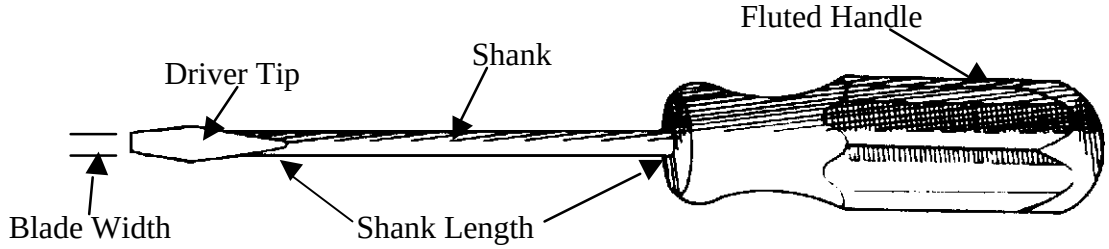
Hand Tools For Electrical/Electronics Tech's

Screwdrivers **- the most common tools used for securing various styles of screws used on electrical/electronic equipment. They are available in a wide variety of handles, shank lengths, shapes, and driver styles.**



Handles **- hardwood or plastic - may have a rubber grip for electrical protection, positive gripping, and comfort or it may have large flutes for improved gripping.**

Shank **- a tempered steel alloy that can withstand the distortion caused by the torque during normal use. The shank may have either a round or square (for severe torque) cross section. Shank lengths vary from about 8 cm to 40 cm. For general electronic assembly and repair, shank lengths of 25 cm are used.**

Driver styles **- available for all screw-head configurations. The most common drive styles used in electronics are the standard (blade), Phillips, and Hexagonal (Allen).**

Blade **- common widths are 2 mm, 3 mm, 4 mm, 5 mm, 6 mm, 9 mm. To avoid damage to the screwdriver or work surface the blade must closely match the slot in the screw head. Standard screw-drivers should never be used for prying or bending.**

Phillips **- made to fit the tapered cross-slots of a screw head. More contact points equal more driving force and less slippage. Commonly available in five number sizes; 0, 1, 2, 3, and 4. To avoid damage to the screwdriver or work surface the alignment between the tip of the screwdriver and the head of the screw must be exact.**

Allen **- made to minimize the possibility of slippage. For most electronics assembly and service the sizes vary between 3/64 & 3/8 inch. (1.5 mm - 9.5 mm)**

Jewelers screwdriver **sets may be used for small and delicate work.**

Power screwdrivers **may be used for the removal or insertion of large numbers of screws during service or assembly.**

Also available are for special applications - ***stubby, offset, and magnetic*****.**

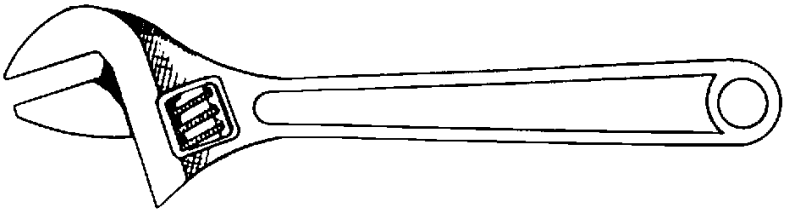
Nutdrivers **- used much like the screwdriver but designed to accommodate hexagonal-style machine nuts or screw heads. Available in sizes 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, and 18. The number represents the size in 32nds. of an inch (i.e. #6 fits a 3/16 hex nut or screw). Nutdrivers are also available in a variety of metric sizes. Sizes above 1/2 inch are used on potentiometers and switches. Shank length may vary from 4 inches to 20 inches. The shanks may be hallow or have a magnetic insert to hold the nut or screw.**

Wrenches **- used for large nuts found on some potentiometers, switches, and binding posts where the correct size nutdriver is not available or accessibility does not allow for its use. Box-end, open-end, and adjustable are the most common types used for electronic/electrical service and assembly.**

Box-end **- like a nutdriver it snugly grips the complete nut to allow for a secure contact eliminating the possibility of shearing or rounding the points of the nut. The sizes listed for nutdrivers are also available for the box-end wrench. Larger sizes are available which are not normally used in electronic service and assembly.**

