

BY JASON ISLEY LEAD PHOTO D.E. BAER PHOTOS PHILIP ROYLE

No one ever said racing was cheap, but it certainly can be affordable. Typically, the least expensive entry into the realm of Club Racing is learning from someone else's mistakes. On any given month, the classified ads in *SportsCar* show pages of used racecars for sale – cars that can often be had for a fraction of what they cost to build. Not only do you stand to save money by buying a used racecar, but you will also cut down on the amount of time spent with a wrench in your hand.

Like any used car, a used racecar can come with its own set of challenges and issues, particularly if the car does not have a clear history. If you are looking at a used racecar and its logbook has vanished, you might want to be cautious; that logbook could be missing because there was something the owner did not want you to see.

But perhaps you can't find the pre-owned racecar you

want, or what you have seen does not meet your expectations. This leaves a number of options. Salvage auctions are popular places to find cars – often what an insurance company writes off as a totaled car is a great start for a racecar. Theft recoveries can be a great starting point, as thieves often go after valuable airbags, seats and stereos – items that are not needed in a racecar.

We chose a different route. Like many of you, we have an older, but still useful car sitting in our driveway. Our 2004 Nissan Sentra SE-R Spec V has served us well as a trusty daily driver, occasional autocrosser and we have even picked up a National RallyCross event win with the car. It was time for it

to start its next phase of life as a Showroom Stock C Club Racing car.

There are a number of advantages in using a car you already own – most notably, you know the car's history and you probably already know how to work on it.

The problem for us was, we had next to no money available – but why should that stop us? Over the course of a few weeks, a plan was made and parts were ordered, and before we knew it, we were racing on a dime.

GETTING STARTED

The premise of the Showroom Stock category is it's a place for members to race street stock, legal automobiles.

Don't think you can afford to go racing? Think again. For as little as \$3,000, we hit the track

**CLUB
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DIME**




Essentially, with a few exceptions, you are racing a car as it was delivered from the factory, so it can still be driven on the street. A few wear items will need to be replaced, like tires and brake pads, but for the most part the modifications to the cars are safety related. Passive restraints like the airbags must be disarmed and may be removed. Aside from that, you are mostly installing the required safety gear – this is an ideal class to build for when you already own the car.

To keep the motor running cool, the factory air conditioning system can be removed. For some cars, this is not as easy as it sounds. Many cars that are Showroom Stock legal come standard with a/c, and no provisions were ever

made to route the accessory drive belts without an a/c compressor – this generally means custom fabrication.

For our SSC Sentra, the Nissan Motorsports support program offered pieces from another car in the Nissan family that did not have standard a/c, making for a simple and clean removal. Once removed from the car, selling or trading some of the items like the a/c and audio equipment that you are allowed to remove is also a great way to reduce costs on your build.

Another open area is fluids. Using the “ounce of prevention is worth a pound of cure” method, we went to the top of the line. Royal Purple has a complete line of fluids to lubricate every moving part on

your car, and its great reputation has been earned on the track. We treated the engine, transaxle and power steering with the appropriate Royal Purple lubes, and after flushing the coolant from our radiator, we poured in some Purple Ice.

To keep the bad stuff out of the engine, we replaced the original paper air filter with a reusable one from K&N engineering. While we were at it, we installed a K&N oil filter to trap any impurities. The handy nut that is integrated into the oil filter also makes changing the filter a snap.

One final step under the hood was to find an acceptable home for our AMB transponder. Most tracks do offer AMB transponders



for rent and, in our area, it is about \$60 a weekend. Rather than renting, however, we opted to get our own, as this is the kind of item that pays for itself in the long run. Also, owning your own transponder allows you to take advantage of MyLaps.com, where you can pull up race results and personal lap times – something that’s an incredible reference, allowing you to compare your lap times to those of your competitors.

We found a great transponder mounting point off the radiator core support. This position was the optimum height, which Bill Skibby of AMB tells us is around 18 inches. It was also near the front of the car but still behind the main bumper structure, so the transponder remains protected.

