

STUDDING YOUR

Traction studs have finally begun to find a place on the sleds of Quebec snowmobilers. While there are still many pundits who refuse to see any practical use for studs on a normal trail sled, the pendulum is swinging as many more riders are coming to realize that traction products are veritable and proven safety devices that can and will make your riding safer, perhaps even save your life. Of course, the fact that our most recent winters have been a mixed bag of low snow, freezing rain, mild spells and everything in between is surely partly responsible as icy trails are much more frequent and widespread than they ever were. These are precisely the types of conditions that studs are designed to handle, giving you the surefootedness and control that even the most aggressive rubber track cannot.

For those of you who are now ready to take the leap and enjoy the numerous safety benefits of studs we have dedicated this L'Atelier to helping you make the correct choices when it comes to selecting and installing the right studs. We were fortunate to be able to call on Sylvain Laflamme, racer, trail rider, and a long-time user and endorser of studs, to help us put this together for you so let's begin...

Biting and scratching

In this age of impressive and aggressive new (rubber) snowmobile tracks, one could be forgiven for thinking that these represent "one-stop" traction general stores of sorts. Unfortunately, despite the dramatic improvement in virtually every measurable dimension of performance, these new tracks still fall short when it comes to generating any significant control for you and your snowmobile on slippery or icy surfaces. In such conditions, there is one thing between you and a potential catastrophe, the stud.

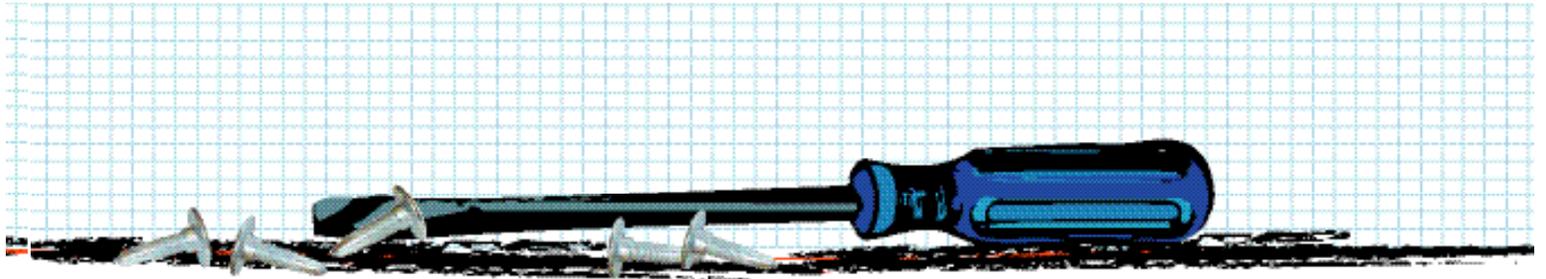
Suffice to say it doesn't take a Ph.D. in physics to understand that studs work by "biting" into the ice and that this bite is what gives you traction (for accelerating, braking,...). Once studs are arranged around the outside of a track, they essentially walk over the underlying surface, biting as the sled moves along. In a constant speed scenario, the latter statement is applicable but in the real world, sleds are often moving at changing rates of speed and in such circumstances, studs generate "scratch lines", the result of the stud being forced (pushed or pulled) across the slippery surface. As each stud (generally) produces its own line, it stands to reason that the more lines there are the more traction they produce. Logically, then, all other things being equal, more scratch lines equals more traction as it is indicative of more studs carving out their own separate traction-producing trajectory through the ice.

Stud types and selection



There are two basic types of studs, the "T-nut" and "push-through" types. In the case of the T-nut stud, the stud's threaded extension is screwed into the base (via the track). While lighter and less costly to produce, the T-nut stud has as its main disadvantage the possibility that a stud coming undone could be projected away from the sled, potentially harming a by-stander or following snowmobiler, or damaging a heat exchanger. The more recently introduced push-through type gets around this matter by combining the stud and base into a single unit. In this case, the stud tip is pushed through the track with the washer and nut being screwed on afterwards. As you can see, this design drastically reduces the risk of a stud becoming a projectile. It is largely for this reason that the push-through type has become the stud of choice for trail riding. As a result, the T-nut has been relegated almost exclusively to racing applications.

