Manual is compiled and maintained by Michael Spiess at California State University, Chico based on the 2005 manual with changes adopted by CATA June, 2013 and approved by the ad hoc committee. New tools were added and descriptions updated. Tool names were updated to reflect current industry names. New high resolution images were added as available. Some tools have been moved to different sections.

The manual and associated formats are generated with an Access database that can produce custom lists, PowerPoint presentations, and multiple choice tests. The entire application and image files are available for download at: http://ag.csuchico.edu/agmech.

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TOC - 2
Common Tools

Axes

Hand Axe
Used for sharpening stakes, cutting small limbs or brush. Also used to drive in small stakes, grade stakes, and corner stakes. The hand axe is similar to the single bit axe but smaller. The handle is 16 to 18 inches long.

Single Bit Axe
Used for building fences, cutting small trees and construction work. This very versatile tool should not be used as a sledge hammer on wedges or iron stakes. Handles are usually of hickory, 36 inches long, oval in cross section and shaped for good balance.

Double Bit Axe
Used to cut small trees, trim logs and tops. Its two cutting edges should not be left in a vertical position because of the safety hazard. The 36 inch handle is oval and straight.

Pliers

Water Pump Pliers
The jaws are adjustable to 2 inches. Used for turning & holding nuts & bolts, gripping irregularly shaped objects, holding pipes etc. These are similar to "Channel Lock" (a brand name) or generically tongue and groove pliers.

Slip Joint Combination Pliers
Used for general purpose work, for holding flat or round stock, and for cutting soft wires.

Diagonal Cutting Pliers
It has curved handles, lap joined; and diagonal cutting jaws. Intended for cutting wire. Slant of the jaws allows cutting nearly flush with a surface.
**Fence Pliers**
Grips between the handles hold the wire tightly while leverage is exerted against the fence post to stretch the wire fairly tight. Can be used for a variety of things, such as cutting wires, pulling staples, hammering nails.

**Locking Pliers**
Locks with a toggle action that holds until the lever is opened. Commonly called Vise-Grip (a brand name) pliers.

**Punches**

**Pin Punch**
This punch has a long, straight shank, the diameter of which designates the size. Used to remove bolts and pins.

**Drift Punch**
The shank is tapered. Used as an aid in aligning bolt or rivet holes prior to inserting a fastener.

**Leather Punch**
The handles are similar to pliers. Used to punch holes in soft materials like leather and rubber.

**Prick Punch**
The punch should be sharp and ground to 30 degrees. Used to precisely create a dimple in metal for layout work or further expansion by a center punch.

**Hole Punch**
These punches are used to make holes in gaskets and other materials. Also called a belt punch.

**Center Punch**
It is manufactured in various sizes and lengths. Used to mark the center of a point. The dimple created by the punch will keep a drill centered.

Common Tools - 2
Torx Head Screwdriver
Also used on appliances, lawn and garden, and electronic equipment.

Slotted Screwdriver
Used to drive slotted wood and machine screws.

Offset Screwdriver
Used where it is difficult to reach the screw head with a common or standard screwdriver.

Stubby Screwdriver
It comes in slotted and Phillips, and has a blade length of 1 1/4 to 1 1/2 inches long. Same use as a screwdriver, but designed for small, tight spaces.

Screwdriver Bit
Available in slotted, Phillips, square, and torx drives for power screwdrivers. Shank is hexagonal.

Nut Driver
This is a very popular tool in the electrical and sheet metal industry. Nut drivers are used for tightening nuts and hex head machine screws.

Square Recess Screwdriver
Used for square drive screws. These screws are commonly used for decks.

Phillips Screwdriver
Used to drive Phillips head machine and wood screws. Always select the correct size for the correct application. Common sizes are 0, 1, and 2.

Clutch Driver
This is a specialty drive that fits screws used in mobile homes, boats, recreational vehicles, and electric motors.

Wrenches
Common Tools

Combination End Wrench
The reason for the popularity of this wrench is that it has the advantage of having both open and box ends. Used to provide grip and mechanical advantage in applying torque to turn objects—usually rotary fasteners, such as nuts and bolts—or keep them from turning. Box end can be 6 or 12 point.

Open End Wrench
Both ends of the wrench are open but are of different sizes. Used for turning fasteners in locations where a box end wrench cannot encompass the fastener.

Box End Wrench
Wrench is available in 12 and 6 point ends.

Six Point Socket
The socket has 6 points inside to fit over hexagonal nuts. Will grip better than a 12 point socket.

Tubing Wrench
The box at each end of the wrench is 6 point only. Also called a flare nut wrench.

Flex Socket
Permits working at various angles.

Twelve Point Socket
The socket has thin walls to fit in tight places.

Deep Socket
The deep socket is made in standard, thin, and extra thin walls, with 6 or 12 point openings and with 3/8, 1/2 or 3/4 inch drive.
Common Tools

Eight Point Socket
Has 8 points and is used on square nuts found on farm machinery.

