

## Bob's Tool List

This is a breakdown of what I have on my bench, in the tool cabinet, and in my travel kit. Not all items are needed for every machine, and some may be considered somewhat esoteric, but this is what I own and use.

- 1) Screwdrivers
  - a. Straight blade: 1/8" x 3" long, 3/16" x 6" long, 1/4" x 6" long typical hardware store stuff, I use mostly older Craftsman brand
  - b. 1/4" interchangeable bit type, 3" long: Get a nice assortment of bits as well
  - c. 1/4" interchangeable bit type, ratcheting, offset: Craftsman has a great one (sold at Lowe's) McMaster-Carr has one with an outstanding padded handle. These will use the same bits as the handle above
  - d. Hollow-ground set: example – Chapman 9600 is the traditional choice. Chapman bits do not fit the universal 1/4" bit drivers, at least not well. You will want their ratchet and both size extensions
  - e. #1 and #2 Phillips: once again, I use Craftsman. Vintage Singers don't use Phillips headed fasteners, but you'll need these for other things
- 2) Pliers, cutters, crimpers - Some pliers may be difficult to find, such as the smooth jaw types.
  - a. Slip joint: any good 6" or 8" pair will do, find one that's comfortable in your hands
  - b. Smooth jaw duck bill: this may take some looking to find one, I found my favorite pair as a rusty mess at a flea market, then spent a lot of time cleaning them up
  - c. Plastic lined jaws non-marring pliers: Beadsmith has some nice ones, check the jewelry making department at Hobby Lobby
  - d. Locking jaw pliers: aka Vise-Grip, I have a few pair in my cabinet, a "regular" and a long nose are helpful, but not mandatory (until you absolutely need them)
  - e. Screw removal pliers: I have the Engineer PZ-56, PZ-57, and PZ-60. While they aren't "absolutely necessary", now that I have them, I'm not sure how I lived without them
  - f. Diagonal cutter: find a beefy one that's comfortable, also look for a small pair for electronic work as they are also handy
  - g. End nipper: you'll use these to cut music wire too, so you may want two pair, a large and a small. Find ones that are comfortable in your hands
  - h. Wire strippers: I like an automatic type such as the Doyle Heavy Duty from Harbor Freight
  - i. Crimpers: I like the Klein 1006
- 3) Wrenches
  - a. 6" adjustable wrench: very useful (I use a Craftsman), but having an 8" or 10" available can sometimes be a life saver
  - b. SAE size box wrenches: 12-point offset heads are great. You'll need a few different sizes but getting a set that has everything from 3/8" to 15/16" will cover all the bases. Most used sizes for domestics are 3/8", 7/16", 9/16", and 11/16"
  - c. Ignition wrenches: these used to be common, but I can only find them via mail order now. I would get a set of SAE and metric.
  - d. Nut drivers: I'm listing these as "nice to have" because they are. Once again, not critical, but handy
- 4) Hammers
  - a. Small, soft faced jewelers hammer: I have one that is two-sided, one side is brass, the other is nylon
  - b. 8-ounce ball peen: I have a stubby from Harbor Freight that I like a lot

- c. 2-pound dead blow: another staple from Harbor Freight.
  - d. Rawhide or plastic headed Mallet: I went with plastic because of cost, but it's your choice.
- 5) Punches – You'll use these more than you might think. All the punches I'm recommending are at Harbor Freight. You don't need to spend a lot of money on these...
- a. 5-piece long drive pin punch set
  - b. 8-piece pin punch set
  - c. 28-piece transfer punch set: I bought two of these sets. On one set, I ground off the "transfer point" to have a large assortment of odd-ball size punches, albeit ones that are a bit soft.
- 6) Files
- a. Jeweler's needle files: a simple set will do
  - b. 8" Mill file: common hardware store stuff, make sure you get a handle
  - c. Foam-cored nail files: I buy a lot of these at Sally's Beauty Supply. Grits from 100 to 12,000. Most boards are split grits, example, 100/180, 200/320, 400/600, 600/4000/12,000. These are used to debur metal parts and to clean up chowdered screw heads
- 7) Miscellaneous (no particular order)
- a. Safety glasses: Don't work without them
  - b. Shop apron: This is filthy work, keep your clothing clean(er)
  - c. Rotary tool: In my opinion, a must have. I use buffing wheels, hard felt polishing points, Scotch-Brite wheels
  - d. Portable drill: I'm a fan of Milwaukee 18-Volt tools, so that's what I use. You'll want a selection of bits as well.
  - e. Left hand drill bits: These are used to drill out a fastener with a damaged head. It doesn't happen that often, but when it does, you'll be glad you have these
  - f. Thread gauge checker: I have a real nice one from McMaster-Carr
  - g. Cleaning brushes: I buy the 3-pack of detail brushes from Harbor Freight that have Stainless Steel, Brass, and Nylon brushes
  - h. Pin vise: for holding small parts
  - i. Gear and bearing puller: I have a couple, my favorite being the Posi Lock model 103
  - j. Soldering iron, gun, or station: Not mandatory, until you start to rewire motors and light fixtures.
  - k. Multi-claw tweezer pick-up tool: I have a few of these, in both 4 and 5 prong
  - l. Tweezers: you'll want several different tip sizes and styles. McMaster-Carr has an excellent selection
  - m. Picks: I have several sets, plus a variety of dental instruments given to me by dentists over the years. Ask yours to save you old or broken dental picks, they can be very useful to you even when they aren't to the dentist
  - n. Airbrush cleaning brushes: useful for cleaning upper thread tension mechanism studs
  - o. Magnet on a stick: Get at least one, preferably more than one, but in different sizes. These will be used a lot, and every day
  - p. Flexible steel rule, 6" long: find one that has metric and imperial graduations
  - q. Button magnets: another very helpful item for your kit
  - r. Utility scissors: get good ones, but don't go overboard, you don't need dressmaker's shears here

