Clock Tools: Where do I start?

This page is for hobbyists and for clockmakers entering the profession. You need tools and the catalogs are filled with more tools than you need or can afford. I will begin with inexpensive but necessary tools that you need to start with, and then continue with more expensive and necessary tools you will need to do the job correctly. I am looking through catalog #23 from Timesavers primarily, because they provide excellent service.

Standard keys, such as a #6 key (10105) for American clocks, a #8 (10106) and #10 (10054) keys $1.50 for most European clocks. A four prong key (#6,8,10,12) is recommended (10095) $5.00 but do not buy a five prong key. With these keys, you can wind over 90% of the clocks out there. Then you can decide what other sizes you need. The #8 crank (15813) $5.25 will wind almost all grandfather clocks made in the last 30 years.

The best tool I have found to let down mainsprings before disassembly is the Let Down Set (10066) $28. You want the seven piece set. A good investment.

The Hermle suspension spring (11613) $1.00 can be used on many European mantle and wall clocks. They have a large spring (11612) $2.50 that can be used on many grandfather clocks. These are good to have on hand.

Timesavers sells suspension springs made by Horolovar. I have had bad experience with other brands, so I say that if it isn't Horolovar, don't send it. Their beat setter (13532) $15.00 is recommended for those repairing anniversary clocks.

There is a wrench (15770) for anyone replacing a quartz movement in a clock. Only costs $1.00

Do not buy the Atmos poising tool or balance nut wrench until you have taken the repair course. I would say you need considerable experience before working on Atmos clocks.

Brass spring wire sizes #22 (10570) and #24 (10571) $5.40 have many uses.

If you replace a mainspring in an American clock, this one works well (18790) $2.65 but the inner loop is frequently not formed correctly and you must correct this for it to fit correctly onto the arbor hook or there will be problems.

The clock hand bushing tool (19439) (about$7) is used for adjusting the minute hand so that the clock would strike at the correct time.

Two tools to avoid are the reamer adapters (14913) for electric screwdrivers and (14912) for drill presses. While these tools do their job well, they should be used only by craftsmen with considerable

experience doing bushing work because it is too easy to ream a bushing hole off center.

A set of needle files (13616) $8 are needed. These files are cheap and probably not the best quality. As soon as you can afford it, look for a set of Swiss needle files (from LaRose 061307 for $42.50).

A gauge (13789) $9 for measuring in metric and inches. You can buy several fancy dial or digital calipers and also a micrometer, but the simple gauge is a good place to start and is suitable for most routine work.

I use a two ounce hammer and a twelve ounce hammer, which you can get at your local hardware store. As hammers do hard work, do not buy a cheap hammer.

You could use a brad and tack puller (18716) $4. However, most of the available styles are not exactly suited to my needs (mostly to remove gathering pallets), so I bought one and, when I figured out what I needed, I made my own. To do this, I took a cheap screwdriver and heated the end of it to cherry red to remove the temper. I filed a slot the size and shape I wanted with a needle file. Then I reheated the end and bent it by almost 90 degrees while it was still hot. I did not like the result, so I took another screwdriver and did it again until I got what I wanted. Then I took a third screwdriver and made another one, so that I would have two on hand. The two should be the same in style and shape, so that they can be placed in the same way under each side of the gathering pallet. Then you can carefully and evenly pull off the gathering pallet.

A clock punch and staking set (15478) $54 you cannot do without.

Do not buy a hole closing set (13415). I have seen some really nasty work done with this tool. Also avoid screw-in bushings.

If you have a clock mainspring with a ripped outer end, you can anneal (heat it to remove the temper) and punch a new hole with a Power Punch Set (16659) $24.

A hand saw (17617) $2 with extra blades (17637) $2.50 is useful. For fine work, you may decide upon a jewelers' saw (13588) $20.