THE ROLL CAGE

If you are building one of the more popular cars, a roll cage is easy to find – this was not the case with our Sentra. As it turns out, relatively few B15 Sentras have been prepared for Club Racing. Fortunately for us, it seems that no matter how obscure the car, Kirk Racing Products has a roll cage for it. In the case of the Sentra, Kirk offers both a bolt-in and a you-weld kit – the company will even build you a custom cage if you can get your car to Kirk’s shop.



The Sentra performed as you might expect a midsize sedan to, but it was fun nonetheless – and the competition was great. This on-track image was captured with a GoPro Motorsports Hero on photo mode.

Our trusty Sentra has served us well as a daily driver, autocross and RallyCross racer, and now on the track.

For the ultimate in safety and driver comfort, it is hard to beat a custom cage. Tricks like running the front down tubes through the dash can give the driver a little extra space and help spread the load over the chassis, helping with both safety and stiffening the car. A set of NASCAR-style door bars can help your ingress and egress, as well as offer added protection in a side impact. However, these custom features are optional per the General Competition Rules, and they also come at a price – when you’re building on a budget, you never want to skimp on safety, but sometimes you must give up a little when it comes to convenience.

As a side note, we would never suggest anyone sidestep safety, but luckily the GCR has safety standards in place to prevent you from cutting corners. These standards should always be adhered to or exceeded.

Since our project was very budget sensitive, we elected to forego a custom-built cage in lieu of one of the bolt-in variety. We ordered a bolt-in cage from Kirk Racing Products. This cage would get us on track for the least amount of cost while still meeting the GCR’s requirements.

The basic cage kit cost \$725, but there was an extra \$45 fee for the second pair of SCCA mandated door bars. At the same time, we ordered the optional dash bar for \$35. The weld-in kit is actually \$50 less, at \$675, but the big cost difference comes in labor and installation time – expect to spend twice as much time installing a weld-in, or paying a welder to do it for you.

Since the bolt-in kit shares the same structure and design as the weld-in kit, the fit and level of protection are similar. According to Mark Stewart of Kirk Racing Products, there is not a measurable difference in safety between his two kits. “The weld-in kit has the advantage of helping stiffen up the chassis,” says Stewart.

Certainly, stiffening up the chassis



can help in handling and, to some extent, protection in an impact, but the bolt-in kit meets every requirement of the GCR so we knew it was still a safe choice.

With the roll cage kit in hand, we set about removing the seats and pulling up the carpet to prepare for the installation. Or goal was to complete the installation in one day, which Stewart says is about right for the kit we ordered.

The installation starts with placing the main hoop, front down tubes and rear braces in the car. The fit and finish of the Kirk cage was second to none. In particular, the main hoop fit could not have been better – it was snug against the roof and fit perfectly between the sunroof and dome light. Other than a little trimming on some of the interior plastic panels to pass the tubes to the car's tub, the main cage installation was simple and quick.

One small thing Kirk does that really helps speed up installation and make your life easier is the company pre-drills all of the holes for the telescoping, bolt-together joints. Drilling a few holes may not sound like a big deal, but trying to drill the tube and sleeve with the cage up against the headliner could quickly turn into an act of frustration.

Not having to grind away paint and undercoating to weld the base plates is where you save a lot of time with the bolt-in installation. However, you're not completely off the hook – the door bars and dash bar still have to be welded in place. The race seat, your door panels and the height at which you run the dash bar, all affect where they are attached, so it can't be done ahead of time. The great thing is Kirk already has the proper contours cut into the tubes, and they have the GCR-approved slip joints installed, so once you weld them in place they will be removable.

Welding in the dash and door bars is a point where, if you have any doubts about your ability, you should hire a professional. You may have to pay to get these bars welded in, but that is a fraction of what it would cost to have the entire cage welded for you. The GCR requires that all welds meet the Structural Welding Code set by the American Welding Society – if you don't know what that means, you should definitely not attempt to weld the additional bars yourself.

We evaluated our options for installing the dash and door bars and decided to blow our budget in the hopes of saving money in the long run. Instead of paying someone to weld in the bars,



(ABOVE) Recycling items like the seat and harness from another project helped us save money. (LEFT) The Kirk Racing Products bolt-in roll cage fit perfectly and installed with simple hand tools. (BOTTOM LEFT) When using a bolt-in roll cage, take special care to follow the manufacturer's instructions, double checking the GCR that the cage will be legal.

which would have been a few hundred dollars, we decided to invest in a welding machine.

