones on my 911. After a winter of exhaust work on the dyno, I came back with the same car and posted 93 Db and was a second faster.
I spent a lot of time with Bill Scott at Summit Point trying to convince him to post his own track noise limits for all events (not just SCCA's events which are now 103 Db.) The marque clubs think noise if fast and we all suffer the neighbor's displeasure because of that. Bill didn't see a need since his track was grandfathered. You can tell the difference on which club is at the track easily from two miles away from Summit.
I'm totally in support of reductions in sound levels to keep using any track facilities.

924Guy 01-06-2010, 03:55 PM
Noise limits won't kill the racing, and might just keep our hearing a little bit longer too...
My home track is Waterford. Sound limit is 74Db for a black flag - at the properly line, which is the top of the wall along the back straight. Note that the wall is approx 10-15' or so from the edge of the track.

Knestis 01-06-2010, 05:21 PM
I read the word "megaphone" and was reminded of the late '70s, when I attended my first SCCA Club races. The C Prod RX7s at the time ran megaphones. When they got far enough down track that you were in the cone of doom that projected out of them, you'd literally feel ill from the sound. But everything was loud - earplugs were absolutely mandatory and even at that, I've suffered some hearing loss that I attribute to that period.

Seckerich 01-07-2010, 01:46 PM
Both my EP RX7 and my ITS car never post higher than 88-89 db and the power is just fine.

Z3_GoCar 01-07-2010, 04:33 PM
The problem will be that a couple of pro-FA (or what ever feeder series replaces FA) guys will show up and get flagged for sound:shrug: It's easy to add mufflers on production based/sized cars, formula cars are a horse of a different color.
I don't think one track in all of Cal-Club has sound limits... Cal-Speedway is surrounded by city but the nearest neighbor is a rail yard and steel mills. Our sound guy was (he moved out of region and hasn't been replaced) measuring sound for cotton plants. Contrast this with NASA with no sound limits...

... a couple of pro-FA (or what ever feeder series replaces FA) guys will show up and get flagged for sound

Knestis 01-07-2010, 08:57 PM
Bah. It's totally doable. The formula and SR guys/gals said the same thing when the current sound limits were imposed. "Impossible!" BS.

RedMisted 01-07-2010, 09:23 PM
I just hope that the noise issue can be resolved to the satisfaction of all, and that the track can continue to operate as normal as possible.
The problem with these situations is that they eventually become political. And as an area continues to develop, the political power tends to shift from the offending entity (racetrack, airport, etc.)to the nearby communities.

CRallo 01-08-2010, 01:03 PM
The Skip Barber formula cars that run at Laguna Seca are under 85db. When they do fail sound, it's usually a body work or wing rattle! lol It's a simple exhaust mod to do plus a lil retune. Anyone running one of those cars (FA or whatever) sure can afford it...

alberto_mg 01-08-2010, 02:19 PM
Sounds a wee bit similar to what happened at Bridgehampton.

Flyinglizard 01-12-2010, 12:16 PM
Less noise= less pissed off neighbors. (PON)
So, your sitting around your barby, having a beer, while the freakin race track is running. Does it matter that it has been there 20years? No. The noise is a bother. Do your next door folks think the same thing??
Noise is about the only thing that can unite a neigbhorhood.
The law has no value if the elected officials want to lower the noise level.
We leave our circle track when the mods come out,
the race cars are just too loud.
Why is it a pleasure to get in your tow car, and drive home, nice and quiet? The race car was too loud!!
Most enduro drivers will run faster laps, for a longer period of time if the car is quiet, IMHO.
If you want to have race tracks for racing,not golf, then the tracks should not piss off the locals. IMHO.

Ron Earp 01-21-2010, 08:13 AM
Adopting lower noise limits makes a lot of sense. We'd all be much better off and enjoy a slight boost to our image. What could be extremely troubling is different tracks adopting vastly different noise limits. Trying to hit 100dB here, 80dB there, and 90dB over there will be a lot of work. Sure, you could go for the lowest common denominator but one of your competitors will end up tuning the exhaust for each track and picking up a minor advantage over those that done. But a low, club wide noise limit for the entire SCCA would knock some cars out of racing.
General Aviation faces similar threats to small airports all across the country. As mentioned, organized efforts like this one, even by a handful of people, can have disastrous effects. Disastrous depending on which side of the fence you're on.

John Herman 01-21-2010, 10:21 AM
SAE J1169 is one objective procedure used in the automotive exhaust industry to validate an exhaust system for road use. States like California were having a HUGE battle with the sport compact car crowd on "excessive noise" on modified cars. Lots of tickets were being written on subjective opinions. SEMA worked with the police and SAE, and this objective test was developed. The California law was written such that a car was legal if it recorded a reading of less than 95 dBA when tested to the procedure. Exhaust manufactures can now easily certify their systems for California. I know a few East coast states have now adopted the California law as well. The basic test is a microphone is placed at 0.5 m at 45 degrees to the tailpipe and the engine is held at 3/4 of the engine speed at rated horsepower. The result must be below 95 dBA. It's a very simple test to run, and could easily be modified to fit various classes. For example, what's the 3/4 rated speed of a GT car? Don't know, but the rule for GT cars may be <95 dBA at 5000 rpm. Some testing would be required to correlate this test to track side testing, but I think it could be done and would allow competitors to quiet their cars without track testing. Also, since cars are tested individually, the effect of other cars racing in a pack is eliminated. **Finally, noise does NOT equal horsepower and so I agree with others that a more proactive approach needs to be taken on this noise issue before more tracks are shut down.**

Dyoungre 01-21-2010, 10:27 AM
"But a low, club wide noise limit for the entire SCCA would knock some cars out of racing."
This comment befuddles me. How does the addition of a muffler completely void the function of a car? Lap records may not be set for a few years, but completely knocking cars out of racing because a muffler needs to be retrofit? I don't buy it.

Ron Earp 01-21-2010, 10:28 AM
SEMA / CA adopted this almost straight word for word from the UK sound laws governing most tracks. 1/2 meter, 3/4 max engine speed, 45 degree angle from the collector output. Works for most engines/vehicles but is a difficult hurdle for many, such as GT40 / Lola / Can Am cars with a large displacement engine located midship with a very short lengthof exhaust to work with.

Dtanthon 01-21-2010, 11:53 AM
The SJR/NJRRS banquet is at the NJMP Officer's Club on 1/30. I'll ask about this concern.
Also, the SCCA National Convention is in Vegas this same weekend. I'm sure 'noise' will be a hot topic. Anyone

attending this year? In March we have the NEDiv Round Table in New Jersey, this will also be a topic for discussion.

lateapex911 01-21-2010, 04:41 PM
Karl, the Bridgehampton situation is much different. !- you live on an island. It take YOU forever to get anywhere off the island, but the reverse is true...getting rigs and pro teams to the Bridge was a major PIA. That, and once there, accomodations were difficult, at best. Further, the track was guilty of not keeping up with the times. perhaps it ws because of the impossibility of attracting pro level events due to it's isalnd location , but, in the end, the finacial realities meant that the land was far more valuable when repurposed. Just as a golf range in a suburb gets eaten by development.
Lime Rock faces similar issues. PIA to get to for the big rigs, and difficult to find accomodations that are nearby. NJMP has none of those issues.
However, the town and the track should cooperate and try to make a reasonable effort at blocking the sound, even if it pus large walls up right next to the track. I have no issue with SCCA looking at noise limits, but we have to remember that we're not the only ones on any particular track. Perhaps NJMP will be granted certain "current level" limit days, and the rest gets knocked down.....investigation will reveal whether this woman has a case or not, but politics are the overiding issue here.

dickita15 01-21-2010, 07:03 PM
Darrell, I was planning on asking the CRB if there has been any discussion but if anyone thinks a lower standard it I good idea a quick note to the CRB would be a good idea

Flyinglizard 01-22-2010, 10:55 AM
The Lola and Gt 40/can am cars can use the real racer mufflers that late models use. Two 4in in , with a balance chamber, one 5 or6 in turnout. Makes 650 hp tolerable at 50 ft. Borla, Flowmaster, Shoenfield. Do a quick search , .
Check that, the T70 would have to put two mufflers in the fender wells. A balnce pipe would have to pass the gearbox and bodywork, not. Boat stuffers was used on the street conversion for these cars.
Street T 70, yeah. 450 hp,on off clutch, Hewland crashh box, shitty brakes cold, what could go wrong?? MM

Disquek 01-22-2010, 02:26 PM
Bear in mind that comments here could be used as part of this litigation.
I'd skip commenting publicly about what our options are. Better to not provide fuel to the opposing side of this fire.

BruceG 01-22-2010, 04:24 PM
I have written twice to the protagonists, informing them that the SCCA is only one of many clubs using NJMP, that we are always interested in getting along with out neighbors and that they should contact the SNJR SCCA region. The woman who wrote me back(and is the principal in this complaint) was gracious and thoughtful in her presentation to me of the issues).
Sugar rather than vinegar works wonders with a lot of folks

Racing mufflers and performance effects

01-05-2010, 11:54 AM #15

BFrank
Member
Join Date: Dec 2008
Location: Nashville TN
Posts: 1,063

> Originally Posted by **RacerBowie**
> *Why haven't we voluntarily reduced Club Racing cars' noise output down below 100db at 50 feet yet? Seriously.*

you ever tried doing it yet seriously?? Ask Grand-am how easy it is to measure competitors consistently... last time they tried to check that i'm aware of in rolex not one car passed, not one. But you go to Barber and the track checks from 50 feet away and nobody has problems. it is great in theory.. but a lot harder to do meaningfully.