While there is some variety in the various push-through models offered, they are much more alike than different. That being said, an honest assessment of your needs will help you to make the best possible choice, something your dealer or stud manufacturer can assist you with. Just remember that in order to ensure longevity, any stud you select should have a carbide tip. This will guarantee you durability and a long life despite road crossings and other such surfaces and obstacles which are known to be harmful to studs.



WAY TO SAFETY

Text and photos by Michel Garneau, in collaboration with Sylvain Laflamme



In light of the above, the two most significant selection choices you will make will consist of what length stud to select and how many to use. In the first case, the proper length is generally determined as a function of the desired stud penetration, or a measure of the length of the stud that protrudes past the track lug and actually digs in. Generally speaking, one should aim for between 2 to 3/8" of penetration, any less resulting in less than optimal traction, any more causing undue stress on the stud and track. Fortunately, virtually all stud manufacturers have developed easy-to-use reference tables that will give you the guidance you need in selecting the right stud. As a rule, tracks with 1" lugs should use 1.075" studs and 1.25" lugs should be matched up with 1.325" studs.

Now that we have the right stud for the job, we must determine how many to use. This is generally a function of two main parameters, engine power and riding style. It stands to reason that more powerful engines require additional studs in order to properly channel the added torque being fed through the track. Similarly, more aggressive riders will also want to install more studs for added control and traction. Again, we encourage you to refer to the stud and/or sled manufacturers' guidelines. Besides, there is no such thing as the perfect stud for snow conditions change on an almost hourly basis. From experience, however, a normal trail rider with a sled whose output is below 120 hp should be alright with 2 studs per bar (or 96 for a regular 121" track). Snowmobiles with 120-150 hp can typically get by with an average 2.5 studs per bar (or 120 for a standard track) and sleds over 150 hp should use 3 studs per bar (or 144 for a 121" track).

With the actual stud question being out of the way, we are now left to select the washer to be used, or as it is known the "support plate". Over the years, stud manufacturers have introduced support plates in various shapes (round, square and now even triangular), materials (nylon or aluminium), even format (single or double). The possibilities can be intimidating to be honest but just remember to keep it simple. While each variety of support plates has its advantages (and proponents), the round aluminium type is a versatile choice that not only holds up well, but is also easier to install.

Tools

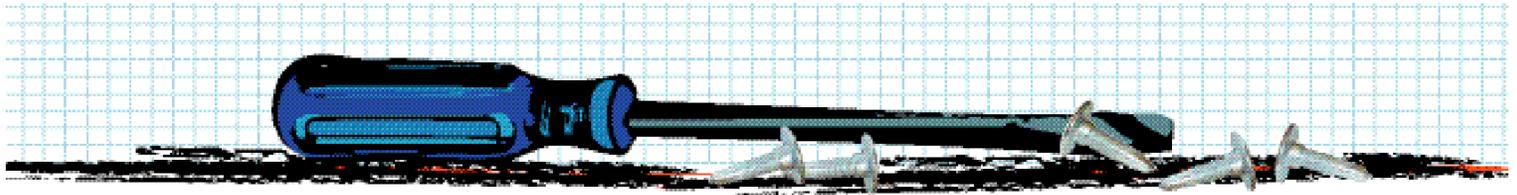
The tools required are really quite basic, consisting of 5/32" Hex head or Allen key, a track-cutting bit (available from most stud manufacturers and distributors), a deep socket (7/16" for 7mm studs, and 1/2" for 5/16" studs), a drill and a rivet gun. As the nuts are of the Nyloc variety, no thread-locking compound is needed. We should mention also that while a studding template (available from most stud manufacturers) would be very useful, particularly if this is your first time installing studs, it isn't an absolute necessity.