We decided to pick up an HTP America MIG 140. The MIG 140 can handle up to 1/4-inch thick material, and is small enough we can transport it for emergency repairs to our racecars. At \$749, the MIG 140 was a great value, but this did nearly double the cost of our cage. However, having this on hand means we won't have to pay for welding in the future, and the convenience of being able to fire it up at any time we need to make repairs or fabricate a small item is a big bonus.

It is vitally important to emphasize once more that if your welding skills are not up to par, you may be endangering yourself on the track in the event of any on-track contact. A roll cage is not an item you should learn to weld on.

The door bar installation is straightforward, just make sure that you have your race seat mounted in its final location, so you can check for interference. Once the bars are tacked in place you can again remove the seats to make the final welding easier. Our MIG 140 made quick work of our four door bars. However, with the clock ticking, we skipped the GCR-optional dash bar for our Sentra's maiden outing – we will install this at a later date.

PERSONAL SAFETY ON A BUDGET

PREPARING THE CAR IS only part of the equation – a driver's personal safety is a completely separate, but equally important matter. Just like anything in motorsports, often the only limitation is your budget. However, not having a lot of money to spend does not mean you won't be protected. The basic rules apply: shop smart and you can save big.

When shopping for helmets, we looked at number of options. With cost being a concern we decided to stick with a fiberglass helmet, versus the more costly composite units. The HJC AR-10 was only slightly heavier than the Si-12 composite version, and meets the same SA2005 requirement – but gets it done for \$400 less.

When selecting a driving suit, the SFI and FIA rating systems are very useful, as the GCR spells out a minimum requirement for your safety. Looking to Vesta Motorsports, we found a good range of suits, all at great prices. From Vesta's Safe-

Quip line we selected the 120 Series multi-layer suit. Constructed of Pyrovatex FRC and Nomex, it offers great protection and comfort at a very reasonable \$279.99. A pair of Safe-Quip



SCAVENGING PARTS

With our funds running low, it was time to save some money. One great way to do that is with used equipment. This was easy for us as we were able to tap into our pile of inventory from previous projects. I don't want to say we are packrats, but some stuff is too cool to get rid of. So, a couple of zero-dollar items helped get us back on track.

Left over from our Project MX-5 car (*SportsCar*, July 2006) we had a nice Sparco fire extinguisher and a Racetech RT 4009 HR seat, which had also spent time in the Sentra during its brush with RallyCross (*SportsCar*, July 2008). We also had the Impact Racing harness and quick-release steering wheel from our RallyCross efforts.

If you don't have your own pile of leftovers, scouring Internet forums can reveal a lot of really good buys on used equipment. For example, a quick search on a Nissan Sentra forum revealed stock Sentra wheels for \$50 each – so we bought a pair.

Keep in mind that many items have a limited number of years they can be used, and if you have any doubts about an item's history, you should pass on it. You would not want to install a used race seat that had been involved in a crash – its structure may be compromised and you could pay a bigger price down the road.

TIP: SAVE ON SHIPPING

Moving on, we had a number of items left on our safety checklist. Our friends at I/O Port Racing Supplies make it easy to spend money –

351 gloves, and RaceQuip Euro shoes finished off the package for less than \$150. Don't forget the Nomex socks – we found a pair from Sparco for around \$20 on the Internet.

For this race weekend, we also chose to test a head and neck restraint. A head and neck restraint is currently not required equipment for Club Racing, so using one is strictly a personal choice.

The unit we tested was the Hybrid Pro by Safety Solutions. The Hybrid Pro simply disappears once it is strapped to your body – it almost becomes part of your drivers suit, and we found it did not hamper entry or exit from the Sentra in the least. It is also one of the few devices that will work at any layback angle, so no matter what type of car you have (be it production based or open wheel) you will be able to use this device.

The unit we tested was the full carbon fiber unit, and it was a little pricy at \$995, but Safety Solutions recently released a composite version of the Hybrid Pro at a very reasonable \$649, we expect that unit to be of the same great quality and just as easy to use.



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almost too easy. Having a huge selection makes it possible to find everything you need, or just want. We also found you can save on shipping by purchasing a lot of items from one place.