Edit:

I'm not saying you can't do it and hit 90db's bowie.. in fact on one car i've worked the muffler actually improved power and was quieter than anything we tried.. still not quiet... but it was definetly not loud anymore. That car is the only one i've seen quieted to any real degree without some sort of power loss(sometimes only 2-3 hp on 300). It used a muffler designed to work as an x pipe from some 60's muscle car.. and actually made power over everything we ever tested. That kind of breakthrough is kind of rare though... and probable less likely to happen on an inline 4 cylinder... even more likely is that the x without the muffler would have been even better.. but we needed a muffler anyway. I'll continue to run mid ohio and nashville superspeedway and not really worry much about sound... it's a lot cheaper that way... I've probably tried/changed/repacked nearly 30k dollars in mufflers in the last 4 years if your wondering, and the one I reference that made power was dirt cheap at like 200 or 250 a piece.

Last edited by BFrank; 01-05-2010 at 12:05 PM.

01-05-2010, 11:58 AM #21

granracing
No really, I wrote the freaking book!
Join Date: Nov 2006
Posts: 3,715

> *Folks will complain that it affects the competition.*

How so? When Anthony Serra built my exhaust system, he specifically said his goal was to keep it pretty quite and the advantages of doing so (all of which were racing / strategy related). What he said made sense at least to me. My car is usually around 90ish db.

How difficult would it really be for some of those big bore racecars to be under 100?

Muffler effects on performance 2

01-05-2010, 11:54 AM #15

BFrank
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Last edited by BFrank; 01-05-2010 at 12:05 PM.

11-10-2010, 10:12 AM #10

Dano77
Member
Join Date: Apr 2010
Posts: 161

Give it up on the "lose 2-3 horsepower" crap. How much are you gonna lose when the track gets closed due to noise complaints or even bigger restrictions.

Put a muffler on it,there is no real reason an ITC Rabbit needs to be louder than a GT-1 Camaro

Dan 77 IT7 85db at 7500 rpm.
NERRC Champion 2010 IT7
NARRC Champion 2010 IT7

Mufflers, weight, performance and tunability 3

* Replacement mufflers/systems

The current rage are the muffler bypass pipes available for 86.5 - 95s. These pipes are a true bolt-in, sell for under $200 and come in three styles - plain megaphone tips in flat black, polished tips and stainless. David Roberts of 928 Specialists reports a significant weight reduction vs. the stock final muffler, with the added bonus being this weight savings occur outside the 'suspension box', similiar to Honda's mass centralization weight management theory. The bypass pipes are available from 928 International, David Roberts as well as in Panorama magazine.

Numerous other sources for bolt-on ie. Ansa mufflers and weld-in ie. , Borla, B&B , and also Flowmaster, Powertone, Supertrapp etc. Don't be afraid to try traditional muflers such as Thrush, Hedman, Edelbrock, etc. The catch on muffler mod's is to get the sound you

want while maintaining power-curve desired. Remember, the 928 engine is a highly tuned and balanced 'system' - even a simple muffler swap will change the output characteristics, sometimes reducing power at one rpm level while boosting it at others. These systems are also very expensive as they are custom bent & welded to fit. For a high-horsepower 928 engine, this is your only option for max gains.

12th February 2010, 02:40 PM #21 (permalink)

Russ Noble

THE FORD THAT BEAT FERRARI
69GT40
LE MANS WINNER 1966,67,68,69

Russ Noble
Lifetime Premier Supporter

Join Date: Jul 2004
Location: Christchurch,NZ
GT40: Scratch Kiwi 40
Posts: 2,033

Re: Silencer Advice

Further to Jac Macs post, here is the muffler I am using, that I built in consultation with him.

Salient points are that it retains the tuned tailpipe length before dumping into the muffler. The cross sectional area the gas has to pass through between the baffles is greater than the tailpipe area. The muffler is seperated down the middle as two self contained units, but would probably be even quieter if both tailpipes dumped into the whole thing as a common chamber. It contains no sound deadening packing. I guess a picture is worth a thousand words.

Although I have not done back to back dyno testing with and without the muffler, I am confident that I am not taking a power hit with it. Disadvantages are weight (28kg) and size, but I feel the superior power I'm sure this gives me over most other setups more than compensates. To give an idea of scale, tailpipes and muffler outlets are 3" diameter, primaries 2" and the muffler is 6" deep.

Trackside observers cannot believe how quiet the car is. That is the first comment, usually followed by equal disbelief about how much grunt it has got. Guys who have watched the video Leon posted of the first start up have made the same comments about quietness. The lap times I am doing put me firmly in the top three in my class, so I think I have achieved my goals with regard to the muffler.....

Attached Thumbnails




Excerpt from Larry Shepard's book
"Hot Rod Small Block Mopar Engines"

Mufflers

Much has been written about mufflers over the years, mostly on how they affect street packages. But many race tracks today require racing mufflers to run. To meet this demand, a new generation of efficient race mufflers has been developed. These new mufflers are superior in performance over all the old standbys.

There is a popular belief among racers relating to mufflers that louder equals more horsepower. This type of "mental horsepower" is largely false. The reverse is actually true. The loudest muffler generally will not make the most power.

Muffler effects on performance 4

964 Exhaust Question — Threaded Mode | Linear Mode

07-18-2009, 09:11 AM — Post: #1

JoeP
Riesentöter PCA Member
MEMBER

Posts: 283
Joined: May 2007
Reputation: 0

I am an incorrigable tinkerer and want to build my own cat-free exhaust for my 964. (Raspier sound is probably 80% of my reasoning, and weight is only 20%.)

Will a free-flow exhaust affect the ECU's fuel/air calculations enough to damage the engine? I plan to eventually install a high-flow airbox cover and a chip. I just do not want to spend all of that money at once if I can help it. I've already spent a politically incorrect sum this season.

Thanks.....

Joe Piernock, Paoli, PA
'72 914-3.2, '95 M3, '06 E350

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07-19-2009, 04:37 PM — Post: #2

Larry Herman
Riesentöter Technical Chair
MEMBER

Posts: 385
Joined: Jul 2006
Reputation: 0

Headed somewhere warm!

No it won't, not if you are just driving it on the street. If you are tracking it, I still don't think that you would have a problem, but you could always spend the $150 it takes to get it dyno'd and check the Air/Fuel mixture just to be sure.

Larry Herman
2006 Cayenne S
2010 Allegro RED 38QBA
Nationally Certified PCA Instructor

04-13-2012, 09:20 AM — #11

DBurke
Done watching.

Join Date: Oct 2003
Location: 06330

Posts: 1,317
My Cars: ///M
Items for Sale

I have the same attitude toward SE36. One big JSport class with E30 M3s E36s, E46s seems better than JS/SE36/M3T. Digression over... Come race! The track is spectacular and you are missing out if you haven't been on the new surface.

Yes an E36 is going to require two mufflers to make sound if you're working with a 'race' exhaust, it's the sound range that they and BMWs put out. If sound is an issue, you're at a track day, just build something quiet. The ~5 hp difference between quiet and loud doesn't make a bit of difference at a track day.

13th February 2010, 05:05 AM #22 (permalink)

Al Jones

A.J.
Bronze Supporter

Join Date: Mar 2008
Location: Cheshire,CT
GT40: RCR
Posts: 781

Re: Silencer Advice

Russ - that looks good. Of course, Jac Mac's advice is on-the-money. Co-incidently, that internal design is exactly like one of the commercially available mufflers but they are single units,and that unit is supposed to be efficient and quiet.
As for the original thread question, if you're looking for the cheap way out, Patriot makes some disc inserts,centrally rod mounted, for less than $20 and they should be available from Summit or Jegs. A.J.

RCR MK1
331 Keith Craft 436hp SBF
G50-01
Halibrands

QUOTE

Pelican Technical Article:

Muffler Replacement - Porsche 911 Carrera

Wayne R. Dempsey

An easy way to add a small increase in power to almost any car is to add a set of aftermarket mufflers. The reduced backpressure can result in an engine that flows air easier, resulting in an increase in horsepower. However, the amount of power that you can expect to gain depends on a variety of factors. Exhaust design in itself is somewhat of a black art. I recommend that you research the set of mufflers you wish to buy very closely and see if the manufacturer has dyno-proven results.

On a Carrera engine, the exhaust system is already limited due to the space requirements of the rear engine design. However, it is fair to say that gains of up to 15 or more horsepower are attainable by changing out the stock mufflers for a set of aftermarket ones.

A Beginners Guide to Modifying A Car

It's easy for a seasoned car guy to give advice on what he or she thinks is best when it comes to modifying your car or truck, but many times that advice is biased based on their own belief of what is best and based on what they read on their forum. What a beginner needs is advice that comes from the basics of automotive performance and what makes or doesn't make power. It's hard not to get tied up in manufacture claims, so we're going to create this guide on what every beginner should know when it comes to modifying their car for the first time, or even picking a platform to modify.

Back in the day, street rods were built based on bigger is better. Today, with technology being at the forefront of automotive performance, bigger isn't necessarily better. Today it's about creating power from a lean and mean engine in addition to a lightweight chassis that both work with well together.

Why it's important to plan your mods
Many of our customers, and myself included, like to buy parts on a feel good basis. We want that intake or want that exhaust because we want the car to sound good, and make more power. But then we find later that we decide to go a different route, and then all of a sudden the exhaust is too small or too big, and the intake won't work any more. At that point we've learned that we wasted money and should have come up with a plan first on what goals we have for the vehicle. Do we want a car for drag racing? AutoX? Road Racing? Street Performance? Every setup would be different here, so planning that out would help you to not only save money, but ensure the parts you purchase work well together and compliment each other.

