



National Aviation
ACADEMY

BASIC A&P TOOL GUIDE
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The best advice I've heard about tools is that there is no best brand – instead, each brand tends to excel at making a certain tool type. Does the tool make you a better technician? Should you spend \$150 on a tool that functions exactly the same as a \$15 tool? These are questions you should ask yourself when you're about to invest in your kit. The value and warranty that a tool carries should always be considered. And, don't forget, the best tool you will ever have is your brain.

This guide has been put together with thoughtful consideration about the student need for tools. Use it as you see fit, but don't treat it as an absolute. It has been designed to make things easier (and hopefully a lot cheaper!) for someone preparing to become a professional. Extensive research has been pared down to communicate the basics about brands and tool types. The tool list derives from a mashup of several employer's minimum tool lists, suggestions from active A&Ps and NAA instructors, and personal experience.

Remember: the person with the fanciest tools is not necessarily a good mechanic... and if you borrow a tool from a coworker more than twice, you should buy it for yourself!

TOOL BRANDS INTRODUCED:

Craftsman

Reliable baseline brand with a lifetime warranty. Still the most purchased tools in the US. Craftsman is innovative and well-liked, despite being criticized for outsourcing. Praised by professionals and cheap enough for someone starting out, but often replaced with higher-end tools as tighter clearances are desired (wrenches with smaller heads, etc.) and money allows. Their tools are often purchased to be modified or to make a custom tool without having to spend much. Tool boxes and power tools don't have the best reputation, but they're OK in a pinch. The Craftsman brand has recently been purchased by Stanley Black & Decker, however, broken tools can still be exchanged just about anywhere.

Snap-on

High-end, shiny, expensive tools. Snap-on uses proprietary virgin steel, allowing them to manufacture strong tools with much tighter clearances than other

brands. They mostly utilize a vendor network based out of trucks to distribute their products. The only downside to this is you will have to wait longer to warranty something while the truck arrives at your workplace. Snap-on is renowned in the aviation industry for their safety wire pliers, angle wrenches (labeled as 4-way wrenches), swivel sockets, thin-walled standard sockets, allen bit sockets, and ratcheting screwdrivers. Their boxes will outlive your grandchildren.

Matco

Quality is about on par with Snap-on. Matco also uses a truck-based distribution network for sales. Though slightly less popular than Snap-on, some techs swear by them. They're reputed for their ratchets, which according to some technicians have better head clearance and "feel" to them, and also their shallow swivel sockets. Some techs prefer Matco boxes for their layout and locking system.

Mac/Cornwell

Perceived as a notch below Snap-on, but still high quality. Their truck network covers a much smaller territory than the aforementioned, however, and this may cause issues for some mechanics who move often. Their prices are somewhat lower than Snap-on. Mac is affiliated with the Stanley group.

Knipex

Great brand renowned for their durable side cutters, proprietary pliers and plier-wrenches. They often manufacture tools for other brands. Worth considering for their price-to-quality balance.

Milbar

The best value for safety wire pliers. They should be considered the baseline for them and are worth the investment if you don't want Snap-on. Milbar makes other types of pliers, but they are often sold under other brand names.

SK/Proto/Armstrong/Wright/Blackhawk

Quality tools at a decent price. Lifetime warranty and available for purchase online. SK is an old name with a small truck network. Look in your grandpa's toolbox and you will probably find an SK ratchet. Proto is Stanley Black & Decker's affiliate, and while they're not the cheapest, they are known to be reliable and sometimes on par with Mac.

Crescent

Good brand which is known for their adjustable tools, cutters and pliers. Not as popular with mechanics, but a brand worth considering.

Ridgid

A name typically associated with plumbing and construction work, Ridgid has found its way into aviation via their model E-110 adjustable hex wrench. The E-110 is an offset, smooth jaw pipe fitting tool typically only found amongst Boeing and Airbus technicians. It is sometimes called a “Boeing wrench.”

GearWrench

Basically Craftsman tools with mechanical/swiveling bits and pieces. Excellent value that is seen to be a notch above the big box brands. Known for their ratcheting wrenches.

Chapman

US manufacturer of miniature ratcheting screwdrivers and accessories. Respected among gunsmiths and technicians who work on small machines.

Stanley/Kobalt/Husky/Bostitch/Ace/Napa

Good inexpensive tools that, if used properly, will almost always hold their end of the bargain. Good source of tools for instances when you don't need the best of the best or you need to modify a tool—and they usually carry a lifetime warranty. Some of these tools have, on rare occasion, lost their chrome plating or have been improperly manufactured.

Titan

Decent quality brand known for their miniature ratchets and bit drivers.

V8 Tools

The only brand that makes angle wrenches with the same head angles as Snap-on's 4-way wrenches. Good quality-to-price and will hold up if used as intended. Viewed to be on par with the big box brands. No relation to the juice brand.

Sunex/Tekton

Relatively new, imported brands that have gained a good

reputation among some techs. Known, in particular, for their angle wrenches, but also their stubby and standard wrenches which have fairly tight clearances. They are on par with big box brands and their sets have all the necessary sizes.

Pittsburgh (Harbor Freight)

A much debated distributor which can sometimes be hit or miss. Some of their products work very well, but research before investing in them is recommended. Their tools usually carry a lifetime warranty. Avoid their safety wire pliers unless you absolutely need a pair. Their wrenches and ratchets are well-liked, and their tool chests (pro versions) are known to be of surprisingly good quality.

Oddball Finds

Some techs have reported the use of bicycle tools (although most are metric). The first aircraft tech was a bicycle mechanic, so why not? Others have been known to use basic medical tools for their precision.

