

He Can Fix Anything but a Rainy Day
© Tom McGowan 2025

Coming across a speech a relative gave many years ago on the importance of apprenticeship caused me to reflect on the importance of learning from others. Aptitude is an important factor, but time watching those having more skills, talking with them, and working alongside them is the critical element.

I ran a quick experiment on the subject. I asked a mature, well educated, "A" student with two liberal arts degrees the question: "What would you do to loosen a stuck bolt?" After some thought, the reply was:

1. Hit it with something heavy.
2. Spray it with WD 40.

Both good answers. Not bad. Anything else? No. Two shots at fixing the problem.

I asked a mature, well-educated person that is mechanically inclined (me), "What would you do to loosen a stuck bolt?"

With little delay, I tallied up methods through number 21 below, with others added later by likeminded folks -- and me -- over the years:

1. Hit it axially (sideways) with big drift and hammer.
2. Spray it with penetrating oil like Liquid Wrench or PB Blaster.
3. Get a bigger wrench.
4. Use a cheater bar or add length to box or open end wrench by hooking it with another box or open end wrench.
5. Use a box wrench rather than an open end wrench.
6. Use a 6 point socket/impact socket rather than 12 point socket.
7. If it rounds off, use a Vice Grip, Channellock wrench or pipe wrench.
8. Use an impact wrench, if that does not work, lube the impact wrench, raise the air pressure to it and try again.
9. If possible, eliminate extensions between the impact wrench and the bolt head that reduce impact torque at the bolt.
10. Tighten it then try to loosen it (*an excellent move if it happens to be a left-hand thread!*)
11. Get someone to pull on the wrench while you push on it.
12. For lug nuts or others in a horizontal plane, put a jack under the end of the wrench, lifting the wrench handle horizontally.
13. Have lunch or take a break and think about it some, or let it go until the next day.
14. Look on the Internet or in books (like Tools and Their Uses, a NAVPERs manual) for ideas.
15. Heat the head of the bolt with a propane torch, stick welder, TIG welder, or oxy/acetylene torch.
16. Heat the area around the bolt, and put ice on the bolt head, or use dry ice or nitrogen.
17. Hit the bolt near a crown, radially, with a sharp chisel, then slowly repeat hitting it while changing the angle to approximate tangential blows.
18. If it is a socket head bolt, use a Vice Grip wrench on the outside and hex or TORX wrench on the inside of the bolt head at same time.
19. Hit the wrench near the end with a ball peen hammer in a tangential direction.
20. If the other end of the bolt has a nut on it, work on that end instead (*this works particularly well on bolts that are welded to a frame to begin with! Same goes for welded in place nuts!*).

21. Grind or snap the head of the bolt off, or drill it out, to get the parts apart and extract the remaining exposed stud later.
22. Put the bolt head in a vice and rotate the attached item rather than the bolt.
23. Think about whether the bolt has to be taken out, or can be worked around (e.g., leave the carburetor base on the intake manifold, and take the top of the carburetor off to work on the float and inlet valve).
24. While pulling on the bolt with an open end wrench or a box wrench, hit the head of the bolt with the ball end of a ball peen hammer.
25. Weld a big nut on top of the bolt head and try again.
26. If you are using a 6 point socket that is a bit too loose, shim it with some sheet metal on 3 of the flats or line it with aluminum foil duct tape.
27. For snapped or stripped car wheel lug nut studs, place open end wrench, claw foot socket or other bushing behind it to allow 1/8" or more free travel for head of stud. Place large forged C-clamp C-end on the bushing and screw head on the broken end of stud, tighten screw, hit end of screw handle end 3 times with a 3 lb hand sledge or 2 lb ball peen hammer. Stud should now be free to hammer out with clamp removed.
28. For bolts that protrude behind a flange or plate, use a Vice Grip or Channellock pliers to thread it through the back.
29. For bolts, screws or studs that protrude a half inch from the surface and are less than 1/2" diameter, put drill chuck over them, tighten chuck, and put drill in reverse to back them out.
30. For bolts that protrude behind a flange or plate, drill out to smaller size, tap them, then thread in a hardened long shaft bolt, tighten the new bolt and thread the broken bolt through the back; then use two wrenches to extract the new bolt from the broken bolt.
31. For broken bolts, drill out to next size up, tap new threads and install larger bolt or drill and tap for a Helicoil™ and install the same size as the broken bolt.
32. For broken bolts that have access from the back, drill out broken bolt to allow passage of next size up bolt, install bolt with nut on the back; weld nut on back if worthwhile.
33. Use a Dremel motor tool or similar tool with two stone cutting disks and cut a slot into the top of a broken bolt. For big bolts, use a 4 1/2" cut off wheel to make the slot or double up two hacksaw blades to do the same. Take the biggest screwdriver that can fit into the slot, hammer it in, put a wrench on the screwdriver shaft for extra torque and back the bolt out.
34. Cut it out with oxy/acetylene cutting torch.
35. Get someone bigger and stronger to loosen it.
36. Get someone more skilled to do the job.

Basic math shows an 18 to 1 ratio on number of answers in total. More detail too, and a rapid cataloging of approaches to be taken. All that took more than few years of being up against stuck bolts, and more than a few hours spent with more senior folks that had to solve the same problem and in turn learned what works and what doesn't from others more skilled in the trade. And that is what apprenticeship is all about.

See related article "The Case For Working With Your Hands"

http://www.nytimes.com/2009/05/24/magazine/24labor-t.html?_r=1