Select your platform
If you don't already have a car or truck to modify, then you need to decide first which platform you are going to go for before you come up with a path. Again, this comes down to deciding what type of racing or performance you want from your car. Many of us already know that we want an import or domestic, and a specific brand. Others are limited by budget or other criteria. For flat out power, nothing beat starting with a platform that is already turbo from the factory, or already has a V8 motor. Some examples of great platforms to start your mods:

> Subaru WRX or Subaru WRX STi
> Mitsubishi Lancer EVO (all generations)
> Mitsubishi Eclipse Turbo (FWD or AWD) and Eagle Talon or Plymouth Laser
> Mazdaspeed3
> Ford Mustang
> Chevy Camaro
> Corvette (C5 Z06 is extremely affordable right now)
> Dodge Charger or Challenger
> Nissan 350Z or Nissan 370Z
> Nissan 240SX (great drifting platform)
> Honda Civic / Acura Integra (Great platform for anything other than drfiting)
> Toyota Supra Turbo (can be had for a good price now)
> ... and more

The above list is just an example of good platforms on a budget. Sure you can go the more expensive route and go straight for a Nissan GT-R, but the majority of people won't go that route, and so we won't explore that platform in specific. Our goal here is to give you general advice that you can use on any platform.

Drag Racing
So, you decided that drag racing is for you? Welcome to a highly competitive world primarily dominated by high horsepower. The goal of drag racing is to get your car down 1320 feet as quickly as possible. This means your car needs to be as light as possible, launch as hard as possible, and have as much useable power as possible. Typically, drag race setups are not very comfortable on the street. If you have a front wheel drive, you will need a good set of slicks and a limited slip differential. You can't drive around with slicks on the street (typically), so you will need a special setup of wheels and tires for the track. If your car is rear wheel drive, you can get away with using street slicks, but for serious drag racers, this might not work. You'd want to setup your suspension to keep the rear stiffer than the front, so as the weight transfers to the back for launch it helps with traction. Brakes aren't too important except you want to be able to stop at the end of the drag strip.

Road Racing
Unlike with drag racing, road racing not only requires power, but requires all around incredible handling and braking

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Unlike with drag racing, road racing not only requires power, but requires all around incredible handling and braking. Where as drag racing requires only 10-13 seconds of racing at a time, road racing could be for 30+ minutes of constant abuse. Cars that are lightweight and handle/brake well could have faster lap times than cars making twice the power, so it's really a game of balance. For competitive use, you'd need to get a set of road racing tires and a set of wheels to go with it, as tires are extremely important. Once the brakes and suspension are ready to go, you'd want power to match. The key here is balance, you don't want a car that has more power than the chassis can handle, more power than the brakes can handle, or more brakes than power. Start road racing with a bone stock car, then add race tires the next time you are out, and then start to modify your car. You'll appreciate your car much more when starting road racing with a stock vehicle.

AutoX
Autocross or AutoX really wears out your tires from parking lot racing. You'd want a car that is nimble, has good torque, and a usable power band as most of the time your speeds will be under 60 mph. This type of racing is usually around 1-2 minutes at a time. Most important here would be your tires and your suspension setup. Tires are an interesting aspect here because with 1-2 minutes of racing they don't really get much of a chance to warm up. So you would need to get tires that are able to handle well on gravel and heat up quickly. A typical road racing or street suspension should be plenty for a fun AutoX day.

Safety
Safety is extremely important, and you would need a fire extinguisher, and possibly a roll cage depending on the performance of your car, and the type of racing you choose. You would also need a helmet and possibly a 4 or 5 point safety harness. You also need to make sure you have great brakes... it's often overlooked. Many cars brake well with just upgraded rotors and pads, others need a whole new big brake kit.

Planning your modifications
Now that you know the general idea of what you need for each type of racing, you need to decide what route you are going to take with modifying your car. Below we will touch on the basics of some of the major areas of modification and you can decide which is right for you, and which is within your budget. Not all of these modifications need to be done at once, but some will require a mod or two before you go to the next step, so plan that out too.

Intake System
Ok, so one of the basics would be the intake system. If your car is not turbo but you are going to add a turbo to it later, skip the intake. When you get a turbo, the intake system is completely redone, so the old intake you had won't work with the new system any more. Also, if you go with a turbo kit, most of the kits come with an intake kit for it.

Should I get a drop in air filter?
If you are never going to modify your car past an air filter, then sure. An air filter such as a K&N is a good way for an extra 1-2 horsepower and it's an air filter that you won't have to replace again for a lifetime, but it's not going to give you nearly as much power as a short ram or cold air intake.

Short Ram Intake vs Cold Air Intake - What's the difference?
This is a big question we get asked a lot. A short ram intake has a shorter intake tube, and typically has the air filter in plain sight under the hood. For some applications this is fine, but for others this isn't as efficient as a cold air intake, because a cold air intake actually has a longer air tube that literally relocates the air filter away from the engine as far as possible, sometimes into the fender, to draw in cooler air. Short Ram intakes have been known to not create as much power since they take in so much of the engine's heat. Short ram intakes are less expensive, and also depending on the car or truck, they might find that a short ram intake with an air box works just as well or better than a cold air so only a short ram might be available. If both are available we always recommend the cold air intake. Since the cold air intake is usually far from the engine, it can be low to the ground. This causes the air filter to sometimes suck in water if you run over puddles or live in a area that rains a lot. Due to this many cold air intakes have an available air bypass valve that solves this problem.

Exhaust System
The louder the exhaust the more power it makes, right? Wrong. Just because an exhaust is loud doesn't mean that car is making more power than a similar car with a quieter exhaust. The design of exhaust systems now a days has quality mufflers that are straight through (meaning the exhaust has a single unrestricted exit path), but have technology built in that also quiets the sound at the same time.

A big exhaust causes backpressure loss and you lose power
Wrong. This is a myth. If you look at a dyno of a car such as an Acura Integra GSR that has a 3" exhaust and a naturally aspirated motor, you will see that the car didn't lose power, but what happened was it "feels" like it lost power due to the power band shifting up. However, no one wants an exhaust that makes more power but doesn't feel like it. Seat of the pants is a big factor in street performance. We recommend for you to get an exhaust based on the future goals of the car. If you have a non turbo car, and are going to make it turbo, 3" exhaust is the way to go. If you are going to stay all motor, a 2.5" would be ideal. For turbo or high power V8s we always recommend a 3" exhaust or even more in some cases.

Catalytic Converter vs Test Pipe or Cat Delete
It's true that removing the catalytic converter from the exhaust increases power quite a bit. However, we recommend this only for off road cars because not only is it against smog laws it's just not good for air quality. We've found that a good high flow catalytic converter does a great job with only a slight power loss over a straight pipe. Make sure your high flow catalytic converter matches the same size as your catback exhaust for straight exhaust flow.

Turbo Kits

– What's the difference?

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Turbo Kits
If your car didn't come with a turbo from the factory, then we recommend no modifications at all until you have your turbo kit. Once you have the kit, put it on, get it tuned, and enjoy the car for a bit. Plan out then what exhaust system you want. At that time, when you get your exhaust, you can also get the boost turned up, and re-tuned. We find that customers who do it all at once end up getting used to the power too soon, and wanting more. This two step process gives you the ability to feel your car at a higher power level, and also to know that you can be turbo with a stock exhaust and the car can make more power yet be quiet at the same time. Sure it's a big bottle neck, but we've actually had customers who preferred this setup. It's great for a daily driver under the radar. Sometimes a stock exhaust with a high flow catalytic converter and muffler do the trick.

Cars with a stock turbo
If your car came with a turbo stock, you have it made. Your upgrade path is easy - cold air intake, high flow turboback exhaust (downpipe, high flow cat, catback), boost controller and tuning. Most exhausts are already 3" upgrades, so when you decide later that you want a bigger turbo, your exhaust system is already set and ready to go.

Cars with larger engines - V6 or V8
Depending on if you want all motor power, or forced induction, you are going to be able to benefit from a bigger exhaust. Moreso on the V8, we recommend at least a 2.5 or 3" exhaust, long tube headers (if they are smog legal in your area), and high flow cats. The goal is to let your engine breathe. If you are going to use nitrous, make sure you figure the max nitrous shot your engine can take, and scale it back by 50-75 shot. For example, if you have a LS1, you can usually run a 150 shot and be fine, but to be on the safe side, run a 75 or 100 shot. We recommend wet nitrous kits vs a dry nitrous kit.

What is the difference between wet nitrous kit and dry nitrous kit?
A wet nitrous kit injects both nitrous and fuel into your intake together. A dry nitrous kit only injects nitrous. We believe that for most applications, you are safer to run a wet shot to ensure you have enough fuel for your engine. If you run a dry shot, you need to be sure that when the nitrous is activated your fuel system will have enough capacity to add enough fuel to compensate. As long as you have the fuel, and you run the nitrous shot within the limits of your engine, you should be able to run nitrous for hundreds of passes reliably. Nitrous of course would only be used for bursts of speed such as drag racing.

Tuning
I can't stress how important it is to have your car tuned. If you want reliable power and don't want to worry about your engine every time you are full throttle, make sure you take your car to a reputable tuner. They will ensure your fuel trims, timing and everything is set in line and well within safe spec.