Keep an assortment of flat head and Philips screwdrivers on hand. Sears sells a nice assortment. For smaller work, consider smaller screwdrivers (19520) $15, though at this price they are probably not the highest quality. They should be all right to start with. For working on clock platforms, which are like pocketwatches, do not buy cheap screwdrivers. The difference in the cost of the screwdriver is in the quality of the blade. There is a set of French screwdrivers (13474) for $45, which should be all right. I use a set of Bergeon screwdrivers that now costs over $100 (similar to a set LaRose sells, part #066865 but with a wooden box and many spare blades), and they are worth every penny. For watchmakers' screwdrivers, you must have a blade sharpener (13529) $8. Also get a screw-holding screwdriver (13552) $6.50 which is useful for installing clock movements in their cases.

Tweezers are a horologists best friend, and Dumont is probably the best, for those who can afford

them. Look for a set of less expensive tweezers for a lower price, but do buy the Dumont if you go into watch repair. Always buy the best tools you can afford and build on your tool collection as you can afford it. A good repairman does not skimp on tools. One good inexpensive tweezer to start with (13595) $2.25, and one plastic one for changing batteries in quartz watches (14397) $0.90.

For soldering and assembly, extra hands (13429) $10 are wonderful.

A pivot locator is a terrific tool. It comes in two styles (19328) $6.50 and (15475)$3.25. Buy both and use the one that works best for you. I bought the latter, and then made my own with a larger slot, using a piece of brass rod 3/16" thick, six inches long. I hammered a flat end and filed the slot I wanted in the shape of the letter "c". Then I made a little wooden handle for it. You need the larger slot for grandfather clock assembly.

Must have alligator clips (15756) $2.50.

I have a large vise I bought at Sears and a miniature machinists vise (I cannot remember where I got it). Both are very useful. Sears also has miniature pliers of several styles that are very useful and good quality.

This set of hand removers is cheap and is a must-have (18418) $3.75.

The following emery buffs are very useful, #1 (13574), #02 (13572) and #04 (13570) all $0.70 each. They can be used for a fine finish. Be aware, however, that if you use them to polish pivots, you must clean the pivots thoroughly afterwards, in order to remove any abrasive residue. These buffs are cheap and very useful.

If you do any watch work, a box of pithwood (10459) $4 and some pegwood (10462) $5.25. The pegwood is also useful for cleaning clock bushings, though some people use wooden tooth picks.

If you want to spend the money, a timing machine for clocks such as the Time Trax is all right but mine has been of limited usefulness. I have found mine gives consistent results with pocket watches and platform escapements, but has given me difficulties with pendulum clocks.

Some clockmakers like a beat amplifier, but I never seem to use mine. It is really only useful for quiet clocks, such as some French clocks. If you are starting out, stay away from French clocks.

Eye loupes are critical. You could start out with a couple of cheap ones, such as (15870) and (18213), at under $2 each. When you get serious, get the Baush & Lomb loupe: I use a double loupe (13463) at over $40 for most of my work. I bought mine over ten years ago and highly recommend it. I keep some cheap loupes on hand for when I travel to horology conventions and see what others have for sale. I note that many clockmakers like optivisors. I cannot see well through them, so try before you buy.

For polishing wooden clock cases, regular lemon oil (yellow liquid) from your local supermarket or hardware store, does a good job. If you want extra shine, Natschez solution (13879) $7.95 is a terrific product.

If you're starting out, you need to find which oilers work best for you. I recommend that you buy (15458) $3.25 from Timesavers. Buy (OL-359) $4, (OL-354) $7.40 and (CP-336) from LaRose. Buy them all since they're not expensive. You will find that one will work better for you with a thick oil, another will work better with a thin oil.

La Rose has a pin vise for general work that you should consider (061184) $10. Also get their mini twist drill set, made in USA (067114) $27.50. They have an India oil stone (ST-776) $18 for sharpening knives, good for sharpening screwdriver blades. Get a crows foot (061114) $10, a wire bender (062064) $2.70. For American clocks, try these clicksprings (085737) $5.25 for six.

I get tapered pins from Merritts (P-857) and (P-856) $3.