The moment of truth

Armed with a full complement of studs, support plates, and the necessary tools, we are now ready to get our hands dirty with the actual installation:

- 1) Remove the drive belt on the sled to be studded. This will enable you to turn the track easily by hand and will greatly facilitate the job.
- 2) Lift the rear of the sled off the ground and secure it in place. This can be achieved numerous ways but remember to work safely and double check your set-up. The last thing you want is for the sled to come crashing down on you halfway through the job.
- 3) Remove the snow flap by drilling out the rivets that hold it in place.
- 4) Inspect the tunnel protectors, replace if damaged or if they are of insufficient height for a studded track application. We should mention as well that some sleds, typically older units (a good example being certain older Ski-Doo sleds with the S-2000 chassis), may have issues related to clearance in the area of the bulkhead-mounted heat exchanger. If in doubt as to the height of protectors needed or the bulkhead clearance, speak to your dealer or the stud manufacturer/vendor.



5) Given that you have the rear of the sled in the air, it is suggested that you perform a quick visual inspection of the track to ensure that it is in good condition. While you're at it, have a look at the rear suspension and make sure that everything is in fine working order.



6) Verify that your cutting bit is sharp. A quick and easy trick for sharpening it is to simply lay the tip down so it rests at an angle against a file and run the drill briefly.



Studs: A practical overview

Ever heard of the old adage of “race it on Sunday, sell it on Monday” ? It would seem many have as this theory has guided many investment and marketing decisions over the years. Of course, while the merits of this practice are often espoused, one doesn't often hear about the downside, however, which could be likened to what actors refer to as “typecasting”, or a long-term tendency to so closely associate an actor's character with the actor himself/herself that it actually becomes harmful to the actor's career by severely his or her choice of roles.

I have had the opportunity to meet and speak with thousands of snowmobilers across Quebec in recent years. In many instances, I have taken it upon myself to questions snowmobilers about their views on traction aids, or more specifically, track studs. Far too often it seems I am met with comments such as “I don't need those, I don't race/ride fast/...” It seems that studs have been typecast in the minds of many, right next to the checkered flag..... Interestingly, when questioned on their use of winter tires, many of these same individuals will go on at length about the safety merits of using winter tires on their cars and trucks...

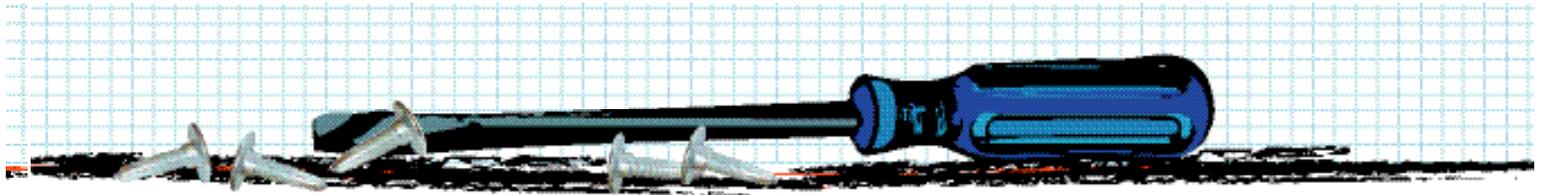
Moving away from the abstract to the concrete, the safety benefits of traction products are well established and revolve mainly around vehicle control and ability to stop in slippery conditions. Did you know that research has shown that a properly studded sled will stop somewhere near 1/10 the distance of an un-studded sled? Traction balance is a key factor in maintaining control in adverse and icy conditions, and this can only be provided by traction products.

Studs can also prove critical when climbing icy grades. One often overlooked and practical example of this benefit can be seen at slippery (and dangerous) road crossing problems where studs provide you with the necessary traction to ensure a timely and safe crossing.

From an economic perspective, the stability and control provided by studs act as a kind of investment insurance against damage to your new multi-thousand dollar snowmobile in the event of a rollover or slide-induced accident. In other words, spend a few hundred dollars to potentially save a few thousand. This, of course, doesn't even begin to take into account the potential human costs, such as pain and suffering, lot wages,...