Suspension
Ah, the all important stance. Nothing is more important for many people, and we agree, the car has to not only look good, but have the suspension prowess to boot. There is everything available from lowering springs to coilover kits, and what you choose depends on your budget and end goal. Typically, lowering springs are made to lower your car, give you a good ride, and the trade off is that they don't handle as good as a coilover system. If you pair your lowering springs with a good shock, you can have a good handling car, better than stock, but not for competition use. We'd recommend lowering springs more for looks than performance. For more performance, look at a coilover kit. These kits come with both shocks and the coilover springs as a unit (there are exceptions, but full coilover kits come with shocks). These are the best setup for handling and one of the best features is that they are adjustable. You can raise or lower the car depending on how you want it to sit. The price point is higher, but if you consider that with lowering springs, you typically need to buy shocks as well, you will see the price for the coilover kit wins out, especially since many of the better coilover kits also come with built in camber kits.

Do I need a camber kit?
If you are going to lower your car more than an inch, we recommend a camber kit. Without a camber kit, the amount of handling you gain can be negated by the handling you lose from too much negative camber. Not to mention the negative camber really wears on your tires. You want the camber kit to give you as much tire contact patch as possible, and it's highly worth it.

Do I need upgraded shocks with my lowering springs?
Depends. If your car is new, you can get away with just using lowering springs. If your car is older, this means your shocks are older, and the lowered stance of the lowering springs, plus the added spring rate usually blows the stock shock within a few weeks or few months.

What about coilovers that don't come with shocks?
You have to be careful with these. We highly recommend to buy performance shocks to go with these. A popular choice is Ground Control coilovers with Koni Shocks. However, this combination is pretty pricey, and many customers end up going the route of a full coilover kit.

Full Coilover Kit
A full coilover kit comes from the factory with not only the manufactures recommended spring rate for your car, but also with shocks that can handle being lowered, and handle the added spring rate. This is very important for you to have a balanced suspension right from the start. You can use sleeve type coilovers (ones that don't come with shocks), but you would need to pair them with the right shocks to ensure your suspension works well together. Plus, many full coilover kits come with upper pillowball mounts that allow you to adjust camber. Really a great way to enhance your suspension.

Wheels and Tires

Nitrous Systems
Oils & Lubricants
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Tuning Systems
Turbos & Turbo Kits
Wastegates & Flanges
Wheels & Tires

Want dubs? The bigger the wheels the less performance gain typically. The goal is less rotating mass, so you want smaller and lighter wheels than stock. Sometimes you can't go too small because you might have a big brake kit and need wheels large enough to clear. This is a huge topic, but go with the lightest wheels, and only go for the bigger size if you'd rather have looks over performance. Depending on the vehicle, the tradeoff could be minimal. For example, 20" rims would work on a 2011 Ford Mustang GT, but not so much on a 1995 Civic. Do what makes sense for your vehicle.

In conclusion
There is so much to modifying a car that it's hard to include everything in a single article. However, we wanted to touch on the biggest and most important aspects so you can get an idea on what it takes to modify a car the right way for those of you who are beginners. Modifying cars is fun, and very rewarding, and it doesn't have to be rocket science to get the right setup.

If you have general questions, post them below, but this guide should give you a better understanding of the world of modifying, types of racing available, and where you fit in. Once you start, you will have more detailed questions on each topic, and we'll try to address them in future articles.

Happy motoring!

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Manasie Kendall
July 17th, 2012 - 15:25

hey, i have a 2011 Mazda 3 GS 2.5 and want to make a few mods. I am interested in the short ram intake and a exhaust system and i was wondering if you had any suggestions on which brands go well together and what not.. I am not a drag racer or anything like that, i just want my car to gain some horsepower and sound good.

I hope you can help me out. and thanks a lot.

(REPLY)

Ben
October 5th, 2012 - 22:18

I have a few friends that use short ram intakes and they all have used the weapon r "secret weapon" intake system so you can look into that

(REPLY)

Kelvin vazquez
July 29th, 2012 - 10:11

Great advice.. Cant wait till i get my license so i can use it lol.. And do u know if a nissan 370z nismo would be good for drag racing a 1/4 track, cause i want a car that can do way better then 10 seconds on the track... Do u know if theirs anything out their i can do to make the 370z at least a
9 second car ???

(REPLY)

Published on *Nashville City Paper* (http://nashvillecitypaper.com)

Fairgrounds race track muffler test draws mixed reviews

By *WilliamWilliams*
Created *04/02/2011 - 3:33pm*

Big names in the world of auto racing came to the Nashville Fairgrounds Speedway Saturday afternoon not to compete for trophies, but to try to show high-speed racecars don't have to be so noisy.

Sterling Marlin was among those taking laps at the city's much-disputed racetrack, testing mufflers to demonstrate how the devices limit sound from the cars. For decades, drivers at the fairgrounds haven't used mufflers. But with the fate of racing at the 117-acre property up in the air, track advocates now are willing to install the mufflers to appease agitated neighbors.

"Mufflers were something that should have been done long ago," Metro Councilman Duane Dominy said, watching the cars whiz by. "This demonstration has proven that they can make the cars a lot quieter. The track is an asset of the city. I think it should be used to its fullest extent possible."

The muffler showcase came in advance of Tuesday's fair board meeting when commissioners will consider two separate proposals to hold racing events at the speedway. The track's most recent promoter Tony Formosa turned in one proposal, and former NASCAR greats Chad Chaffin and Bobby Hamilton Jr. are behind the other. Both groups have agreed to use mufflers.

On Saturday, drivers first circled the track using a single car without a muffler. They then performed the same exercise but with an attached muffler. A Knoxville-based company set up decibel-reading devices at different areas surrounding the track, results of which will be released later.

Naturally, mufflers reduced the noise of the stock cars, but neighbors are skeptical nonetheless.

"It's quieter one car to one car," said Colby Sledge, who chairs South Nashville Action People. "The question is when 28 cars get out here, is it going to be any quieter? That's an answer we don't have."

Several fairgrounds neighbors were among the 75 or so who attended Saturday's test. A few said they received text messages during the event from friends who claimed they could still hear the cars from their houses.

"Of course the car with the muffler is going to be quieter than the one without," said Lauren Flaherty, a neighbor. "But really, at the end of the day, it just comes down to what it sounds like when I'm actually living in my house and barbecuing in my backyard."

Councilwoman Sandra Moore, who represents the neighborhood, said she wants to review the decibel tests before offering a judgment.

"It was interesting," Moore said of the demonstration. "I'm still in the informative stage."

Fair board chair James Weaver said commissioners would review the decibel tests before Tuesday's meeting.

Formosa, who conducted demonstrations separate from Chaffin and Hamilton, said mufflers have become the norm for racing in the Northern United States. The South, he said, is just late to the game.

According to Formosa, the majority of his proposed racing events would feature between 15 and 25 cars. One race would have 35 cars racing at one time. He said most drivers don't already have mufflers, so adding the auto park would be a requirement.

Council members Michael Craddock, a candidate for mayor, and Robert Duvall were also in attendance.

City News Colby Sledge Duane Dominy NASCAR Sandra Moore South Nashville Action People Tennessee State Fairgrounds Tony Fomosa

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High Performance Mufflers Dyno Tests

e 21, 2010 natureguy Noise Pollution

nigh performance mufflers make horsepower gains or are they marketing pipe dreams? It might seem nge why I am writing about this subject on a nature related blog, but it will become abundantly clear w.

of my hobbies is tinkering and building automotive engines, transmissions, and other drivetrain to ease performance, and more recently to increase fuel economy. Aftermarket muffler manufactures such as Dynomax, Thrush, Flowmaster, Magnaflow, Cherry Bomb, and others all make a good deal of money selling their performance mufflers. They advertise that their mufflers increase performance quite dramatically from a stock muffler, but never seem to have dyno tests to provide proof. They often only quote muffler flow rates in comparison to a “stock” muffler. The question should then become how much flow is required and how much does more than good enough make?

Finally, Horsepower TV on Spike TV (episode HP2010-07) did a dyno comparison test of some Cherry Bomb mufflers for sound levels and horsepower. I will ignore the sound level tests they did as they have no real world relationship to being inside an enclosed dyno room. They compared Cherry Bomb’s glass pack, turbo, pro, and high priced Vortex brands to a stock muffler on a test engine running headers and dual exhaust. A common stock style muffler gave 472 horsepower, the glass pack gave 480 horsepower, the turbo style muffler gave 477 horsepower, the short pro muffler gave 476 horsepower, and the Vortex muffler gave 480 horsepower. At the very best, the gains were less than 2% and only 1% for two of the mufflers. This proves that more muffler flow is not needed to make performance gains. Performance gains of 5% are barely noticeable, and certainly not worth it for any other than competitive racing.

What these aftermarket mufflers are good for is increasing, quite dramatically, the sound from the engine. Increasing engine sound has a psychological effect of feeling like the vehicle is faster. Now you know that it isn’t from the above dyno tests. The muffler manufactures are truly selling a pipe dream.

When I was younger, I bought into the hype and used loud mufflers, but it was always irritable to drive around a loud vehicle that could be heard from a few miles away. Now that I am much more sensitive to noise pollution, I use high flow stock style mufflers. I can sneak around the back woods and my tires rolling on the gravel make more sound than my engine.

I am writing this article to emphasize that loud mufflers do not help performance and will only make those that use them a menace on the roadways. Believe me, almost nobody wants to hear loud vehicles, especially

while relaxing in a country or forest setting trying to enjoy the wonderful sounds of nature. Loud mufflers are technically illegal, because of the disturbance they cause, and at anytime when an officer wants to stop you, they can on sound alone. Save your ears and everyone else's by using stock style mufflers. Dynomax sells Walker HushFlow mufflers that run very quiet yet offer improved performance than the worst stock mufflers.

noise pollution

4 Responses to "High Performance Mufflers Dyno Tests"

- *Bernard Scott Jr* says:
  January 4, 2011 at 6:06 pm

  I'm looking for a quite performance muffler for my 2007 Chevy Silverado wiith a 5.3 liter flex fuel . I have a dual exhaust system on my truck now and I want to keep the dual exhaust system and don't want to give up the performance . But I want a quite exhaust system. The size of the muffler on the truck now is 22 inches total lenth with 3 inch inlet and 2.25 inches dual outlet . I would appreciate it if you can help me with the muffler.