Extension Bar
Used to connect, the socket wrench to the ratchet handle to give working clearance, and are 3 to 20 inches long.

Universal Joint
It makes work possible in restricted places where the wrench cannot be aligned with the bolt. Used with a socket.

Speed Handle
Used with a socket to rapidly remove a nut or bolt. Common drive sizes 1-4”-3/4”.

Ratchet Handle
The ratchet speeds up the work. Common drive sizes 1-4”-3/4”.

Socket Adaptor
Allows the use of larger drive sockets with smaller socket drives; i.e., 1/2 inch drive socket and 3/8 inch drive ratchet.

Slide Bar Handle
Used as a “T” or “L” handle and is normally used with the extension.

Flex Handle
The end that fits into the socket is swivel hinged, and the other end has a hole with a sliding cross bar to permit use of the wrench at an angle.

Universal Joint
It makes work possible in restricted places where the wrench cannot be aligned with the bolt. Used with a socket.

Chain Wrench
It is made in several sizes ranging from 13 ¾ to 87 inches long, and will handle pipe from 1/8 to 18 inches in diameter. Similar to a pipe wrench but uses a chain.
Common Tools

Strap Wrench
The adjustable strap is useful in rotating large diameter objects like filters.

Hex Key
This wrench is made of hexagon stock with one end bent to a 90 degree angle. Used to drive set screws and bolts with a hex socket head.

Adjustable Wrench
Size is designated by inches in length. Jaws are adjustable to fit nuts of various sizes.

Bars

Ripping Bar
Usually it is of octagon tempered steel. Used for demolition and pulling large nails. Also called a Wrecking Bar.

Flat Pry Bar
Contoured flat bar, with beveled nail slots at each end. Also called a Wonder Bar (Stanley brand name). Used to pull out nails or pry apart boards and other objects.

Crow Bar
It is normally four or five feet long with one end tapered round and the other end with a chisel point. It is used as a lever either to force apart two objects or to remove nails. Crowbars are commonly used to open nailed wooden crates. Common uses for larger crowbars are: removing nails, prying apart boards, etc.

Pry or Fitting Bar
It has a long round taper at one end and a curved pry hook at the other. Used to pull out nails, reposition heavy equipment, or jimmy heavy machinery in place.

Brushes
## Common Tools

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<td>Metal handle is usually sealed at both ends to enable brush to float in solvent to prevent losing brush in solvent tank. Used for cleaning metal parts.</td>
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<td><strong>Push Broom</strong></td>
<td>Handles are 7/8 inch in diameter 4 to 5 feet long and are threaded into broom body or bolted on. Used to sweep up debris from the shop floor and other large, flat surfaces.</td>
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<td><strong>Machinist’s Vise</strong></td>
<td>A bench mounted vise for metal with a swivel base and replaceable jaws. It should not be used for hammering or bending metal. Also called a Bench Vise.</td>
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<td><strong>Bench Brush</strong></td>
<td>The overall length is 16 inches. Used to clean rust and burrs from metal parts and for removing corrosion from tight corners.</td>
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<td><strong>Wire Brush</strong></td>
<td>Used for cleaning metal parts to be welding, cleaning machinery parts and removing slag and rust.</td>
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<td><strong>Woodworker’s Vise</strong></td>
<td>The flat smooth jaws open up to 12 inches. For woodworking, the jaws are made of wood, plastic or from metal, in the latter case they are usually faced with wood to avoid marring the work piece.</td>
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Drill Press Vise
Drilling is safe and more accurate when a vise is used, and fewer drill bits are broken. Commonly clamped to the drill press table.

**Clamps**

Pipe Clamp
A clamp made with a steel pipe. When referring to piping, pipe clamps are used to connect the pipe to the pipe hanger assembly.

Bar Clamp
Bar type clamp has quick non-slip adjustment to approximate size; then screws tight to apply pressure. Used for securing edge to edge boards together to create larger panels and for holding together frame assemblies.

Strap Clamp
Uses a fabric strap that tightens around large or irregular projects.

Spring Clamp
Jaws are specially formed to hold flat or round objects.

Locking Welding Clamp
Works well when clamping two pieces adjacent to each other or at 90 degree angles.

Corner Clamp
Jaws are at 90 degree angles. Used to clamp items like cabinet frames.

"C" Clamp Locking Pliers
Used for clamping irregular shapes quickly and firmly when welding or fastening.
Common Tools

"C" Clamp
The screw has a sliding bar or a thumb screw at one end and usually a ball and socket pad at the other. Sizes range from 2 to 12 inches. Used for a firm hold on metal fabricating or woodworking projects.

Shovels, Rakes, Picks, and Posthole Diggers

Scoop Shovel
The handle can be a short capped ferrule “0” type or 54 inch long handle.

