

Tech article: March 2017

Still wanting to do this, are you? Ok, let's see what tools you have. First off, have your own tools, don't try to borrow them, especially from me. Most shops, and individuals, do not like loaning tools. Nor do we like you to just stop by to use one for a few minutes. Your favorite shop uses their tools to make a living and pay their overhead. Remember this, shops must make a living using their tools and knowledge and getting paid to do so. Letting you use them is not in our job description. We all allow a little freebie work but do not get obnoxious about it.

And if your favorite shop does let you use some space for a minor job, clean up after yourself and offer to take the guys out for lunch at the least. In a restoration, one tool you will use a lot and often is a sand blast cabinet. Not everyone has one of these so if you get to borrow one, replace the blasting media as a deed of good faith. So, let me start with the small tools you will need.

There are three main aspects to a restoration; mechanical, body and paint; and interior. Decide which you want to do first. Me, I like mechanical, farm out the body and paint and do the interior last. And this is how I am going to approach my articles although I will discuss body and paint repairs. So let's start with the tools to do mechanical work. Obviously, mechanical jobs are the heart and soul of the restoration and requires the largest expense of tools.

As I think I said in an earlier article, get a compressor and air tools. Harbor Freight (HF) tools are great and cheap and have a better warranty than Snap-On tools. Get two air hoses, one long and one about 25 foot, both flexible. They sell a few different fitting for these so get your air tools at the same time so you can have male and female fitting that match. Air tools will make the work much easier but are not absolutely required.

The list of air tools includes: 1/2" air gun (150 ft/lb torque), 3/8" air gun and ratchet, 1/4" ratchet, high speed grinder with cut off wheel attachment (remove the stupid protective shield and trigger lock) (do this at your own peril, I have), air blowers (one that blows full pressure with no reduction and one that has a siphon hose attachment so you can spray cleaning solutions) and a 3/8" drill (get the best set of bits you can and the ability to reverse drill can be handy). If I think of any others, I will mention them as I go along.

For the 1/2" gun; get a set of impact sockets, 6 point shorties. What is 6 point; you should not be asking. Sockets that work on old British cars come in 3 main styles. A 6 point socket has six flats inside and fit snugly around the bolt or nut and provide the most anti-round off protection. 12 points have twice as many ways of fitting over the same nut or bolt and provide the best round off ability; but they fit easier over old bolt heads or nuts. Never be afraid to use a small hammer to tap a socket over the bugged up bolt head. Hammer discussion will come shortly.

The third is 8 point sockets and fit square head items like drain plugs. A set of these is not mandatory but nice. Without these, you will find that vice grips and crescent wrenches do not work very well. Within the discussion of sockets, comes the depth of them. Short or deep, get both if you can afford them. Of course you can afford them, you are restoring a car and buying from HF. Also get a few extensions from 2" up to 6" in 1/2" drive. Get several 1/2" drive to 3/8" drive adapters and 3/8" to 1/2" adapters; you will lose some of these -- we do.

In 3/8" drive, get a set of extensions from 2" up to 18". The sockets come in many styles but the most useful are short 6 points, deep 6 points and 12 points (yes, that is two sets), and inside the deep sockets, look inside and see how far down the stop is. This is where the points or flats end and the inside becomes round. I like sockets that are only about 1 full size nut deep. This allows me to apply pressure to the nut by pushing the sockets down over the bolt. If the socket was full depth, you cannot do this. It is a minor difference but one I have several sets of sockets to combat. You only need one set if you get the "shallow" deep sockets.

Another set of 3/8" sockets handy to have is wobble or flexible sockets. These are exactly what the name says, they wobble. They are made in two parts, one fits on the ratchet or air gun or extension and there is some sort of u-joint connection to the part that fits over the bolt or nut. Get a short set; they come in as many different styles as the straight sockets, 6 point is best. You can use a few deep wobble sockets, 7/16", 1/2", 9/16" should do. These three sizes will fit the majority of bolts that hold your car together. They also make the 8 point sockets in 3/8" drive as well as impact in straight and wobble.