- *natureguy* says:
  January 5, 2011 at 9:00 am

  Walker Muffler part number 22719 or 22784 looks like it would fit your application. It is their Quiet Flow series that should be quiet and flows well enough, especially with two mufflers on your system. Check out the specifics of the part number on their website: http://www.walkerexhaust.com/products/mufflers.asp The muffler can be ordered through many sources, such as Summit Racing, Advance Auto, or your favorite supplier. Be sure to have a cross-over pipe between the dual exhaust to keep the low frequency sound quieter.

- *Than* says:
  June 17, 2013 at 4:39 pm

  only time they are not legal is if exceeds certain db, I have the cherry bomb pro muffler on my 07 jk which passes inspection, from quiet to loud it goes turbo, elite, vortex, pro, glass pack and extreme.

- *natureguy* says:
  June 18, 2013 at 2:16 pm

Pricing Info.
304 SS Tubing
321 SS Tubing
304 Oval SS Tubing
Ultra-Light Racing Mufflers
Aluminum Tubing
Silicone Hose
Tubing < 2"
Tubing 2 to 3"
Tubing > 3"
Hardware, Supplies
Transitions
Megaphones
X-Pipes
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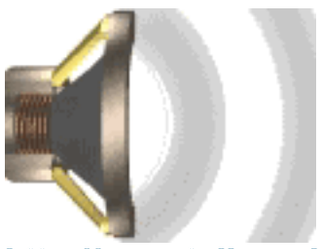
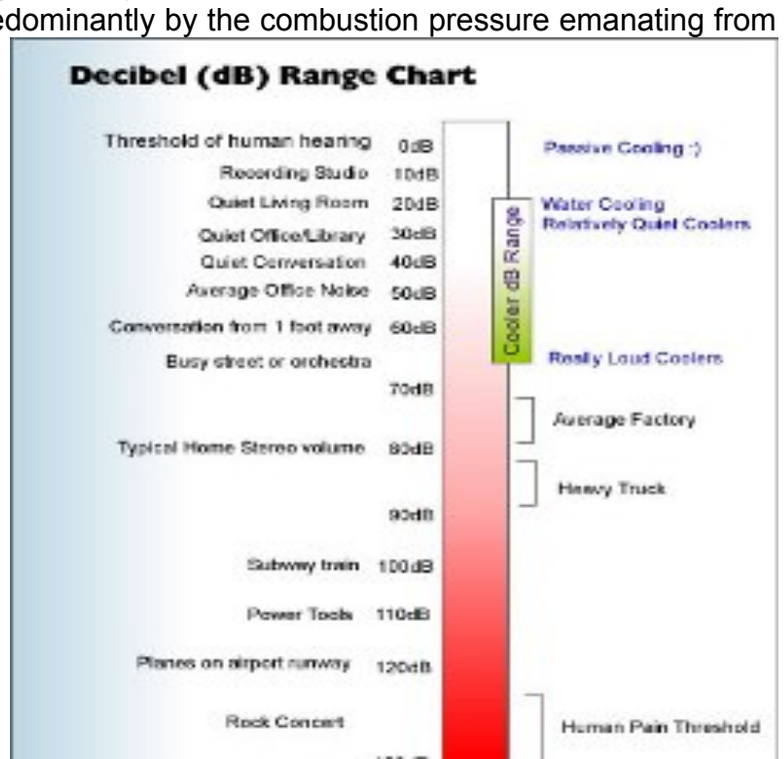
Muffler Technology – Part 1 Sound Measurement

Over the past few years, as residential homes have been built closer and closer to race tracks, there has been a strong movement towards reducing the sound from race cars. At some tracks, such as Laguna Seca in California, the sound limits have become so low, 92 dB in this case, that some street cars with OE exhaust systems will not pass without modification. Case in point is a late-model Porsche 911 GT3 (997). The OE exhaust is equipped with valves that by-pass the main mufflers at high rpm conditions. With the bypass activated, a GT3 will get black-flagged at the track. The bypass valve on the GT3 can be electronically, or mechanically "bypassed" so that the car will pass sound, but many racers would prefer to shed some of the weight of the OS exhaust. I have heard other stories of cars with mufflers strapped to the rear bumper just to be able to race. Though exhaust muffler technology is the focus of this article, it is important to note that the main sources of noise from an automobile also include intake noise and general mechanical noise.



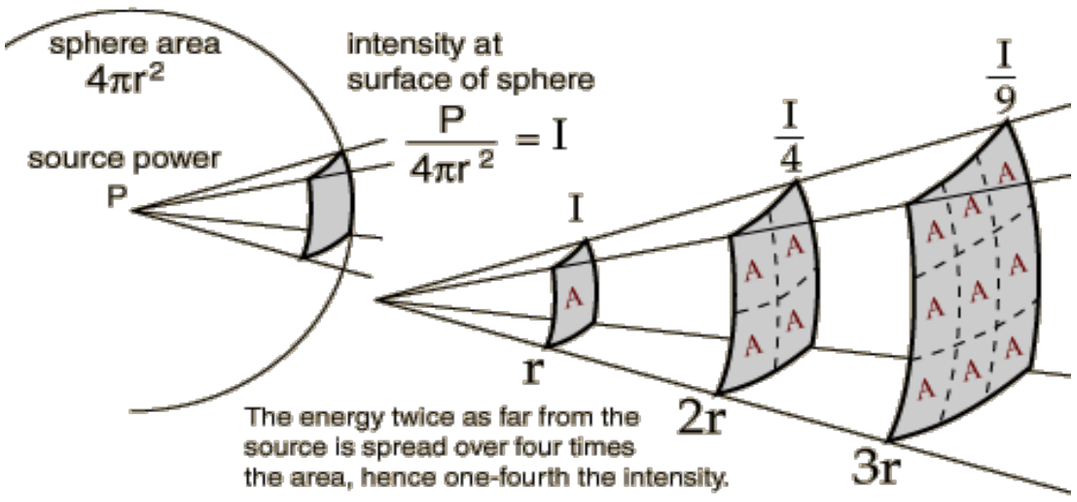
Sound is caused by small amplitude pressure waves. Consider a loudspeaker cone that oscillates in air. When the cone moves forward, it pushes the air causing a localized higher than ambient pressure. As the cone recedes, it imparts a slightly lower pressure forming a sound wave. The pressure of the wave pushing on our eardrum is what we hear as sound. The higher the pressure of the wave, the louder we hear the sound. In an engine, the exhaust noise is caused predominantly by the combustion pressure emanating from the exhaust valves of the engine. (animation from http://www.tellmewhyfacts.com/2007/08/what-is-sound.html).

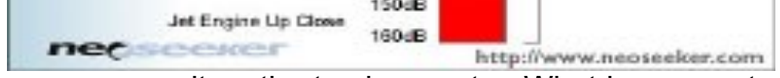
Sound pressure is normally measured on a decibel (dB) scale. The dB scale is a logarithmic scale, therefore a 10 dB increase in sound is actually a ten-fold increase in sound pressure – i.e. 100 db is 10 times louder than 90 dB and 110 dB is 100 times louder than 90dB. Many race tracks have dB limits of around 100-110 dB. So you can see, the 92 dB limit at Laguna Seca is quite restrictive as compared with other tracks.



Another aspect of sound is that its intensity drops by the inverse square of the distance from the sound. Because of the logarithmic scale, each time you double the distance from the sound source, the sound level drops by 6dB. For example, a sound that measures 100 dB at a distance of 10 feet will measure 94 dB at 20 feet. And at 40 feet from the same source, the sound level would drop another 6dB to 88dB. When assessing whether or not your car will meet sound at a track, you must know where the sound will be measured. Some race classes will measure the sound only a few feet away from the exhaust pipe with the engine operating at a particular rpm. At some venues, the sound is measured at trackside and some even measure

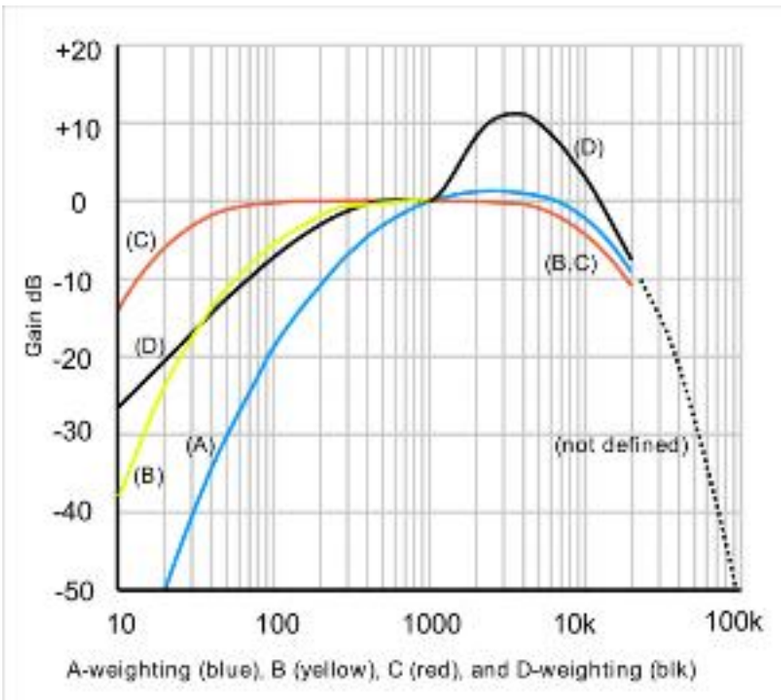
the sound at the property line because that is how the local government





agency monitors the track operator. What is a racer to do?