Round Point Shovel
A shovel used for digging. Typical handle length approximately 50 inches.

Square Point Shovel
Used for scooping materials such as sand and gravel. Typically the handle about 50 inches long.

Irrigating Shovel
The same as the round point except the blade is almost straight with the handle.

Bow Rake
Has 15, 2 1/2 inch pointed teeth attached at 90 degrees to a 5 foot ferruled handle.

Clay Picks
The handles for all picks are 32 inches long and are larger at the head or blade end.

Cutter Mattocks
The blades ends are rotated 90 degrees and oval hole is in the center for the handle which is sold separate.

Pick Mattocks
Similar to the cutter mattocks except one end of the blade comes to a sharp point for breaking or digging in hardpan or very hard soil.
Common Tools

Posthole Auger
It is operated by rotating the handle. Used to build fences in solid without rocks.

Posthole Digger
It is operated by thrusting the points into the soil and spreading the handles to remove the soil. Also called a Clam Shell.

Miscellaneous

Safety Glasses
Eye protection that covers eyes only. Safety glasses have side shields. The California State Educational Code states that all students, teachers, and visitors in a school shop must wear eye protection.

Safety Goggles
Eye protection that covers eye glasses.

Face Shield
Eye protection that covers the entire face. Often used with safety glasses when full protection of the face is required.

Chain Saw
Most chain saws are gasoline powered, but smaller pruning saws can be electric or hydraulically powered. Used to trim trees.

Air Compressor
Used for supplying compressed air for spray painting and for operating air tools at low pressures (less than 100 psi).

Rotary Hammer
Used for drilling holes in concrete and with chisel attachments. Special carbide tipped bits must be used with this unit.
Common Tools

Contractors Wheelbarrow
Used widely in the construction industry. Typical capacity 1/5 cubic yard. Wheel is pneumatic.

Bolt Cutter
The toggle and lever joints develop great mechanical advantage. Commonly used to cut bolts, chain, and reinforcing bar.

Hammer Drill
A power drill (corded or cordless) that creates a hammering action on the drill bit. Commonly used for concrete drilling with masonry bits.

Hog Ringer
It is somewhat like a pair of pliers except the jaws of the ringer has special slots for holding the ring. Used in many applications including; nursery cages, fencing, wire mesh products, erosion control, bedding and automotive.

Anvil
Sizes range in weight from 20 to 200 pounds. Used to shape cold and hot metal.

Electric Drill
Many models are variable speed. Typical chuck sizes are 1/4" to 1/2".

Hammer Tacker
A stapler that operates like a hammer. Used to install insulation, builder's paper, roofing felt, etc.
Common Tools

Power Screwdriver

Comes in many shapes and sizes. These power tools are battery or AC powered, reversible, and variable speed. They are commonly used for dry wall or decking installation. Many models also have a high speed range for drilling.

Staple Gun

Heavy duty and light utility models are available driving 3/16 to 1/2 inch staples. Staple guns are used for many different applications and to affix a variety of materials, including insulation, house wrap, roofing, wiring, carpeting, upholstery, and hobby and craft materials.
Measuring, Layout, and Surveying

**Measuring And Marking Tools**

- **Micrometer**
  Sizes range from 0 to 1 inch up to 12 inches. Used for measurement of machined parts to .001 inches.

- **Fractional Vernier Caliper**
  Direct reading of 16ths and 32nds of an inch on the handle, and Vernier readings of 1/128 inch.

- **Dial Caliper**
  Used for accurate measurement to .001 inches. Capacity is from 0 to 6 inches.

- **Fiberglass Tape**
  Lengths of 50’, 100’, 200, and 300’ common. Tape maybe graduated in feet and inches, feet and 1/100’, or metric.

- **Steel Tape**
  A retractable measuring tool available in widths 1/2” to 1” and lengths 6’ to 30’. It should be cleaned after using and kept free from rust.

- **Measuring Wheel**
  Used to measure long distances such as field boundaries or road length where high accuracy is not required.

- **Try Square**
  A fixed square. It is marked in 8ths and 16ths of an inch.

- **Framing Square**
  Rafter framing squares are marked in 12ths of an inch on the back side. Also called a Carpenter’s or steel square. Many of these squares are inscribed with rafter tables.

- **Rafter Square**
  An aluminum square marked for cutting rafters and angles. Also can be used as a guide for cross cutting with a circular saw. Small size will fit in a nail pouch.
**Measuring, Layout, and Surveying**

**Combination Square**
A level and a scribe are contained in the beam. The rule is commonly marked with 1/8", 1/16", and 32nd" marking.

**Inside Calipers**
The calipers are adjusted to the diameter of the object and then laid on a rule where the reading is taken.

**Carpenter's Level**
Used for marking level lines and for checking surfaces for level and plumb. Typical length 24-48 inches. Longer levels are often called masonry levels since they are commonly used to lay brick.

