



Set Up Your Sled To Race Cross-Country

Anything can and will happen during a race, especially a cross-country race. One of the first rules of cross-country setup is if you are going through the sled and find something you think may break or fall off or cause a problem, then fix it right away because chances are it will. In my years of cross-country racing I have DNF'ed for many stupid things including a broken throttle cable, skid bolts breaking or falling out, electrical shorts, fuel line problems, seat falling off, and handle bars coming loose.

by Arne Rantanen Jr. from Black Magic Powersports

One time I had the rear axle bolts come loose and the tensioner bolts broke, broken chains or stripped gears and other things I never would have thought of such as a plastic coolant line fitting that broke. Not to mention stuff you can't control. Over the years I've seen everything including guys hitting trees, parked cars, deer, slamming into drainage ditches, hitting other riders or just coming off the sled. So, are you ready to go cross-country racing? If you think you're ready this How To should send you in the right direction to set up your sled and at least finish, which is sometimes the biggest challenge in cross-country. I will go through three stages, each one progressing to a more advanced setup for a more advanced and more serious rider. But first, let's talk about suspension

Suspension

It doesn't matter who you are, you're going to want a good suspension setup for cross-country. There are a lot of sleds you can race right out of the box, but most, if not all, sleds will benefit from some shock tuning. This is where you need to hunt someone down right away who can take your shocks apart, re-valve them and put them back together.



Re-valvable shocks are a must have item.

Whatever sled you have there is someone who has a cross-country friendly valving setup for it. We usually have a previous setting we like to go back to for starters and adjust as needed and Carver Performance helps us a lot with valving setups as well. This is a huge area and I know guys like Bryan Dyrdaahl win races because of proper suspension setup. You can ride your sled with an out-of-the-box shock setup, but chances are if you're good enough to go cross-country racing you'll be disappointed. OK, now for Stage 1.

Stage 1

The goal here is just to finish the race with all your body panels and various other sled parts intact and to have your sled perform at a basic, competitive level. Step 1 should be to get a copy of the rules for wherever you're racing and read it. You can't race if your sled won't pass tech. If the circuit follows ISR rules (like the USCC does)

there are basic safety items required such as a tether cord, tape on the lights and no orange on the sled.

One of the first things you need to look into is traction products. You want to stud the track because without studs you're dead in the water. If you don't know, ask whoever made your studs for a studding pattern. We try to stick with Stud Boy products but there are other good ones out there as well.



Up front, I have been partial to the old full aluminum saddle Arctic Cat skis, so I like to put a set of those on. Plus, there are a lot of carbide choices for these skis. Some riders prefer USI skis because they use an aluminum saddle too. A plastic saddle ski won't take any long-term abuse like an aluminum saddle will.



Extra straps and pins will help you finish the race in one piece.

Look over the machine and determine what can come loose. I'll give you a hint on a few things such as exhaust springs and hose clamps, you want to put silicone on all of them to reduce vibration and help keep from coming loose. Extra tie-downs on the hood and pins in such things as side pods are a good idea too. Also, check your ski alignment and set to 1/8-inch toe out measured from carbide edge to carbide edge. Other things like a skid plate, billet shock spring retainers, billet spring adjuster blocks and a fourth wheel on the rear axle are good things to install at this point. You might want to put a strap over your seat, too, just in case, and get a good windshield to help keep warm. Now go race and see what happens.

Stage 2

You raced your sled, nothing fell off and you finished and did OK. But you look at your times and you know you can go faster. So, what next?

The best place to get more performance out of your sled is with clutching. We spend countless hours testing various clutching. This is one of the most time consuming things when it comes to setting up a sled (other than shock valving) and is very important. Proper clutch setup not only means going fast, but it can be a race breaker if not right as you may blow belts left and right or you will be just plain slow. Dialing in your clutches isn't something you do in an afternoon, it takes a lot of test sessions, trial and error and you'll no doubt DNF a few times because of it. For that reason I don't know anyone that will tell you exactly what they are using, but most race departments or speed shops will give a pretty good set-up if asked nicely and you're willing to promote them a little.