MOST COMMON GENERAL TOOLS

Below are the most common tools as found on minimum lists from employers. This list deliberately excludes specialty tools, as your needs will change with your career path. However, this will give you an idea of what to expect and, in theory, allow you to function proficiently without much need to borrow tools.

Box/Chest:

55" and larger low profile box (aka bottom box) with ball bearing drawers recommended, but smaller cheap boxes are fine to start with. A wide, short box has the advantage of being able to roll under wings and function as a workbench should you be inclined to install a wood or metal top. This also gives you the ability to install a vise.

Wrenches:

- 12 point SAE combination open/box end wrench set. Employer will sometimes specify sizes. Stubby combination wrenches come highly recommended, also.
- Ratcheting combination wrenches, SAE. Purchase at your discretion as the consensus among techs is to either love them or hate them. Brands that manufacture them with very small heads are sometimes the only ones that work.

- Fine tooth ratchet, 1/4" and 3/8". Employer may specify "1/2" but it is rarely used otherwise. Swivel, roto-head and stubby ratchets are also recommended and complement a standard set very well.
- Adjustable "Ford" wrench. Many techs highly recommend it and is sometimes found on employer lists. Usually not expensive. This is the original "monkey wrench."
- 6" and 12" adjustable wrenches. Plier-wrenches (Knipex) come recommended as they are able to hold a fastener much tighter than a standard adjustable, but the regular ones will get you by.
- Breaker bar, 1/4" and 3/8". Use them to break torque instead of using your ratchets. They are cheap and help your ratchets (and knuckles) last longer. Some use breaker bars with crowfoot wrenches.
- Speed handle, 3/8". Helpful and usually cheap.
- Angle wrenches, SAE. Come as a set much like standard ones, but will get to fasteners other wrenches won't. Not an every day tool, but generally recommended.

Sockets

- Adapters, all size combinations.
- 1/4" and 3/8" drive extensions. 3 and 6 inch most commonly listed. Longer ones are recommended as well.
- SAE allen wrench sockets. A high quality set will eliminate the need for T-handles (saves a ton of space, unless they are required) and give you the ability to use them to torque a fastener.
- 1/4" drive, 12 point SAE swivel socket set.
- 1/4" drive, 12 point SAE standard wall socket set.
- 1/4" drive, 12 point SAE deep wall socket set.
- 3/8" drive, 12 point SAE standard wall socket set.
- 3/8" drive, 12 point SAE deep wall socket set.

Keys

- Allen wrench set of decent quality. Fold-out set or L shaped keys.

Awls/Picks

- Anything. Some techs have long and short sets.

Cutting Tools

- Aviation snips, L/R/Straight. Buy at your discretion, some say they never use them.
- Box cutter/multi-tool.
- Hack saw. Same note as snips.

Extractors

- Set of extractors, high quality recommended. You rarely use them, but when you do you will thank yourself.

Files

- Half round bastard file.
- Mill file.
- Riffler files. Optional but some use them for precise propeller work.
- File card. You need these to clean your files.

Hammers

- Dead blow hammer. Get a decent quality one.
- 8 to 12 oz. ball peen hammer.
- 8 to 12 oz. plastic tip hammer with replaceable tips.
- Mallet.

Measuring/Marking

- Scales, 6 and 12 inch in decimal and fractional.
- Measuring tape.
- Feeler gauges.
- Calipers. Usually optional but some techs recommend them.
- Sharpies. Lots of sharpies.

Inspection/Retrieval

- Inspection mirror.
- Explosion-proof flashlight and normal high-power flashlight.
- Mechanical fingers/magnetic pickup tool.
- Magnifying glass.

Pliers

- Safety wire pliers. Always get the best you can afford.
- Diagonal cutting pliers. Always get a quality pair.
- Needle nose.
- Duck-bill pliers.
- Locking clamp pliers. Uncommon, but they are very cheap and very handy.
- Channel lock/ "water pump" pliers.
- Lock ring pliers. Not seen on many lists, but sometimes used.
- Cannon plug pliers. Optional, but some techs recommend them.

Punches/Chisels

- Automatic center punch.
- Chisels are usually specified in employer's list, if any.

Screwdrivers

- Phillips and slotted stubby.
- Phillips, #1, #2, #3 standard length. Decent quality set recommended to help prevent cam-out.
- Set of standard length slotted in common sizes.
- Phillips long reach and slotted long reach (at least 8").
- Offset screwdriver set or high tooth count ratcheting offset screwdriver.
- Interchangeable-bit screwdriver with #2 Apex bits or diamond bits.
- Cordless screwdriver. Snap-on kit contains two batteries. If your employer doesn't specify the need for cordless screwdrivers with a clutch, a cheap but good alternative is Harbor Freight's Craftsman knockoffs (~\$10 each). It would be wise to get two, just in case.

Miscellaneous

- Cotter pin puller.
- Good quality gloves.
- Multimeter.
- Head band flashlight.
- Painter's tape, wide blue roll. Optional, but very handy.
- Paper/notebook/pens/clipboard.

SPECIAL NOTES

Employer specific Regulations:

It's important to note that tools that require calibration are, in many cases, provided by your employer. These include items such as torque wrenches, industrial multimeters and electronics, specialized tools, etc. Some employers allow you to use your own (up to date) calibrated tools, others will not. There are a number of companies who mandate box shadowing and/or tool labeling. These kinds of things will be communicated to you when hired.

"Toys," gimmick tools and buying pressure from peers or vendors:

You may eventually wander into a tool truck and be stricken by the variety of cool things you find. While nothing is wrong with treating yourself right, it's very easy to rack up thousands of dollars in debt with the tool vendor. Common sense would tell you that this is not a smart path, but it does happen quite often. Live life and enrich your career, but do so wisely! Don't forget about the used tool market and student discounts!