**Sliding "T" Bevel**
Used to reproduce angles. After it is set at the correct angle, it is much the same as a square.

**Outside Calipers**
The calipers are adjusted to the outside diameter of the object and then laid on a rule where the reading is taken.

**Dividers**
Used for marking out circles or parts of circles, for transferring or duplicating short measurements, and for dividing distances into a number of equal parts.

**Depth Gauge**
Usually graduated in 32nds and 64ths.

**Line Level**
It consists of a bubble tube housed in a metal or plastic case which has hooks for attaching to the string line.

**Protractor**
It is graduated from 0 to 180 degrees it is used to measure angles.
### Measuring, Layout, and Surveying

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<td>Used for gauging the clearance or spacing of valve tappets and other jobs where accurate measurements of .001 to .032 may be desired.</td>
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<td>Chalk Line</td>
<td>A special container contains the chalk powder and line which is on a winding spool. Used to mark straight lines by stretching the string and popping it.</td>
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<td>Scribe</td>
<td>Used to mark metal. The tip is brittle and will snap off if dropped on the point or used as center punch.</td>
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<td>Plumb Bob</td>
<td>Used to establish a plumb line in laying brick or concrete blocks. Also used to establish a survey instrument (like a transit) above a specific point.</td>
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<td>Soapstone</td>
<td>Unlike chalk, it is hard enough not to mark hands or clothing and can be used in holders that resemble pencils.</td>
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<tr>
<td>Scratch Awl</td>
<td>Used as a punch for making small holes in light gauge sheet metal for the insertion of sheet metal screws.</td>
</tr>
<tr>
<td>Marking Gauge</td>
<td>It is marked in 8ths and 16ths of an inch and is 8 inches long. Used to scribe a line parallel to an edge.</td>
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<td>Builder's Level</td>
<td>A telescope instrument used to check level of forms or field grades. Builders' levels are designed to be used for short distances. Farm or dumpy levels are similar to builder's levels, but have more powerful telescopes. Farm levels are used for longer distances. Both instruments are leveled manually using adjusting screws. An “auto” level requires less manual leveling and has only three leveling screws.</td>
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Direct Elevation Rod
Rod reads elevations directly (without subtraction from the HI) by used a sliding tape. Some rods have a cut/fill scale for use in grading.

Laser Level
A level that used a rotating laser beam to establish a level plane. Leveling can be done with a single person.

Philadelphia Rod
Reads like a tape measure. An adjustable target is available to allow readings up to 700 feet in distance.

Global Position System Receiver
Commonly called GPS receivers, they used satellites to establish the user’s position (e.g., latitude and longitude). Recreational receivers have an accuracy of 13 m and survey grade receivers have an accuracy of 2 cm. Differential GPS receivers (accuracy 2 cm – 1 m) are commonly used in agriculture to map field boundaries, scout fields, and provide tractor guidance.

Range pole
A simple pole used in lieu of a rod where elevation measurement is not needed.

Transit
Similar to a level, but a transit telescope can be tilted vertically to measure vertical angles. Surveyor’s have generally replaced these with “Total Stations”, but transits are still used to measure vertical angles in construction.

Laser Level Receiver
The receiver that detects the laser beam of the laser level. Can be fitted to a Philadelphia or Direct Elevation rod.
Surveyor’s Arrows
Sizes range from 10 to 14 inches in length. Used to mark distances when "chaining" or measuring distance.

Surveyor’s Steel Tape
Quite often called a “chain.” These may be stored on a reel or coiled. True "chains" are 66 feet long.

Rod Target
Used with the surveyor’s rod to allow readings at a greater distance.

Hand Level
The hand level is held in the hand thus providing little accuracy. Used to establish general slope of land.

Surveying Tripod
Used to hold a level or other survey instrument. To protect threads, keep cap on when not in use.
Fasteners

**Bolts**

**Toggle Bolt**
When the screw is tightened a firm anchorage is made. Used in plaster and sheetrock walls.

**Machine Bolt**
The head and nut may be square or hexagon shaped. Used to connect metal parts.

**Cap Screw**
It resembles a short bolt with a hexagon head with either coarse, fine, or metric thread. Term describes machine bolts and machine screws.

**Machine Screw**
The head is slotted for a screwdriver and may be either round or flat. Typical sizes 4-12.

**Lag Bolt**
The bolt has a square or hex head with a tapered wood screw on the other end. Common sizes 1/4 to 1/2 in diameter, 2" to 12" long. Also called a Lag Screw.

**Plow Bolt**
No wrench is necessary to hold the bolt head. Used to make mechanical connections that require a flush surface at the location where the bolt head protrudes.

**Carriage Bolt**
Commonly used to bolt wood. Never use a washer under the head as the square shoulders designed to grip the wood. Also found on machinery.