The final aspect of sound measurement I'd like to discuss is the different dB scales used. You will see that there are three main dB scales that are used. The dB scale, the dBA scale and the dBC scale. Each of these scales weight different sound frequencies differently. The dB scale is a "flat" response and all frequencies are given the same weighting. It is the preferred scale for scientific research as the frequency data is essentially raw. The dBA scale is weighted to the way the human ear hears different frequencies (see figure



A-weighting (blue), B (yellow), C (red), and D-weighting (blk)

http://en.wikipedia.org/wiki/File:Acoustic_weighting_curves.svg). Really high and really low frequencies are given less weighting in order to approximate what a human would most likely hear. This scale is the one most often used to measure environmental sound and is normally the scale used at race tracks for muffler testing. As you can see from the response curve, in order to lower the dBA reading of a sound source, it is most effective to reduce the sound in the 1,000 – 10,000 Hz range. The dBC scale is required by standards to be available on sound meters, but no one remembers why. It is used for some industrial noise applications.

The most intense sounds are from the exhaust and intake respectively. Many racers only concentrate on exhaust noise but in many applications, the intake noise can be so great that it will lead to a car failing sound testing. The OE takes special care in designing intake systems to be very quiet by incorporating resonant chambers and good insulation to keep things quiet. Also, the air filter element is designed as a sound attenuation device and when replaced with a high flow filter, can lead to increased intake noise. The next installment of this article will review different muffler technologies and their application to motorsports.

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Figure 2 - Wild muffler configuration developed by Competition Motorsports for Laguna Seca. It is about the only way to get a GT3 Cup car to pass.

Muffler Technology – Part 2 Sound Reducing Technology

In the last newsletter, I discussed sound and sound level measurements as related to motorsports. Since then, I have learned of additional tracks that have instituted sound rules including the drag strip at Fontana Speedway. And if you ask me, I cannot imagine why anyone would complain of noise there (Figure 1)! The sound level at Fontana is reported to be 82 dB, 10 dB lower than at Laguna Seca! And we've seen some wild muffler setups to meet sound at Laguna (Figure 2). So how does one reduce the sound from a 1,800-hp turbo drag car to 82 dB? Good question!

Figure 1 - Dragway at Auto Club Speedway in Fontana, California

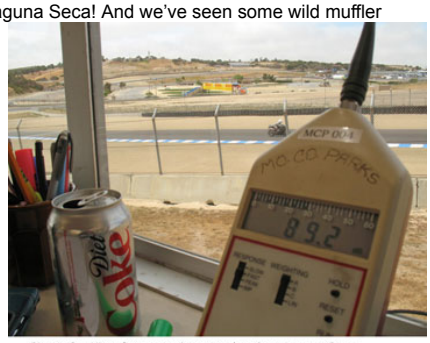

Figure 2 - View from sound testing booth at Laguna Seca

It turns out that the measurement at Fontana is being made at the property line located approximately 500' from the track, whereas the 92dB limit at Laguna is measured at 60' (Figure 3). As we learned last time, the sound level in dB drops by 6 dB each time the distance is doubled. Therefore, 82 dB at 500' is equivalent to approximately 103 dB at 60'. So it is actually quite a bit more liberal than Laguna Seca. Finally some good news.

So, what technologies are available to reduce the sound from a racecar? As mentioned, the loudest source of noise from a racecar is the exhaust followed by intake and mechanical noise. A muffler is a device that is used to reduce the sound from the exhaust and was first patented by Milton Reeves in 1897. Reeves was an early pioneer in the auto industry and built some of the first cars built in

Figure 3 - Milton Reeves built the OctoAuto in 1910

America (Figure 4). He was very concerned with "matters of vibration, odor/vapor, exhaust-and other [problems] too numerous to mention" and is credited to being the first to use a muffler. The design was a very simple open chamber that was thought to trap the sound waves.

Modern muffler designs use three basic technologies, singularly or in combination, to silence automotive exhausts. The three technologies are absorptive, passive-reactive, and active-reactive. The first two are the most prevalent and many OE-style silencers incorporate both methods. An absorptive silencer (Figure 5) uses a porous sound-absorptive packing material such as fiberglass to reduce sound by converting sound energy into heat. These are commonly referred to as glass-packs and are the most common muffler design used in performance and racing applications. This muffler design is essentially a low-pass filter which attenuates sounds in the higher frequencies and produces the deep, throaty sound that many associate with a high performance engine. This design is commonly used for performance applications as they normally have little resistance to flow. A common design is a cylindrical can with a perforated tube surrounded by packing material.

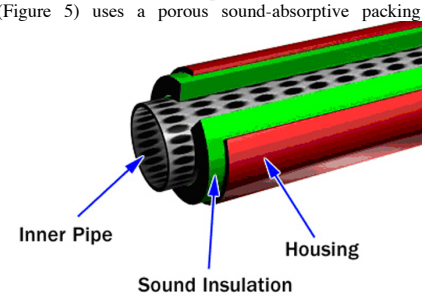

Figure 5 - Absorption style muffler cut-away diagram

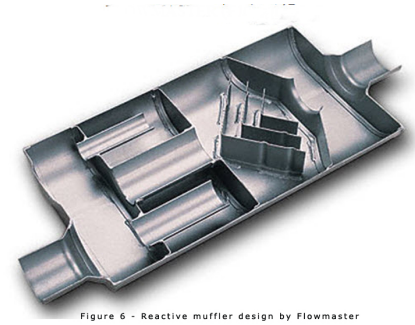

Figure 6 - Reactive muffler design by Flowmaster

Reactive mufflers (Figure 6) use the sound waves themselves to actually cancel out particular sound frequencies. Typical reactive muffler designs utilize tuned elements such as tubes and baffles to reflect the sound waves in such a way as to cancel specific frequencies. ¼-wave resonators and Helmholtz chambers are frequently used and will be discussed further in the next installment of this series. A common example of a reactive muffler is the Flowmaster chambered muffler. Reactive mufflers tend to attenuate low frequency sounds. A drawback to reactive mufflers is the fact that the baffling used can be restrictive to flow and the wave reflections can affect the gas exchange process of the engine – i.e. affect the tune of the engine.

Active-reactive mufflers (Figure 7) utilize a sound generating source such as a speaker to produce sound waves that will cancel the noise from the engine. Typically, a microphone upstream of the muffler will measure the sound waves which are transmitted to an electronic processor that then sends a signal to the speaker that plays a sound that cancels the engine noise. This is essentially the same technology used in the Bose noise cancelling headphones that you may have seen advertised. The technology works great with headphones, but the power needed to reduce the sound from an engine is considerable. I heard one of these systems at the SEMA show a few years ago, and it seemed to work well in the demonstration, but have yet to see any widespread use.

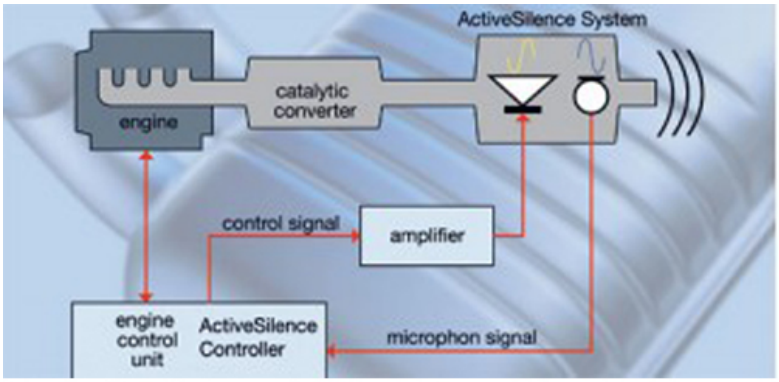

Figure 7 - Schematic of active muffler design

Most OE mufflers (Figure 8) are designed with a combination of reactive and absorptive components. Since the mufflers are designed with a specific vehicle/engine combination, the engineers can incorporate discrete components to cancel out specific sound frequencies to obtain the noise-vibration-harshness (NVH) objectives for the car. Auto manufacturers put a lot of effort and resources to attain NVH objectives. It is important that a Mercedes sounds like a Mercedes and a Lexus sounds like a Lexus. In fact, even Ferrari has developed an engine sound chamber where the cars are tested and mufflers, intakes, catalysts, and tailpipes are tweaked in order to achieve the proper Ferrari sound.

Figure 8 - OEs often use reactive and absorptive elements

The Burns Stainless Ultralight Muffler is an absorption-style muffler (Figure 9). It is comprised of a 0.035" thick perforated tube (core) captured within a larger diameter stainless steel case with end caps, also 0.035" wall. The core is designed to float within the case in order to alleviate thermal stresses due to the high temperature exhaust gases. The core is wrapped in a packing material that provides the sound attenuation. Burns currently uses three types of packing: High temperature fiberglass (glasmat) is standard; stainless steel scrubble is used for extreme applications and a special stainless steel woven mesh for very extreme applications like racing rotaries. The glasmat is the least extensive and lightest packing material and provides the best sound attenuation.

