

Broken Exhaust Stud Repair

By Karl Wilen

One of the best upgrades to an old 911 for power and sound is replacement of the exhaust system. There are many different combinations of heat exchangers (headers if you will), mufflers, and catalytic converters (where applicable) that will make the car sound great and add a little power as well. Whether you are adding a set of SSI's, B&B's, M&K's, or whatever, the upgrades are always worth it for the driving experience. While simple muffler and cat upgrades are fairly straightforward, getting heat exchangers off for an upgrade can be a little more troublesome. Or maybe you aren't upgrading anything, but need to pull the exhaust for some other work. The problem is that over the years, heat cycles, moisture, and dissimilar metals (steel stud in an aluminum head) can cause some serious corrosion with the exhaust hardware on the cylinder heads. Even a liberal overnight soaking with Kroil and some external heat can lead to broken exhaust studs in the head. At that point, you gasp a bit and the thought of complete cylinder head removal quickly pops into your head!

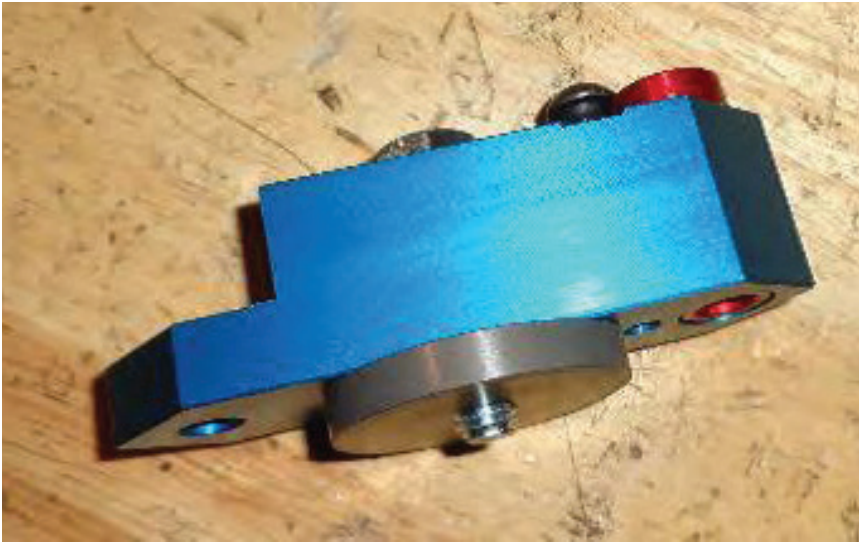
No worries though, there is an affordable repair that will help you get that broken stud out without trying to hold a drill bit straight (and not drill into the head) or risk breaking off an easy out while trying to remove the stud. The former repair would be to take a center punch, try to visually find the center of the stud, make a mark, drill a pilot hole as straight as you can, and then proceed to break off your easy out/screw extractor while trying to remove the stud. At that point who knows what happens, but it probably involves swearing, welders, cutting tools, and a few years of your life. Trying to drill out a stud without totally messing up the surrounding areas can be a bear. Once in a while, you hit it perfectly, but honestly, the odds of you making it worse are more likely.

There is a better and much more foolproof way. The best part is you get to buy new tools! For the cost of a couple of hours of labor, you can conquer this issue yourself. And really... who doesn't like new tools? Arh arh arh. You don't like tools? Stop reading now, and flip to page 12 instead. I think there is a nice article on paint wax, puppies, or something more interesting for you. Instead just bring me your car and I'll repair it.

Now on to the good stuff. Here we have a 964 that I was actually replacing an oil line on and needed to remove the heat exchangers. A liberal soaking of rust penetrate and heat got eleven of the twelve nuts off the studs, but one was stubborn enough to break off. Gasp!...Not a big deal. The first thing to do is to get the broken end of the stud as close to the surface of the head as possible. You may have to cut it down slightly if it has not broken flush with the head. Typically, they break flush with the head.



Next comes our special tool. (Actually, first come your safety glasses as you will likely be doing this with the motor in the car, you are going to have metal shavings falling all over you). This tool is actually made by a company called Stromski Racing and will allow us to drill out the stud perfectly. Have a broken stud in a 996/Boxster? They have a fixture for those engines as well. The kit includes everything you need, the various sized exhaust port pucks (depending on your application), two sizes of drill bits, adapters, bushings, thread chaser, etc. All you need is an electric drill. Here I have the proper sized puck installed on the tool that will fit into the exhaust port and center our drilling bushing perfectly over the new stud.



With the tool attached to the other stud, everything centered, and the proper pilot drill bushing in place, I start to drill a hole through the exhaust stud. Eventually, you will feel it go through the exhaust stud, jump forward a hair, and hit a second surface. That is the cylinder head and where you want to stop! This is slow, tedious drilling; sliding the bit out often to clear out the hole and apply new cutting oil to your drill bit, (any oil to keep the bit cool will work). Go slow and take your time, let the drill bit do the work. After we have drilled our initial hole, remove the bushing and you can see up through the tool at the hole you have made in the stud.





Next, we install the larger drill bushing, and use the larger provided drill bit and drill our next and final hole through the stud. At this point with the pilot hole already drilled (and your arms tired), this bit will cut through very quickly.

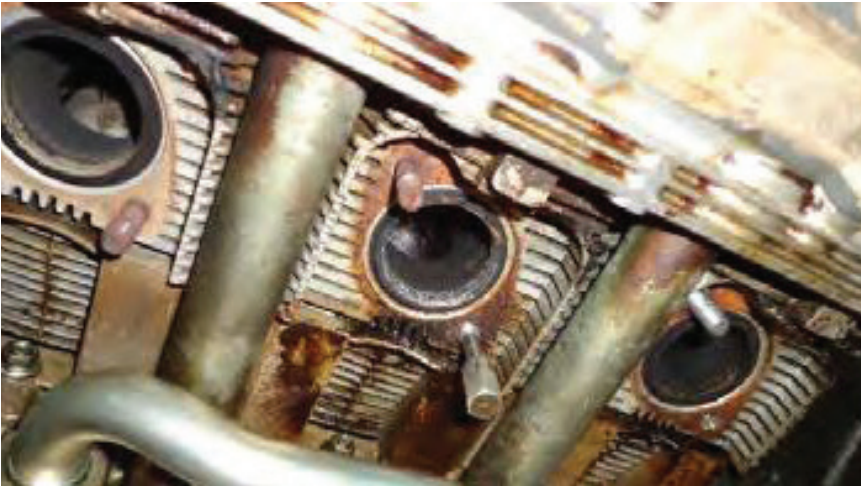


We now have a perfect hole in the cylinder head. All that is left in the hole are the threads of the old stud. With a small dental pick, you can peel out the old threads. Once you get the tip of the threads exposed, grab them with a pliers, and slowly pull downward, unwinding them out of the head.



Here we have all that was left of the old rotten stud, a nice coil of threads. The result is that the original tapped threads remain in the cylinder head completely untouched. This is a very precise tool indeed.

At this point, I typically run a thread chaser tap up the hole to clear out any remaining debris, though there really shouldn't be any. This usually threads in by hand without the need for any wrenches or sockets.



Congratulations! You just made a potentially serious issue into nothing at all. We have the factory original hole untouched. All you need to do now is to screw in a new stud and slap your exhaust back on!