**Eye Bolt**
It has an eye on one end and coarse or fine threads on the other.

**Grade 2 Bolt**
Soft bolt commonly used for landscape applications and other applications where strength is not important.
Fasteners

**Grade 5 Bolt**
Mildly hardened bolt used commonly in machinery and equipment applications. Three markings on the head.

**Grade 8 Bolt**
Hardened bolt used where high tensile strength is required. 6 markings on the head.

**Wing Nut**
Used where hand tightening (no wrench) is desired such as inspection covers.

**Castellated Hex Nut**
Used with a cotter pin to prevent loosening or tightening. Top of the nut is smaller in diameter than the base.

**Square Nut**
Used on farm implements with carriage bolts, machine bolts, stoves bolts and plow bolts.

**Cap Nut**
A nut closed on one side to cover an exposed bolt.

**Self-Locking Nut**
When tightened on a bolt the scored threads bite into the threads of the bolt preventing it from backing off.

**Slotted Hex Nut**
It differs from the castellated nut in that there is no stepped-in castle-like top. Used with a cotter pin to prevent loosening.

**Washers**
Fasteners

Finishing Washer
This is a chrome plated countersunk washer used with oval head wood or metal screws.

Fender Washers
A larger washer than a common flat washer. Use with large holes for aligning or adjusting for proper fit.

Set Screw
When screwed into a set collar the cup point makes an indentation in the shaft preventing the collar from vibrating loose.

Malleable Iron Washer
Used where excess pressure or stress is exerted on wooden structures.

Lock Washer
A lock washer will be used with the part of the assembly that most likely could turn such as the nut. It could be used under the bolt head in instances where the bolt screws into threads in one part of the assembly. It should not be used on wood.

Flat Washer
Used to prevent the nut from rubbing and becoming imbedded in the bolted material. Also called a Cut Washer.

Screws

Sheet Metal Screws
Head types are flat, round, pan, oval and binding. Used to fasten sheet metal.

Screw Eye
It may be described as a screw with an eye or ring head.
### Fasteners

**Torx Head Screws**
The head is similar to the Phillips but having a six point star shaped opening in the center of the head rather than a four point star.

**Self Tapping Screws**
Screw has a sharp point with coarse threads that make their own threads when screwed into a pre-drilled hole that is smaller than the diameter of the screw.

**Self Drilling Screws**
No pre-drilling is necessary when using a self drilling screw. Tip is hardened and sharpened. Commonly used to attach metal siding to steel frames.

**Drywall Screws**
All Are Phillips Except the Hex Wafer Head. Used to fasten drywall. Bugle shaped flat head.

**Screw Hook**
Can be screwed into wood walls or concrete or masonry when pre-drilled and a plastic or lead anchor is

**Deck Screws**
A straight shank wood screw with a bugle head. Commonly made with a Phillips or square drive 2 1/2” of longer. Coated to prevent rusting.

**Wood Screws**
A tapered screw with a round, oval, or flat head. The threaded portion of the screw is tapered with a very coarse thread and cuts its own thread as it is turned into the wood. Shown L-R oval head, round head, flat head Phillips, and flat head slotted.

**Nails**
**Duplex-Head Nail**
The point is sharp, and there are two heads, one above the other, to make removal easy. Common sizes 6d, 8d, 16d.
Box Nail
Roughly speaking, d equals 1/4 inch in length, but this is not constant. The shank is smaller in diameter than the common nail to prevent splitting of the wood. Common sizes 2d to 16d.

Finish Nail
The sizes range from 2d to 20d. The nail is designed to be counter sunk and the hole filled.

Spiral Shank Nails
Designed for the construction and repair of wood pallets. These spiral shank nails are also good for re-nailing wagon beds, trailers.

Common Nail
Roughly speaking, d equals 1/4 inch in length, but this is not constant. The shank is larger in diameter than the box nail making the nail less likely to bend. Common sizes 2d – 20d. Sizes larger then 20s are often called spikes.

Galvanized Nail
Common, box, and finish nails are available for exterior use with a galvanized coating. The coating may be hot dipped (thicker) or electro-plated (EG). Used in many small projects as well as general construction projects.

Wire Brad
The size is expressed in wire gauge and ranges from 1/4 to 1 1/2 inches long. Used for fine nailing applications.
Cement Coated Nails
Sizes range from 2d to 16d. Commonly found in a green coating in 8d and 16d ("sinkers"). Cement coated nails are used for projects that require an extra bond, with the reduction in the chance of splitting. They are also well suited for nailing down plywood.

Lead-Head Nails
Lead washer is to prevent oxidation between the head of the nail and the galvanized roofing and also prevents leakage.

Furring Nail
This allows the wire to become a reinforcing agent and the nails hold the plaster to the wall.

Miscellaneous Fasteners

Blue Plaster Board Nail
The range in size is 1 to 1 1/2 inches. Used to attach wallboard to wood studs.

Galvanized Shingle Nail
A small nail commonly 3d in size is generally used for wood shingles.