We picked up an I/O Port driver's side window net and mounting hardware. The net is a combination of mesh and webbing, giving a good mixture of strength and visibility. The spring-loaded top rod makes using the net a breeze, and its low profile design means you won't impale your head on the mount when climbing in and out.

Even though it's not required, we also picked up a Safety Solutions C5R right side net. Our project ITA Miata has one of these, and we really love how it firms up the seat and adds protection in a side impact.

The last item needed inside the car was adding roll bar padding to areas where the driver could come in contact with the cage. Once again, I/O Port was our one-stop shop, as the company has a variety of approved padding in varying thicknesses. We used the thicker BSCI SFI 45.1-approved padding in areas where we had plenty of room, and the thinner Longacre padding where the confines were tight.

We also ordered a pair of I/O Port tow straps so we can be towed back to the pits. These soft tow straps are super easy to install, as they can be routed around obstructions and through small openings – but most importantly, you will never whack your legs on them as you work on your car in the pits.

GOING FAST AND SLOW

The Sentra's original brake rotors looked a little too weathered, and as our car had the smaller standard brakes, we decided to play it safe and order new parts from the Tire Rack. A set of Brembo blank rotors replaced our old ones, and a set of Goodridge G-Stop lines replaced the factory rubber hoses. The final step was a set of Hawk Blues in the front and HP+ pads in the rear – this setup would allow us confidence while pushing it into the braking zone.

A rather porky car by SSC standards, our Sentra has to weigh 3,100lbs in full race trim, so we knew we needed a durable tire – but it still needed to be fast. Inspired by Lee Niffenegger's SSB National Championship title at last year's Runoffs, we decided to outfit our Sentra with the same BFGoodrich G-Force R1 tires he used. The R1s are already a proven winner and have a reputation for being very durable – something we will put to the test.



(ABOVE) Having your own welding equipment can save you a lot of money in the long run, and it's an invaluable piece of shop equipment that every racer should consider owning.

(TOP LEFT) Installing fresh brakes before our race gave us confidence and meant we would not spend time working on them at the track. The built-in nut on the K&N oil filter makes changing it a breeze. (BOTTOM LEFT) Using good fluids is cheap insurance for your car's moving parts.

Once we were outfitted with new rolling stock and brakes, we pulled the Sentra on to our Longacre scales. While our car is not equipped with any ability to adjust corner weights, we were able to affix our ballast within the limits of the rules to help spread things out – more importantly, we knew heading to our first race that we would not be under weight.

The Longacre scales also provide a nice platform for checking our alignment. Using our Smart Strings and Smart Camber gauge, checking the alignment was an easy task, and they are small enough we can bring them to the track for fine-tuning. Over time, these items (which we obtained for past projects) have really paid for themselves by avoiding costly trips to the alignment shop. It is with this same reasoning we obtained the aforementioned welder.

SUCCESS!

In March, we took our newly completed Sentra (actually, we were still working on it when we got to the track) to Buttonwillow Raceway Park in Southern California for a Double Regional race weekend.

Our weekend was a success on many levels. First, the car passed tech and now has a logbook – this means all of our hard work paid off. The cage install was completed properly and our seat and belts were all up to par. The only feedback the scrutineers gave us was regarding the

EQUIPPING THE DRIVER

BEFORE YOU CAN GET on the track at a Club race, you will need to obtain an SCCA competition license. One way to obtain your license is by attending an SCCA accredited Drivers School, which is exactly what *SportsCar's* Associate Editor Jason Isley did in order to obtain his competition license before taking the Sentra to the track.

Just a short drive from Los Angeles, Calif., located at Willow Springs International Raceway is Danny McKeever and his Fast Lane Racing School. As the official driving school of the Cal Club Region, it is a great choice for anyone looking to make the jump into Club Racing. Previous to opening the Fast Lane school, McKeever spent 12 years as the chief driving instructor for Cal Club, a position currently held by Jim Bishop, who is an active Club racer and a Fast Lane instructor – these guys know what qualities the Club is looking for because they are part of it.

The Fast Lane SCCA course consists of three days, with most of that time being spent on track. While the on-track fundamentals (as well as a test) are given in the classroom, this represents only about an hour of each day – the rest is spent on the track.