Now for 1/4" stuff. These are very lose-able, so be careful using them. I use a selection of extensions from 2" up to 18" all the time. I have mostly 6 point sockets but a set of 12 points can have a little thinner wall and this can be useful at times, so get both sets. They also make them in deep as well as short and as wobble; both short and deep. And they actually make 1/4" impact sockets; also available in wobble.

I may not have explained the difference between regular and impact sockets. Regular sockets are most often chrome plated and thin walled. Impact are mostly black or dark brown and thick walled. Using a non-impact socket on an air gun can void the warranty and hurt you. They can and will shatter when using a hundred ft/lbs force on a thin wall deep 6 point socket so be careful and ready to lie about how it broke when claiming warranty.

Hand ratchets have so many styles that you can let your wallet be your guide. I use hand ratchets with in each size range. I have one large 1/2", several 3/8" including a very useful 4" long one and several 1/4" drive including one that is 2" long. Breaker bars, kind of like a ratchet but do not ratchet; come in all size drives and lengths, get a 1/2" and 3/8" only. You do not need anything smaller. Ratchets are also made to

“flex”, that is bend at the head end. I personally do not like or use these so save your money on them.

Now you have a draw full of stuff, let's buy you some more. Wrenches come in too many styles to discuss in detail so get a set of; short combination wrenches (box end on one end and open end on the other) from 1/4" up to 1" long combination in the same size except 1/4", offset box end wrenches from 7/16" up to 1", both long and short; and a set of Gear Wrenches from 5/16" up to 1" both long and short. These will quickly become your favorite set. I use mostly 12 point wrenches but a 7/16", 1/2" and 9/16" in 6 point is handy. A few “line wrenches” are handy. These are almost a 6 point box end wrench but have an opening to fit around a line such as a steel brake line.

Next you need screwdrivers and I do not mean your grandpa's old set. Get a set of posi-drives and regular Phillips. If you look closely at the tips of them side by side, you will see on the regular Phillips, the little blades come to a point whereas on the posi, they are parallel sides. Both will be needed. Get #s 1, 2 and 4 sizes. These also come in different lengths so get a shorty thru 12" long set. Sets are probably the best way to buy these.

Blade or flat screwdrivers are best purchased in sets as well. You will need some very small ones up to very large with the blade being over 1/2" wide. These make reasonably good small pry bars but break easier than a real pry bar. The handle design of screwdrivers is as varied as the tip designs. Find what fits your hand the best as you will get very used to using them and you don't want blisters. On some screwdrivers, there is a 6 point drive mechanism at the base of the handle. This is designed so you can use a wrench to add a little force to your efforts.

Another tip; if you apply force with a screwdriver and still cannot turn the blasted screw, tap the top of it with a hammer while exerting rotational force. This will act like an impact screw driver. If you are thinking this is a lot of tools, wait, we haven't gotten to pliers and vice grips.

Pliers come in a huge variety as well as all the other tools. If you could afford it, I would tell you to purchase a Snap On tool truck as they have everything you would ever need in one small, very expensive container. I will get to tool boxes in a little bit. Several style pliers will be handy from regular standard types to needle nose to water pump shall be handy. Buy a set and you should be good to go.

Vice grips can become your go to tool for a lot of things. They not only help turn nuts and bolts but can be used as hydraulic line clamps, soldering clamps, and they can replace about 1/2 of the tools in your box. Get a small and large needle nose pair, a small medium and large standard pair with straight jaws. A medium size with curved jaws can be useful. Vice grips will be very helpful when you round off the heads of bolts or strip out screw heads. If you put short pieces of rubber tubing over the needle nose jaws, they make good line clamps. You can also pinch the hell out of your finger with them. This makes great blood blisters.