Corrugated Fastener
The size is 1/4 to 1 inch in depth and 2 to 7 corrugations. Used to fasten wood.

Galvanized Roofing Nail
The head is about 1/2 inch in diameter, and the length ranges from ¾ to 2 inches. Used in roofing and construction projects.

Cotter Pin
This prevents the nut from working loose. Also called a Cotter Key.

Fasteners - 23
Fasteners

Soft Iron Rivet
The size is based on length and diameter.

Pop Rivet
A rivet used to fasten metal. Requires access on to one side of the project. Pop rivets are made in aluminum or steel. Commonly found in 1/8 to 1/4" diameters and various lengths.

Rivet Set
A rivet set is a small bar of steel with a hole drilled in the end to receive the rivet, and with a cup-like depression for forming a round head on the rivet.

Pop Rivet Tool
Tool is adjustable to use to install the various sizes (diameter) of pop rivets.
Hardware

Hinges

Gate Latch
The hook is inserted into the eye screw to latch.

Strap Hinge
The size is measured from the hinge pin to the end of one strap.

Hinge Hasp
One end is like a strap hinge with a slot which folds over an eye or staple to accommodate a padlock.

Butt Hinge
This hinge is available with fast pin or loose pin and is plain brass or steel or primed with paint.

Continuous Hinge
Same as the butt hinge except it comes in 8” to 8’ lengths and is cut to length with a hacksaw. Also called a Piano hinge.

"T" Hinge
Size is measured from hinge pin to the end of the strap. Commonly use for gates ("T" fastens to post).

Barrel Bolt
The other end, a separate piece is an eye which the bolt slides into when locking.

Fencing And Supplies

Nail On Electric Fence Insulator
Commonly a plastic insulator that nails to a wood post. Insulators hold electric fence conductors about 1" from the post.

Wire Stretcher
It consists of two double sheave blocks specifically designed with hooks, holding lock, wire clamp and a rope.
**Hardware**

- **Wire Grip**
  Made of steel or malleable iron. Used to grip fencing wire when tightening.

- **Steel Fence Posts**
  Round steel post with an anchor plate 12 inches from the bottom and comes in 3 to 6 foot lengths.

- **Woven Wire Fencing**
  The roll contains 20 rods of wire ranging from 32 to 47 inches wide.

- **Welded Wire Fence**
  Consists of 16 gauge galvanized wire spot welded rather than woven, and has 2 inch by 3 inch mesh.

- **Fence Staple**
  The length is stated in inches and fractions.

- **T-Post Insulator**
  The insulator is clipped to the steel post and the wire inserted into the plastic clip, thus preventing grounding of the electrical system.

- **Electric Fence Gate Handle**
  By pulling on the handle, tension can be released on the fence and it can be disconnected allowing entry.

- **Poultry Wire Netting**
  The rolls are 50 to 150 feet long and from 1 1/4 to 4 feet wide. Used to build poultry pens or for framing of small craft projects.

- **Chain Link Fencing**
  Comes in 36 to 60 inch widths and 50 to 100 foot lengths. Also called Diamond Mesh.
Hardware

Come-A-Long
By working the ratchet handle the cable is tightened and moves the sheave block closer to the ratchet spool.

Turn Buckle
Turning the body tightens or loosens both at the same time.

Tension Spring
This spring can be extended, but exerts force by extending to pull back to its original length.

Barbed Wire
Used for livestock fencing. A spool of wire is 80 rods long.

Smooth Galvanized Wire
Used for livestock fencing. It is made of smooth galvanized steel and is available in a variety of gauges.

Springs

T Post
A steel post with an attached plate to help anchor the post. Commonly 5'-8' long.

Compression Spring
A compression spring is one that exerts pressure when it is compressed.

Torsion Spring
When the spring is wound up it exerts a twisting force. Commonly found in roll up doors.
Rope and Chain

Chains, Lashing Straps, and Accessories

Proof Coil Chain
A welded link chain. Chain size is designated by the diameter of the steel used in making the links (e.g., 3/16"-3/4"). Made from low carbon steel, proof coil is a general utility chain for such uses as tie-down, log chain and assembly tow and switch chain. Available in plain, hot galvanized, and bright zinc finishes.

Sash Chain
Sash Chain is sold by the foot. Used to hang light fixtures, etc.

Twist Link Chain
Used where the chain must travel easily over something (links don’t get caught).

Load or Chain Binder
This devise consists of a handle, two offset links and grab hooks which, when connected to a section of the load-binding chain and the handle pulled, tightens the chain.

Double Loop Chain
Used for tether chains, swings and hammocks and wherever a light inexpensive chain is needed.

Slip Hook
A round hook used on one end of a log chain to permit it to slip along the chain.

Repair Link
Used to repair a broken chain and for attaching rings and hooks. Also called a Lap Link

Grab Hook
Grab hooks are designed to hook over a chain link and will hold fast when the chain is tightened.
Rope and Chain

Swivel
It consists of two chain links connected by a riveted pin.