One very nice feature about the Fast Lane school is that they will let you bring your own car – this can be a great way to get some extra seat time in your new racecar.

However, using the Toyota Celica GT-S school cars really allows you to focus on the task at hand, and the Improved Touring-like prep of the Celicas makes them a very lively ride.

At Fast Lane, the class size is kept small to maximize the instructor-to-student ratio; this also means more track time for everyone. Rather than working from preset criteria in the car, the instructors work on what the individual students need – if you need work on the basics, that's what they do. The instructor's goal is to take each person to *their* next level.

The Fast Lane school, or any of SCCA's other approved Drivers Schools, is a great choice for anyone looking to complete their SCCA school requirements, or just looking for some great driver coaching.

To find an accredited Drivers School in your area like Fast Lane, go to www.scca.com, click the "Club Racing" tab at the top and select "Accredited Schools" in the left hand bar.




A week after the car's Club Racing debut, we entered it in the El Toro ProSolo. In full SSC trim, the Sentra was a little out gunned, but it was fun nonetheless.

cleanliness under the hood – but come on, it was a RallyCross car.

On the track, the Sentra ran great, aside from some excessive (almost frightening) body roll, the car ran strong and consistent. The biggest concern we had going into the weekend was tire wear. Having to finish the race at 3,100lbs, and essentially having no negative camber up front, we spent the weekend watching the front tires very closely. We were very pleased to find the tires were extremely consistent during the race and, after two days of hard racing, the original set of BFGoodrich tires were still going strong – in fact, they even looked great after running a Tire Rack ProSolo event on them in the same car the very next weekend.

On the racetrack, we were rewarded with a pair of SSC wins, and we managed to finish just outside the top five in a mixed field of faster Touring and Improved Touring racecars (one of which was our project ITA Miata).

Overall, we were very satisfied with our budget Club racer. Tallying up our costs, we discovered that \$3,000 was all that was required to get us on track in a competitive car that is eligible for both Regional and National Club Racing. Obviously already owning the car was key for such a small outlay of money, and already owning a seat and harnesses really helped, too. Had we needed to purchase the car, we found comparable model to ours for \$7,000 for a car with a clean title – still a reasonable amount of money to get on track. 

(RIGHT) Your AMB transponder should be mounted about 18-inches above the track surface, with no metal below it. (FAR RIGHT) Our Longacre scales, Smart Strings, a Smart Camber gauge and Race Ramps let us do setup work any time.



DATA ACQUISITION

ONCE YOU LEAVE YOUR Drivers School it is up to you to find the fastest way around a racetrack. You can spend lots of time testing, hire a driving coach and run infinite laps to learn the quick way around the track, or you can use a virtual driver coach.

At our Double Regional race weekend, we were fortunate enough to meet up with the team from RLC Racing, and they were nice enough to install the Track Commander in our Sentra for the weekend.



In the past, we have had experience with various data systems and lap timers, but this one had a feature we'd never used before – predictive lap timing. Rather than coming in at the end of a session and downloading data in the attempt to lower your lap times, the predictive lap timing feature breaks the track up into segments on the fly – as you race around the track, you are instantly updated as to your segment time, and the display tells you if you are going faster or slower than your previous fastest lap. If you try a new line through one corner, you'll get instant feedback telling you whether or not it worked.

RLC's 3.5-inch display is easy to read, even in direct sunlight, and the full color display alleviates confusion – there it is just taunting you, if you see green you know you went slower. Seemingly, with every mistake, the display lights up and lets you know you

RICHARD S. JAMES

SOURCES

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www.amb-it.com
- BFGoodrich Tires**
www.bfgoodrichtires.com
- Fast Lane Racing School**
www.raceschool.com | (888) 948-4888
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www.hawkperformance.com | (800) 542-0972
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www.hjchelmets.com
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www.impactraceproducts.com | (317) 852-3067
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just slowed down. It is a relentless, full-time driving coach that tells it like it is – but used properly, the pay off is quicker lap times during the same track session.

Aside from this very useful feature, the Track Commander also has GPS mapping, lap timing, PC playback analysis and can be synchronized with video. The data is collected via a 3-axis g-force sensor and GPS at speeds of up to 20Hz. The information is stored internally, and can be transferred to your PC using a USB cable or Flash Stick.

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