These absorption style mufflers work best if kept packed. Burnt-out packing material will not only be louder, it can actually cause a loss in performance due to the change of tune. The packed muffler will become a reactive muffler and may attenuate frequencies that will affect the tune. Many motorcycle race teams will actually weigh their bike mufflers between races to insure that they contain proper packing.

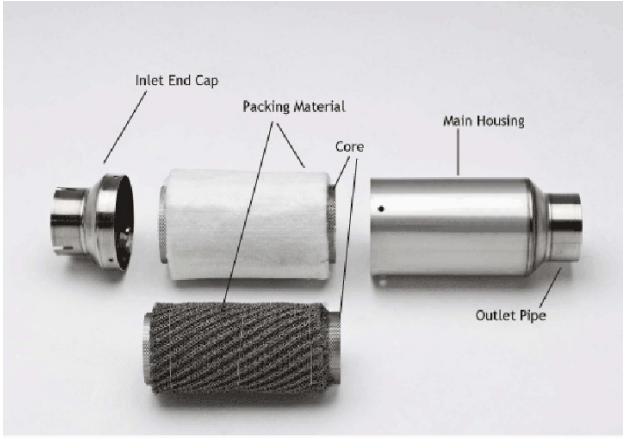

Figure 9 - Burns Stainless Ultralight muffler

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Fast & Quiet(er): Race Muffler Design and Function

When using mufflers on a race engine, a little knowledge can bring improved performance

From the February, 2009 issue of Stock Car Racing / By Sleepy Gomez

Racing and mufflers are two words that don't seem to fit together. However, sometimes they are forced together in a shotgun wedding of sorts. While some racers love to hear engine noise, there are neighbors near racetracks who have other opinions, and these neighbors are sometimes armed with lawyers. Depending on the situation, mufflers may be the solution to this conflict. It might be that the cure is the use of mufflers that take some of the high-pitched sound from the exhaust note. Other times, a quieter muffler is required. In this case, there is usually a maximum decibel requirement.

There is another reason for reducing the noise in your race car. If your car is quieter than another, then you can hear the other cars around you better. More than a few drivers do this.

There is a problem to all this that should concern the racer. When noise is reduced, it often means that power is also reduced. This may not always be the case, but it does take some investigation to find the answers, and the answer will possibly be different for each application.

One thing we need to know is how a muffler works. A muffler does not work just by restricting flow. In the basic sense, for the muffler to reduce noise, it must separate that noise in a way likened to leveling the mountain top to fill the valley. By separating the peaks and valleys produced in the noise and then reassembling them at the end of the muffler, the noise is somewhat neutralized.

This noise separation occurs by several means. Each of these means has parts of the noise traveling paths of different lengths through the muffler. Thus, a particular noise event (e.g., one cylinder's exhaust valve opening) is broken up so that parts of it reach the muffler outlet at different times. This tends to blend the noise events. While this won't make a totally quiet muffler, the peaks and valleys will be evened out to a level at which the muffler is designed to work. Therefore, our ears perceive the noise to be a lower volume.

However, it is easy and perhaps inexpensive to greatly reduce the noise by slowing the flow through chambered mufflers, as found in many stock automobiles. These are very quiet and very restrictive. Many straight-through mufflers (glasspacks, and so on) have internal louvers that disrupt flow, so while appearing straight-through, the small louvers actually present a restriction to flow. These types are often found on street machines.

If your track rules specify the use of a muffler, but no decibel limit is listed, then get one of the short, straight-through types that offer virtually no restriction. All you need to do is put these on the ends of the collectors.

No story on mufflers would be complete without discussing some of the ways to get the exhaust to the muffler. We are not speaking about headers or cast manifolds. We'll hold that topic for another time. What we are going to be examining is how the exhaust is fed to the muffler(s).

I called a friend, Greg Fuesler, who has exhausted this subject with Dynatech (pun intended). My questions concerned the use of x pipe systems,Y pipes, and H pipes, among other things. Fuesler's thoughts are incorporated into the rest of this article.

It seems there is no single exhaust system that is correct for all applications. When class rules restrict the use of any type of side-to-side connection, then a straight-through muffler attached to each collector is thought to be best. There is some extra power available when you connect the two sides of a V-8 exhaust. In some cases, you may want to bring both collectors into one muffler. This applies to engines at the 525-550hp range or less. Also, you want to stay with 3-inch diameter pipes and the matching muffler. These sizes maintain the speed of the exhaust flow.

Higher horsepower engines running on tracks longer than a 11/42 mile can take advantage of 311/42-inch diameter pipes.

Where the Y pipe arrangement is not practical, such as in crossover headers, there are other solutions that can work just as well. The crossover headers have the left-bank cross behind the distributor to join in a Y with the right bank. If stock firewalls are required, these can't be used because the crossover pipes must go through the firewall.

The x pipe system or H pipe arrangement allows the exhaust system to possibly be placed more efficiently in the chassis, usually under the car. Both of these systems function virtually the same. The nature of the H pipes is not to change the flow between the two sides, but to allow the pressure waves to equalize. The size of the H crossover pipe is not too critical; however, it would be preferable to have it the same diameter as the collector.

For the H pipe to be most effective, it should be attached to the collector close to the point where the individual pipes come together.

With the x pipe system, the two sides are brought together and then apart in an x shape. There can be some easy crossing of the exhaust pulses from one to another, which happens if an exhaust pulse reaches the x and finds a lower pressure on the other side. Still, its primary function is to equalize the pressure waves between both sides of the engine's exhaust.

Sound Advice

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By Tom Georgalos

With the sound restrictions getting tighter at Laguna Seca and for that matter all tracks, we are continually looking for better ways to quiet our cars. The sound meter requirements over the last 10 years have been tweaked more and more. Each time the meter was tweaked tighter we seemed to know what to do and how to quiet our cars just that much more. We started around 103 dba, then went to 100 dba, then 95 dba. When the meter hit this last mark of 95 dba we started to separate the men from the boys. The race cars with high strung motors were the most difficult to tame. Technology came around with the Flowmaster muffler, which seemed like a miracle. This muffler didn't cut down on power, it enhanced torque, and it made the limit. Now we are at a new low limit which is being strictly enforced, and this is as low as 90 dba. By the way these readings at Laguna Seca are taken at 50 feet. Most other race tracks take their readings at 100 feet. Quite a difference!

We don't claim to know the exact solution for quieting the car on the racetrack, but are in a panic to perfect our readings. The advice we offer below is merely some findings that we offer to you. We would love to take advice from anybody and share it with others. Many cars in our group pass with flying colors, we will try and list their formula. We are also in search of other techniques all the time which we will try for the future.

Exhaust Systems That Don't Work.

- Open exhaust, obviously doesn't work!
- Glasspack mufflers do not work!
- 3 inch pipe Flowmasters don't work!
- Flowmasters with center inlet or center outlet don't work!
- 3 inch pipe or larger Brand-X mufflers don't work!
- Shorter than 28 inch LoBaks don't work!
- Race style LoBaks don't work!
- Borla mufflers without catalytic converters or without a secondary muffler such as a Supertrapp don't work.
- Monza style exhaust or European high performance mufflers on Ferrari's, Porsche's, etc., don't work.
- Stinger type of exhaust on Porsche's & Mazdas, commonly known as expansion chambers, don't work.

What Systems and Things Seem to Help.

- Crossover Pipes

Crossover pipes are a must. They lower decibels by some 2 - 6 dba.Crossover pipes can be smaller pipe than your exhaust system. For example, 2 inch crossover would be fine for a 2 1/2 inch system. Consult your muffler manufacturer for optimum placement of this crossover tube in your system. This seems to be a great tool for gaining torque.

- D-Gas Crossover Pipe

Another type of crossover tube in the form of a Siamese joining of smooth flowing bends is called D-Gas and is recommended by Ron Bramlett of Mustangs Plus in Stockton. Great results are reported on the track, and a smoother pulse from this subtle crossover is achieved. Contact Ron @ Mustangs Plus 209-944-9977, he claims to have a new muffler he is working on as well.

- Diameter of Exhaust System

2 1/2 inch pipe is the absolute largest pipe that can be utilized to make strict sound limits. Naturally 2 1/4 inch or 2 inch would even be quieter. This even applies for necking down of side pipes.

- Length of Exhaust Pipe

The longer the pipe the quieter the system. Exhaust all the way out the back of the car is going to be quieter than side exhaust. Some believe routing both pipes, if dual exhaust is used, to the drivers side of the car, helps divert sound away from the sound meter. This can only be a crutch until sound is read on both sides of the track.

- Flowmaster Mufflers

Large three chamber Flowmasters (approximately 16 inches or longer) with offset in, offset out 2 1/2 inch pipe seem to get you just below the limit. On certain days this system may be right at the limit, especially if the atmosphere has any moisture present. Crossover tube is essential. Try part # FLO-42553. This is the quietest Flowmaster that they have currently. It will not sacrifice power up to 400 HP. This will satisfy most of our needs. By the way, Flowmaster has found their mufflers are quietest at wide open throttle. They seem to smooth out the exhaust flow and that's when they really do their job well. The latest versions of Flowmasters are aluminized to hold off corrosion. By the way we are on about the fourth generation of Flowmasters currently. You may have the old ones.

Flowmaster offers complete Cat-Back systems, which may interest owners of late model Mustangs & Corvettes, etc. Contact them for your application. They also have developed new bolt on aluminum heat shields which incorporate stainless steel straps. These might be just the ticket for vehicles with converters, which generate more heat. Great safety item!