Clevis or Shackle
Used for fastening an implement to a draw bar for pulling, fastening a tow cable, and for purposes requiring the fastening or securing of machines or materials.

Lashing Strap
Used for securing loads. Not used for securing heavy equipment. Typical polyester or nylon strap strength is 10,000-20,000 pounds. Smaller straps are available with a built-in winch. Larger straps are designed to be used with winches mounted on the truck bed.

Chain Hoist
Sizes are available from 1/2 to 5 ton capacity.

Winch
A ratcheting device used to tighten a rope or lashing strap.

Rope

Rope Thimble
Used to protect the eye in a rope or cable.

Twisted Polypropylene Rope
Keep away from flames and hot metal, it will melt or solidify and break easily. Also called trucker's rope which is generally black with an orange stripe.

Wire Rope
Laid construction of steel wire. Very stiff but much stronger than plastic or natural fiber rope.
Nylon Rope
Maybe manufactured as a laid (twisted) rope or a braided rope. Stronger and more expensive than poly rope. Braided rope does not have individual strands therefore it is not suited for hand braiding.

Manila Rope
This is a laid (twisted) and comes in three and four strands. A natural fiber, manila is stronger than cotton, but weaker than the synthetic ropes.

Cotton Rope
Cotton ropes are soft but the weakest of the natural fiber ropes.

Wire Rope Clamp
There are two types, the “U” bolt with cleat and the bolt clamp that are used to fasten wire rope. Maybe used to make eyes or splices.

Knots, Hitches, and Splices

Eye Splice
Used to make a permanent loop in a laid (twisted) rope.

Square Knot
A common knot for joining two ropes

Bowline
A knot for making a loop

Clove Hitch
A hitch used to secure a rope to a hook.

Sheet Bend
A knot for joining ropes of different diameters

Trucker's Hitch
A hitch used for securing a load
Metal Working

**Metals**

**Bronze**
An alloy of copper and tin. It is less malleable than brass. It is sold by the piece or by the pound.

**Copper**
A non-ferrous metal that resists oxidation. It is sold by the piece, running foot or pound.

**Brass**
An alloy of copper and zinc. It is sold by the piece or by the pound.

**Aluminum**
A light weight non-ferrous metal that resists oxidation. It is sold by the square foot, by the piece or by the pound.

**Cast Iron**
Used to make castings for cylinder blocks, plow bottoms, housings for tractor differentials, transmission cases, sprockets wheels, pulleys, pipe fittings and gears.

**Stainless Steel**
An alloy steel that resists oxidation. Commonly a chrome or nickel alloy of iron.

**Galvanized Steel**
The zinc coating varies from 0.0002 inch for the lightest coating to 0.002 inch for water pipe inhibits rusting.

**Hot Rolled Steel**
Available in many shapes. Formed hot the finish is rough and dark.

**Cold Rolled Steel**
It is commonly used for making bolts and shafting. Shaped cold the metal is bright and shiny.
Sheet Metal
Sizes thinner than 1/8". Commonly hot rolled steel in 2', 3', and 4' widths and 8', 10', and 12' lengths. Steel may be plain or galvanized. Thickness in wire gauge sizes.

Square Tubing
Wall thickness varies from very light (ex. .080") to thick in larger sizes (ex. 1/2"). Heavier wall tubing is excellent for cultivator tool bars because of its smooth exterior finish and ability to withstand heavy loads.

Rectangular Tubing
Unequal dimensions (ex. 2"x4") steel tubing. Wall thickness varies from very light (ex. .080") to thick in larger sizes (ex. 1/2"). Also see square tubing.

Tool Steel
It can be tempered to various degrees of hardness. Contains more carbon than mild steel alloy.

Plate
Sizes thicker than 1/8". Commonly hot rolled in 4'x8' sheets.

Angle Iron
Sized by the length of the legs and thickness. Ex. 2"x2"x1/4".

Channel Iron
A "U" shaped form. The common sizes range from 1/2" X 1 inch to 4 X 12 inches.

Diamond Plate
Sizes range from 1/8 to 1/4 inch thick, 4 to 5 feet in width and 8 to 12 feet in length. Surface texture is less slick than plate.
Metal Working

**Square Bar**
A solid square shape. Ranges in size from 1/8 inch and greater.

**Strip Iron**
It is 1/8 inch or less in thickness and comes in various widths.

**Expanded Metal**
Come in gauge thickness and usually 4 to 5 foot width and 8 to 12 foot lengths.

**Flat Bar**
Size is 3/16 inch thick and greater and comes in a variety of widths.

**Strip Iron**
Come in gauge thickness and usually 4 to 5 foot width and 8 to 12 foot lengths.

**H Beam**
A 4 inch H beam is 4 inches wide and 4 inches high. Commonly used vertically in buildings.

**I Beam**
Used to support structures (placed horizontally). Typical lengths 20-40 feet.

**Boring Tools (Metal)**

**Straight Shank Twist Drill**
If used on hard steel and at high speeds, it should be made of high speed steel. Designed for general purpose drilling in a wide variety of materials.