Up to this point, I have avoided expensive tools. Below are more expensive tools for serious hobbyists and for professionals. These are well worth having, especially if you earn your living repairing clocks.

Webster mainspring winder (15452) $87. This is the one I use for clocks, and I like it. It has improved considerably over the one I used ten years ago. However, some clockmakers do not like it, and prefer the Accu-Winder (18792) $188 and the Keystone (18426) $245. I think the Webster is easier to use, though the Keystone is better for very large springs, and the Accu-Winder could be said to be the safest design (if you've had an American clock mainspring blow up in your face, you know what I mean). I should add that the Webster does everything I need.

I use the Bergeon bushing tool (18466) $400 and recommend it. I like the quality and design of Bergeon reamers best. Just as a quality screwdriver is determined by the quality of its blade, bushing tools need quality reamers. There is a cheaper version of this Bergeon bushing tool: avoid it. Buy the tool with the plate clamps. For bushing work, a set of countersinks (13888) $49 would help do a neater repair. Also buy a set of Swiss cutting broaches (13411) $26 and smoothing broaches (13412) $21 and a burnisher (17526) $18 for polishing pivots. A bushing tool jig (18372) $7 is useful for installing bushings for escape wheels in some American clocks, and is very useful when you need it. You need pin vises for the broaches, and you should avoid the cheap ones: I had some until I bought a set of used Bergeon pin vises. They sure are expensive, but they are really good. Note that LaRose has a set of Bergeon cutting broaches (066928) $37.50 and Bergeon smoothing broaches (066926) $33.00, and Bergeon is the best. I use Merritts to get Bergeon bushings (P-723) $58 for box of 450, and then later to refill. Also note that Merritts sells the Bergeon Bushing Tool (P-139) for $339, which is a considerable price difference compared to Timesavers, so be sure to ask if this is the current price and if it includes the plate clamps as shown in their catalog.

For polishing pivots, many clockmakers like the miniature lathe by Sherline (16499) $455 because it has many accessories. It is really up to you: I use a Unimat, which has served me very well for the last eight years. For watch work, I bought a used Boley watchmakers' lathe and a set of collets, well worth the investment. You can buy a used watchmakers' lathe at the NAWCC conventions, but do not buy one unless you know what you're looking for or have someone you can trust to give you advice.

Ultrasonic cleaning machines are more useful for watches than for clocks, but professional clockmakers need them because these machines save time and work. They clean light watch oils well, but heavier dried-up clock oils and greases are frequently not cleaned well. Therefore a clock should be completely disassembled before cleaning (as should a watch): I clean the plates by hand, and the other parts in the cleaning machine. I have a six quart machine by L&R (from Merritts: Q210 for $535).

You could spend lots of money on books, but I only recommend three. One is available from me, and two are available from LaRose:
"The top 300 trade secrets of a master clockmaker" by Jim Huckabee, a very good introduction to repair of American clocks. Part #055216 for $21.00
"400 day clock repair guide" by Charles Terwilleger, a must for repairing anniversary clocks and replacing their suspension units. Part #087091 for $28.00

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Make sure you receive catalogs from all of them. Shop and compare prices, because Merritts usually has the lowest prices. Timesavers has the best service, in my experience. When I order from Merritts, I ask for the "third-day delivery" service so that I receive my order before next month, (this was true for years, they may recently have changed). Black Forest Imports has excellent service. Keep an eye on prices, because there can be considerable differences.

This list is not complete, nor is it intended to be. It is, rather, a good starting point. When I started out, I had no idea what to buy, and a list like this would have been very helpful to me, though I could not

afford all these tools at once. It is not a list of all the tools I have, nor is it a list of tools I never use. It is a list of tools that I use regularly, some frequently, some every day. Most importantly, I hope you like this list and find it useful to you.

Written 9 March 1999. The prices may change soon, so this information may become somewhat outdated, but the usefulness of the tools will not diminish!

Mark Headrick