So why don't we all use studs then? Well, detractors will rightfully claim that studs provide little or no benefits in loose snow or slush. While this is indeed true, the corollary to this is that unless you ride exclusively in these types of conditions then it stands to reason that studs may be of some benefit to you. Another common remark is that, as in the case of carbide runners, studs can be damaging to surfaces such as roadways, garage floors, trailers, bridges and the like. Fortunately, common sense and a delicate throttle hand can all but eliminate this negative effect.

If you still don't think that studs are for you, then try this little test. Speak to any snowmobiler who has given studs a try. Once the discussion about his or her experience is over, ask one simple question: would you consider going back to an un-studded sled? If you find one who says yes, consider that you are, for all intents and purposes, witnessing history.



7) Begin drilling holes in the prescribed places. If you have a template, simply follow the directions. If not, remember to position your studs so as to get the maximum number of scratch lines and remember that track pressure (hence stud penetration) is highest closest to the slide rails. Studs placed directly in the middle of the track will have very little effect. For normal trail riding, it is recommended that you limit your studs to the center portion (or "belt") of the track and avoid placing studs in the outer belts as these are more vulnerable to pulling out and causing track damage. Once the holes are drilled, you may use side cutters to remove any excess rubber around the holes that may not have been removed by drilling.

As an aside, some individuals have held onto the belief that the hole should be singed or burned after drilling so as to seal things up. While this may have been true in the past, it is no longer necessary, especially if you are using the recommended bit. Another myth deals with the need to ride a track and "break it in" prior to installing studs. This again may have been true in the past but no longer holds.

8) Insert the stud from the inside by simply pushing the tip through the hole. Once the stud is fully pushed in, place the support plate and nut in place and tighten. The recommended torque setting is 15 ft-lbs but another way of doing it is to simply tighten the nut until the stud is slightly set into the track. There is no advantage to over tightening and doing so will likely only damage the studs or the track.



The fire within

Sylvain Laflamme is, by his own admission, a very fortunate individual. You see, he is one of those rare individuals who are fortunate enough to earn his living doing something he loves. From his earliest recollections, he always wanted to work in the forestry industry, and race snowmobiles. Well, thankfully for him, the second option has allowed him to walk away from his previous occupation, forestry worker.

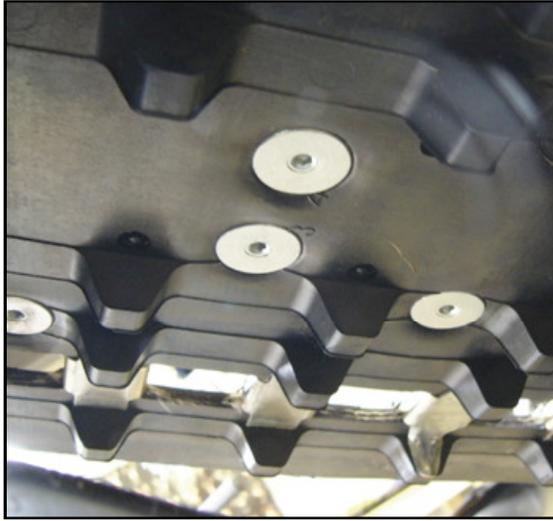
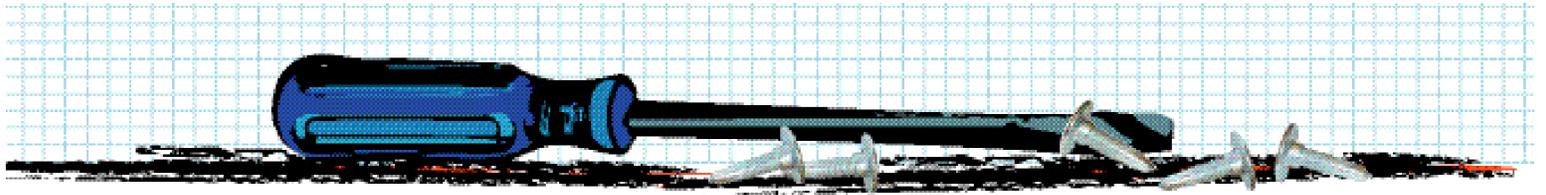