- LoBak Mufflers

Street LowBaks 32 inch or longer seem to get the job done, keeping with 2 1/2 inch pipe & a crossover tube. Stay away from the race version of the LowBak. Some have reported 24 inch LowBaks working with fairly healthy motors and keeping well below the sound limit. These seem to be the answer for sidepipes for Cobra's, yet must incorporate an additional Supertrapp attached to the end. Nevertheless this is far less restrictive than just Supertrapps.

- Supertrapps & Supertrapp Mufflers

Supertrapps definitely work! They are more restrictive than most of the race style mufflers, but they allow you to stay on track with no black flag. You can tune them on the spot for the most power possible. Supertrapps seem to be the real answer as a secondary muffler system. They are the assurance you need to tune your car quiet when all else fails. Supertrapp mufflers with the plates on the tail end are less restrictive than just the plates by themselves. These may warrant looking into for side pipes and Cobra's.

- Catalytic Converters

These act more like a muffler than can be imagined. A stock Mustang GT with catalytic converters will register down in the low 80's for decibels. If your car was designed to work and run with catalytic converters, it will be just fine. Catalytic converters definitely help and work! Don't take them off! If you take them off you place yourself in the same position as the vintage cars. That is, constantly trying to find a solution. If your car is tuned for catalytic converters, stick with them! They don't give up that much power. There are some companies that offer Hi-Flo catalytic converters that claim 50 -100 % gains in flow, which mean less back pressure. This would be the avenue to pursue while still keeping sound levels down. One such company is Random Technology in Stone Mountain, GA., with their Super High Flow converters 404-978-0264. Another source is M & M Distributing, Mesa, AZ., who carries Mor-Flow Converters 800-408-2287. Dynomax is a most recent developer of hi-flow converters. They are cheap and affordable. A final source for aftermarket high flow converters is Summit Racing Equipment at 330-630-0200.

- Stock Mufflers

Most stock street mufflers seem to work, these are somewhat more restrictive than the so-called performance mufflers. Remember, 2 1/2 inch pipe. Don't forget the crossover tube! Naturally 2 or 2 1/4 inch pipe would be even quieter!

- Walker/ DynoMax Turbo Mufflers

Turbo mufflers, as mentioned, seem to work. Aiming the exhaust to the ground in front of the rear axle causes a resonance & may cause you to be over the limit. Once again don't forget the crossover tube and out the back is the best method of quieting the car within the limit using turbo style mufflers. One of the better known brands is Dynomax, although this information could be applied generally to all brands. The Dynomax seems to be very efficient for dollars spent, robs very little horsepower.On very high strung motors or race motors, 2 1/2" Dynomax may be just over the limit. It may take 2 1/4" pipe to actually do the job. In the Dynomax line, stick with Super Turbo models, nothing less. The Ultra Flo model will not work.
Dynomax offers complete Cat-Back systems, which may interest owners of late model Mustangs & Corvettes, etc. Contact them for your applications.

- Borla Mufflers

Beware of using Borla mufflers without catalytic converters! See above. We have not seen anyone claim to conquer Laguna with Borla's by themselves. Using Borla mufflers, with 2 1/4" pipe may be the way to make them work. We know they work with catalytic converters and or Supertrapps on the ends. Let someone else try them first as a primary muffler. On the plus side these are stainless steel, carry a great lifetime warranty, and naturally these mufflers claim great power gains.
Borla offers complete Cat-Back systems, which may interest owners of late model Mustangs, Corvettes, & SHO's. etc. Contact them for your applications. We are confident that these systems with catalytic converters would pass the sound limits.

- Edelbrock Mufflers

Edelbrock has come out with a new line of mufflers. They are referred to as the RPM Series Mufflers. We don't have information on them yet, but know they have been vintage racing with two or three sets of them in the development stage. They claim good torque benefits, little horsepower loss, and many of the advantages of Flowmaster mufflers. These mufflers are stainless steel, and offer lifetime warranty like the Borla mufflers. They claim to be quieter than Flowmasters, yet we can't attest to the power relationship. We will report when more information is available.
Edelbrock offers complete Cat-Back systems, which may interest owners of late model Mustangs & Corvettes, etc. Contact them for your application.

- Bassani Mufflers

This really seems to be a popular addition to my information. This company makes an X-pipe bolt on fabricated crossover for the late model Mustangs, including the 4.6 liter variety. Their mufflers are good and adequate especially when used with the cats. Quality and fit really seem to shine with Bassani.

- Mandrel Bent Pipes

There are many companies forming mandrel bent pipes lately. This enables one to go with a small diameter tubing, utilizing quieter readings while still keeping up good flow characteristics. A normal 2 1/2" pipe system with normal muffler shop bends will reduce down to around 2.5 square inches of exhaust flow. The mandrel bent tube will maintain 3.14 square inches throughout. This is commensurate to other pipe diameters.

- Latest Attempts and Technology

The latest race muffler set-ups are proving that single exhaust systems are the most advanced. They offer virtually no penalty of power, yet quiet things down. Consult your muffler manufacturer. Along the lines of two devices, we saw a Flowmaster system with either Lobaks or glasspacks welded in- line to help cure the problem. This worked! The system was 3 inch, sort of an exception. The motor was a 377 c.i. Windsor stroker!

Harley Davidson motorcycle pipe baffles. We have seen these inserted in the end of the exhaust system to help quiet the system a bit more. Naturally you will need a straight shot of pipe at the end to incorporate this.

A 2nd Crossover pipe. Think we emphasized the crossover pipe enough? Some are now claiming another decibel or so when you add another crossover pipe after the mufflers.

- Reducers and Trick Pieces

If you are fabricating an exhaust system and want the smoothest transition of exhaust gas possible. Here are a few part numbers from Flowmaster on Venturi Reducer Cones. They reduce pipe diameter from one size pipe to another with the least amount of restriction.

#R3025 3" reduces to ..... 2 1/2" 8" long
#R3530 3 1/2" reduces to 3" 8" long
#R2424 2 3/4" reduces to 2 1/4 " 8" long

If you are fabricating a single exhaust system and want to blend in two pipes with the smoothest transition possible here are a few part numbers from Flowmaster. These are referred to as Force II Scavenger Series Y Collectors.

#Y-200250 2" inlet y's into 2 1/2" outlet 16 1/2" long
#Y-214300 2 1/4" inlet y's into 3" outlet 17 1/2" long
#Y-238300 2 3/8" inlet y's into 3" outlet 16 1/2" long
#Y-250300 2 1/2" inlet y's into 3" outlet 16 1/2" long
#Y-250350 2 1/2" inlet y's into 3 1/2" outlet 17 1/2" long
#Y-300350 3" inlet y's into 3 1/2" outlet 17 1/2" long

- Some Other Factors

Noise is noise! It doesn't have to be exhaust sound to be noise and trip the meter. Here are a few of the things that might play havoc with the sound meter, while you are aiming at the exhaust system.

- Quick change rear-end, like a Franklin
- Flex fans for the radiator
- Gear drive timing sets
- Weber carburetors with velocity stacks
- Mechanical fuel injection with velocity stacks
- Turbo charger swooosh!
- Cam timing. Who can tell us what is the best type of cam to run for sound? Lots of duration or little duration?
- Compression ratio, the more you have, the more the bang.
- Exhaust leaks, holes in pipes or bad connections, etc.

- We Need More Help

We are looking for more information all the time. Please pass on what seems to work for your car if you have licked the sound problem. Here are some areas that really need attention or help. We have made progress in many of these areas, yet the more the merrier when it comes to ideas, thoughts, & results.

- **Side pipes, Cobra's**, 'Vettes, etc.
- GT-40 bundle of snakes exhaust
- Nascar, old or modern, includes Trans-Am old or modern
- Vintage race small blocks
- Late models with off-road pipe option
- Rotary Mazda motors, Porsche Turbo's and modified 911's

- GT-40 Exhaust

Most recently we saw the neatest bundle of snakes exhaust. The owner left the stock bundle of snakes exhaust headers on the vehicle. What followed was a slip fit arrangement atop the engine which mated to two turbo style mufflers which made the grade of 92 decibels or lower. He used a stainless steel (which has nothing to do with sound levels) which enhanced the look of the system. He simply slips the exhaust off and attaches the straight dump pipes which attach to the main header system and you're all set for the power throbbing sound at tolerant race tracks.

For a table of comparison and sample readings taken of club cars at Laguna Seca, **click here** .

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Race mufflers by Automotive-4you.com

Race Series mufflers at Mufflers 4You are built to provide competition-proven performance. Aside from universal mufflers that are perfect for most kinds of exhaust systems, we also offer specially designed mufflers to address the needs of serious car racers. Our great selection of hardwearing race series mufflers are what you need to gain maximum power especially during competition.

Many racing events are now requiring cars to have sound dampening devices to meet the strict decibel level requirements. For those vehicles that can't meet the restrictions will be disqualified. Only Magnaflow race series mufflers can make your racer competition-legal. This kind of muffler offers free-flowing design for better flow of exhaust gas from the system. In addition, this Race Series offers no restriction in the inner pipe, thereby allowing your engine to have the utmost performance.

Available in round and oval shape, our offered race performance mufflers deliver flow-through power with correct decibel levels. Furthermore, these add-ons for your exhaust system help your car gain more horsepower. Made of quality stainless steel, these car mufflers can survive prolonged use. The mirror-polished shine gives a striking look while cruising along the street. And you will hear a true performance sound with a race series muffler.

Whatever your aftermarket muffler needs, we have the ideal products in stock and ready to ship. Our comprehensive online catalog is secure and easy to use. If you don't know what type of race series muffler is right for your ride, we can help you. Just give us a call and speak directly with one of our customer care specialists.