Crescent wrenches have been known as many things -- Mexican speed wrench, hammer (in a pinch), metric wrench, British Standard as well as Whitworth wrenches, etc. I use a small, medium, and large daily so get a set. You may notice I recommend sets of tools. It is less costly to buy sets and augment what comes in them with any special need that arises.

You should now have a pretty good selection of tools. Let's get to a few specialty items. Still, try HF first. I know their torque wrenches may not be the absolute best but you only need it for one car and it will last a whole lot longer than that. So get a good torque wrench. It should come with a spec sheet telling you of its tolerances. If not, (here is where you can find a friend) test it on a digital tester. One big word of caution; NEVER leave your torque wrench set on anything but it's lowest setting unless you are going to use it again in a short time.

Stud removers come in a variety of styles. The first is the good old vice grips. These have a tendency to ruin the studs so use only if you are going to replace the stud. I like the style that looks like a socket and has internal rollers to grip the stud. Google stud remover and order a set today. You will need sizes from 1/4" up to 1/2". You do know that a 1/4" bolt uses a 7/16" wrench? Bolt and stud sizes are the diameter of the shank or threads of the bolt. Wrench sizes are the size of the bolt head or nut across from flat to flat.

Don't stop buying tools yet, there are more. Feeler gauges both a normal and go-no-go set are needed. The standard set comes in thinner blades for measuring things like piston to wall clearance when you check your machine shop's work. And you should always check their work! A vernier caliper, digital from HF is fine, is very useful and inexpensive. Punches in different lengths and sizes are very useful. Chisels are not just for boogering up nuts when being used to remove them. One or two is enough.

Pry bars will be used a lot so get a set of these. Hammers, holy cow are these useful. Get several. I use a small ball peen (never use a claw hammer for working on your car; it looks very unprofessional) and several larger ones. Four different sizes will do. I use a ball peen to remove tie rod ends as well as drive punches and smash fingers. A soft face hammer such as a lead hammer and a "dead blow" hammer are both useful. If you are hitting something that is an actual part of the car then you should use a soft hammer. If you are hitting a tool, such as a chisel, use a hard faced hammer.

Now that you have a bunch of tools and you will acquire more as we go along; where to keep them. Stay away from the professional tool trucks. A Snap-On tool box can cost over \$10,000 empty. Not even drawer liners are included. Get a nice size roll around box from either HF or someplace like Lowe's who has stainless steel boxes at reasonable prices. Having the box on wheels saves time in walking around the car all day long.

A small rolling cart is another great item. They come in many styles with some having a few drawers under the top. These will become very useful as you work. If you are working on one side of the car, say removing a fender, it is easy to heap the required tools on the cart and roll them all to the other side fender.

And, just to help you out more often than you might think, get a magnet on an extendable stick. When you drop a tool near a car, the magnetic force of the cars aura, automatically pulls said dropped tool to the geographic center of the car. And another thing, slick shiny tools look great, but let them get a little oil on them and the magnet will be used more and more.

OK, tool talk went on a lot longer than I thought. There is a lot more to discuss in tools but that will be addressed as we need any others. This sounds like a huge expense to get all the tools you will need up front, but it will save you time and money as work progresses on your car. Budget about \$1,000 for tools plus a storage cabinet to keep them all in. Once you have everything you will need, can I borrow some? You will learn to say no.

Well, I hope you are getting excited about restoring your car. It is now too late to get discouraged, you have money invested. Hope to see y'all somewhere soon.

Oh, I am having a tech session at the shop on March 18th. I am assembling a complete MGB engine. I have one that has had all the machine work done with cam bearings installed. The rings have been gapped but I will discuss each step I take in building an engine. RSVP is mandatory as I have limited space and this will take most of the day. A breakfast and burger w/fixing lunch will be provided. The Peachtree MG Registry is sponsoring this. There is no charge but I will ask for a voluntary \$5.00 donation to our clubs charity, Frankie and Andy's Place.

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