- s. Chip brushes: 1" or ½" wide are most useful. I buy these by the box of three dozen or so at Harbor Freight. Lots of uses, so buy a quantity
  - t. Dial or digital calipers: I have several of both types, but that's overkill. If I were to only have one, it would be my 6" Mitutoyo digital
  - u. Flashlight: a small LED type, preferably with a magnetic base. I have a few, some are rechargeable, others use disposable batteries. I have a long "wand" style with an adjustable light on a magnetic base that I use a lot
  - v. TOWA bobbin case tension gauges: These are really more "nice to have", but they save a lot of time and aggravation in setting bobbin tension. Available for Class 15, M, and L style bobbin cases. I bought mine from Allbrands, spendy, but oh so nice to have
  - w. Postal scale type bobbin case tension gauge: These are sold by the Featherweight Shop. They work well but aren't very elegant. At the price point, a good deal. Also, the only game in town for some bobbin case types
  - x. Presser foot height gauge: another from the Featherweight Shop. Very functional, despite the "cute" factor
  - y. Featherweight Thread Jam Tool: The Featherweight shop sells two models, one for the earliest model 221's, the other for the rest. I'm guilty of buying both, though in my opinion, I would rather take the entire hook apart to clean the threadjam, so I know I got everything
  - z. Tapered Feeler Gauges: I bought my set from Amazon; the tapered ends are perfect for checking the shuttle clearances on vibrating shuttle machines
  - aa. Wire type feeler gauges: You'll need a few sizes to check thread clearances, especially important for class 66 machines when you take the bobbin case positioning bracket apart for cleaning. 0.010, 0.012, 0.014, 0.015, and 0.018 are a good start
  - bb. Artist paint brushes: Don't spend big money, get the cheaper ones as these will be getting dirty and greasy
  - cc. Artist palette knife: a "narrow, small" size is helpful for packing grease into potted motors. You could just use your fingers, but hey, a palette knife is a better solution
  - dd. Tap wrench set: Once you start using taps to repair threaded holes, you'll want these as running a tap into a hole with an adjustable wrench or pair of pliers is no way to live. Harbor Freight has a very nice set of three sizes
- 8) Shop fixtures – Mostly nice to have items
- a. Vise: a bench vise is great but eats up real estate and isn't used that often. A small machinist vise works very well indeed. I also use a 30-year-old Zyliss vise (harder to find now, but quite handy)
  - b. Bench grinder: I have a 6" Craftsman from the 1970's with a grinding wheel on one side and a wire wheel on the other
  - c. Buffing machine: Mine is a ½ HP, 6" capacity from Harbor Freight. It turns a little quick (3450 RPM), so heat builds up kind of quickly. Extreme care is required!
  - d. Drill press: Mine is a floor model Craftsman with 15" capacity, 12-speeds, and a 1HP motor with a 5/8" chuck. Might be a bit overkill, but I've had it since 1993 and it's wonderful. If you opt for a drill press, invest in a drill press vise and use it
  - e. Bench motor: we have two from Ferree's tools. They are equipped with a ½" Jacob's chuck and hand brake on one side, and a tapered spindle and chamois buffing wheel on the other. Set up with foot switches, they are awesome. Spendy, but awesome