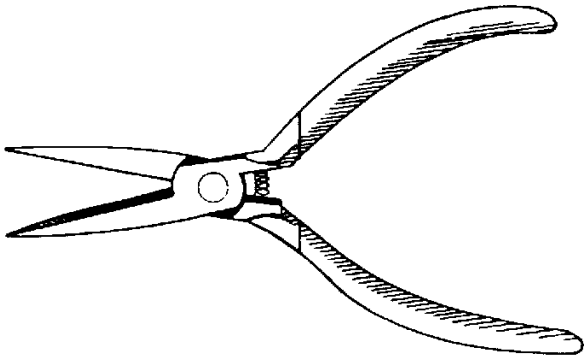
Open-end **- primarily used on square nuts. The length inside the faces of the jaws must fit snugly against the two opposite flats of the nut to minimize slippage and rounding of the nut. The design of the open-end wrench makes it possible to work in confined areas where the nut can only be partially turned. Sizes of open-end wrenches vary from 3/16 to 1 inch, and lengths of 3 1/2 to 10 inches for electronic work. Metric sizes are also available.**

Adjustable **- the distance between the jaws can be adjusted to any size within the capacity of the wrench. This wrench does not provide as secure a grip as the box or open-end wrench. One jaw of the wrench is adjusted by means of a thumb operated adjusting screw located in the head of the wrench. Apply the wrench to the nut and adjust the moveable jaw until both jaws grip the nut securely. When using this wrench be sure that the pulling force is applied to the stationary jaw.**

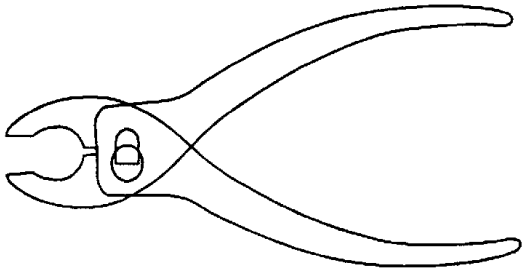


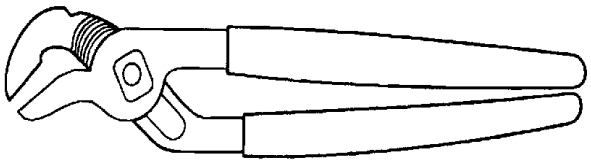
Pliers **- Two types commonly used in electronic service and assembly are the long nose and the slip-joint pliers.**

Long Nose **- consist of long, narrow tapered jaws. The jaws may be smooth or they may have serrations for improved gripping. This tool works well in confined areas where the finger accessibility is limited, for holding wires or positioning small parts. They will not withstand severe gripping or twisting forces. Long-nose pliers are often used in PCB assembly, to set bend allowance on components, and to assist in component insertion.**

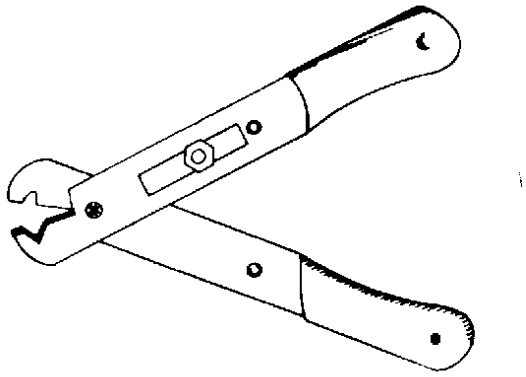


Slip-Joint **- designed for holding and gripping heavy hardware to insert it in a chassis, where marring of the chassis surface is of no concern. These pliers is often used to insert a strain relief and grip large nuts and bolts to hold them in place during assembly.** ***Rib-Joint*** **pliers may be used in much the same way as the slip-joint pliers except that they will often have a larger jaw opening to facilitate larger hardware.**





Wire Strippers **- used to remove insulation from wires, to prepare the wire for electrical connection during assembly or service of electronic equipment. The most popular wire stripper is the "Miller Stripper" . This stripper contains a single slot adjustment within the handle to allow for different gauges of wire. To minimize the damage to conductors, be sure to set the tool for the proper gauge wire, and hold it perpendicular to the wire when pulling off the insulation. Do not use this stripper as a wire cutter, as it will put the cutting edges out of alignment, making the stripper useless.**



Diagonal Cutters **- used to remove the excess wire length along with the accumulation of solder that usually builds up on the wire after a soldering operation. The size of the diagonal cutter determines the AWG gauge that it will be capable of cutting. Typically a 4 inch (10 cm) diagonal cutter will cut wire such as AWG 24 and smaller. Diagonal cutters should not be used as strippers as they may nick (weaken or break) the conductor in the insulation. It is a good safe practice when cutting to point the conductor end downward to the floor to prevent the flying conductor ends from causing eye injury.**