You also want to make sure you align your clutches. If they're off it will rob speed and efficiency from your drive system. If they're out of alignment shim the engine or secondary as needed to get them dialed in. Also put a straight edge on your chain gears or ACT drive gears



Clutching, clutching clutching...

and check their alignment, shim them as needed. Then move on to the skid frame and measure between the rails at the front and back and from corner to corner to make sure the rails are squared. If you do these three things it can make the difference of 2-3MPH on top end. Also, put some rail braces on your skid if it doesn't already have them and some extra wheels at hyfax wear points.

Since you are getting more serious about racing and finishing, there are a lot of other things you can do at this point too, like inspect all coolant hoses for possible wear spots. This was especially important on the 2008 Arctic Cat Sno Pros, as there were a couple areas that could have rubbed. Inspect all wiring connections and make sure they are assembled with good electrical grease. We also inspect all the ground wires for proper grounding and sand any painted surfaces if needed. Check all cables



Auxillary brake cooling duct keeps the binders cool.

and wiring for proper routing and make sure they won't rub and cause a short or kink. Use wire loom or other barrier where needed. If you have an engine with exhaust valves we will check the routing on those cables and also adjust per manufacturers specs. Also clean the valves often because a dirty valve can rob RPM. Check all the bolts in the sled and loctite important ones such as front suspension, a-arms and all skid bolts.

At this point you're riding a lot harder and, whether you realize it or not, you're putting a lot more force into your bars. You want to make sure they stay put. To do this you can sand the paint off the handle bar clamp areas so it's bare metal to metal contact. We also like to use a hammer and punch and make punch marks to give the clamps a better grip. You've got more setup and a faster sled. If you don't get good results now you need to look in the mirror.



A skid plate will save your hide.

Stage 3

At this point you've got some experience and you're likely going for a Top 5 finish or a win, or you're getting ready to enter a huge race such as the Red Lake 1-500. Your machine needs a lot more prep at this level and you might need outside help, but that's up to you. We pretty much take the whole sled apart to prep for this level. Beyond what I've already talked about we will put extra rivets in high-stress areas in the chassis to give the sled more strength. We also inspect the stripped chassis and look to reinforce any potential weak areas and we'll do a lot more engine work.

We like to take the motor out and disassemble it completely. Then we check the crankshaft for runout, check to make sure the journals are correct, check the port heights and measure the head volume for proper spec and re-assemble. Don't assume because the sled's new it's all good because there have been years where we have found engines to be way off spec.

Sometimes, but not always we will check stator and coil output. Racing requires a headlight, but we will sometimes disconnect all but one bulb. Probably more superstition than anything, but if it helps by reducing the electrical draw then it's worth it.

At this point you're looking for ten little things to add up to one big thing, like 1MPH. Getting an extra MPH can be a lot of work. One thing we like to tweak is the chain case or diamond drive. As I said before, we make sure they are aligned properly but then we also like to run just as little fluid as needed. Usually if it requires 8oz of fluid then we will mix 6oz of chain lube with 2 oz of Energy Release. That ER works magic and has saved us many chains and sprockets.

Also, and this isn't always done, but if we are looking for true speed, we will take every wheel out and disassemble them, blow all the grease out and reassemble them with very little grease and some ER. This however requires some maintenance as the wheels with no grease will collect water and rust if they sit for a while.

And Finally...

Don't be afraid to ask for help. Most guys at the races are more than happy to give advice, you just have to ask. Also, checklists are your friend. If you're starting out racing cross-country chances are you're doing everything on your own, or maybe you have one guy helping you. Either way, I can tell you a checklist will eventually save your bacon. Even top pro racers like Dyrdaahl use one in their maintenance sessions. There are so many areas to address on the sled, so many things to bring to the races and at the same time you're always thinking about riding, so if you don't make a list you're sure to miss something and that will inevitably be the thing that makes you a DNF.