His racing days began in 1984 when he started competing on ice ovals throughout Quebec, Ontario and the Northern States. Seems he was a natural as he quickly began amassing podiums and wins. Of course, participating in such races also meant tremendous sacrifices, both in terms of time and money, but his desire and drive kept him going. His oval racing career culminated with his winning the Grand Prix de Valcourt in 1988, as well as reaching the finals of the Eagle River World Championship. Perhaps even more impressive is his winning of 17 of the 19 races he entered that year!

Unfortunately, four years of restless nights, endless travel and tireless dedication to his craft left him drained so he chose to retire at the top of his game. Of course, the racing bug returned a short while later and in 1991, he began Phase 2 of his racing career, this time on the grass drag circuit. It shouldn't surprise you to learn that since then he has amassed numerous provincial championships. Here we are in 2007 and the competitive fire still burns within him. In fact, he will be venturing out into the high stakes world of the famous Hay Days grass drag competition this Fall for the first time ever. Such an undertaking requires support and Sylvain will be accompanied by 6 team members who will be along to make sure that things run smoothly. Suffice to say he likely won't be coming back empty handed....

Over the course of all this success, Sylvain has developed an innate knowledge of snowmobiles, especially the black art of clutching. In fact, it is this very skill that allowed him to open up his new business, Laflamme Racing, which began with the development and selling of clutch kits for select Ski-Doo snowmobiles. While he still deals in clutches and the like, he has also expanded his product lines to include studs, and other high performance products.

So what does Sylvain see in his future? Well, a growing business for one thing but you shouldn't really be surprised to learn that he is developing an interest in snowcross racing and aims to try his hand at it in the near future... once a racer always a racer. To learn more about Sylvain or Laflamme Racing, visit www.laflammeracing.com



9) Roll the track forward by hand and proceed until all of the studs are in place. As in all things, it would be prudent to double-check your work to make sure that all studs are tight and well installed prior to letting the sled down.

10) Re-install the snow flap, let the sled down and you're done! Barring any unforeseen problems, installation of 96 studs should take you approximately 2 hours so it is by no means an overly lengthy endeavour.

Do's and don'ts

- DO pick the right components for the job and follow the manufacturer's recommendations.
- DO perform a periodic inspection of your track to look for missing or damaged studs and replace them as needed.
- DO ensure that your track tension is properly set. A loose track will be more likely to ratchet under acceleration or "balloon" at high speeds, potentially damaging the tunnel or heat exchangers in the process. If anything, it is preferable to err slightly on the side of "tightness".
- DO make sure to match your runners to your newly studded track. A more aggressive bite in the back will require more aggressive runners to maintain balance and prevent over or understeering.

- DON'T mix and match components as they may not be compatible with each other, something that may not be readily apparent in the comfort of your garage.
- DON'T over or under-stud. In other words, use the correct number to get the job done. Using an insufficient amount causes undue stress on the studs and the track, often resulting in damage. Over-studding not only costs more, but also reduces the effectiveness of the traction products.

A new world of traction and safety

While it is quite obvious that much more could be written about this topic, you are now armed with all of the necessary basic information to tackle stud installation. Remember that studs can cause damage to surfaces such as a garage floors and road crossing if not used cautiously so be wise and accelerate slowly so as to reduce the harmful impact that careless acceleration could cause. Remember too that there is no substitute for responsible riding and the all the studs in the world will not protect you (and

perhaps more importantly others on the trails) from irresponsible acts and riding practices.

Now then, armed with your newly studded track, you are now ready to go out and enjoy a new dimension in trail-riding safety and control. Enjoy the ride!



In the next issue :

Fuel injection systems have become commonplace in the snowmobile world. Join us as we shed light on these systems.