**Reduced Shank Drills**
The shank of the drill comes in three sizes, 1/4, 1/2, and ¾ inch. Allows a larger hole to be drilled using smaller cutting tools.

**Tapered Shank Twist Drill**
It should never be used in a chuck. They are designed for general purpose drilling in a wide variety of
Drill Drift
Used for removing Morse taper sleeves and tapered shank twist drills from a drill press. Also called a Center Key.

Chuck
Used to hold a drill in a drill press or drill motor. May portable drill motors are using keyless chucks that are tightened by hand.

Drill Press
Used to ream holes for tapered pins used on farm machinery and equipment.

Chuck Key
Used in keyed chuck to tighten or loosen the chuck.

Cape Chisel
Use for cutting keyways and groves. Useful for tight places where a cold chisel is too large. Sized by the width of the cutting edge.

Morse Taper Sleeve
Used as an adaptor to insert different number taper shank twist drills into the drill press.

Countersink
The shank is 1/4 inch in diameter and can be used in hand or power drills. Used to create cone-shaped holes to countersink flat head wood or machine screws.

Chisels
Cold Chisel
Size is determined by the width of the cutting edge. Cold chisels are used to cut rivets, to split nuts or bolts that refuse to come loose, or to break castings. They can also be used to cut sheet metal. The metal chisels with edges in other shapes have other applications, such as grooving or shaping corners. Don’t use a cold chisel to cut masonry; there are specially made tools for that purpose.

Engineer’s Hammer
Sizes are form 2 1/2 to 4 pound with handle length of 16 inches.

Dead Blow Hammer
It does not absorb liquids or produce sparks when striking steel objects. Some models are weighted with lead shot.

Ball Peen Hammer
This hammer is constructed with a ball at one end and a round crowned hammering face at the other. Also called a Machinist’s Hammer.

Hand Drilling Hammer
The head is made in three different sizes, 2, 3, and 4 pound. It has a short handle and can be used in tight places to drive punches and chisels.

Round Nose Chisel
The sides of the shank are flattened and the width at the cutting edge determines the size. It is used to align drilled holes, cut channels, cutout grooves and similar work.

Blacksmith’s Hammer
The hammering surface is crowned. Designed for use in forming hot metal.

Tinner’s Hammer
The hammer head is beveled on one end and has a square face on the other.

**Hammers (Metal)**
Metal Working

Sledge Hammer
Looks like engineers hammer but much larger. 6-12 pounds in weight.

Files, Threading, and Cutting Tools

Metal File

"T" Tap Wrench
"T" type tap wrenches have an adjustable chuck. Used to hold a tap. Jaws are square to mate with a tap.

SAE Tap
Used to cut Society of Automotive Engineers or National Fine threads in bored holes and nuts.

Tap Wrench
Used to hold the tap when threading.

USS Tap
Used to cut United States Standard or National Coarse threads in drilled holes or nuts.

File Card
The card is a small fine wire brush. Used for cleaning the teeth of a file. Some also have a brush side.

Bottoming Tap
Used after the plug tap to complete a thread in a bottom of a hole.
Plug Tap
Used after a taper tap and before the bottoming tap to cut threads in a blind hole. It has less taper than a taper tap and should not be used to start threads.

Taper Tap
Used as the initial tool to cut threads in a hole. The most commonly used tap.

SAE Dies
Used to cut Society of Automotive Engineers of National Fine (NF) Threads on bolts.

USS Die
The die cuts the male thread of a bolt or rod. USS also called National Course (NC) thread.

Die Stock
Used as a handle for dies.

Screw Extractor
A hole is drilled in the center of the broken stud, and the extractor screwed into the hole in a counter clockwise direction. Screw extractors are often called easyouts, these can be used to remove a broken bolt or a broken stud from a tapped hole.

Hack Saw
The handle normally has a pistol type grip. Used for cutting materials such as metal or plastic. Cuts on the push stroke.

Whet Stone
An abrasive stone used for hand sharpening tools such as wood chisels and other tools to a fine edge.
Round File
A round file is a woodwork device used for removing small amounts of material from a work piece. The round file consists of a long pointed metal body and a square tang for attaching a handle. It is available 4 to 16 inches long and 3/16 to ¾ inches in diameter.

Single Cut File
It has a single series of teeth and is made in bastard cut, second cut and smooth type teeth. Used for filing soft materials.

Sheet Metal Tools

Flat Leg Pattern Dividers
Used For precision transferring Of segments from a pattern to work.

Shear
A powered hand tool used for cutting sheet metal up to 12 gauge.

Sheet Metal Layout Rule
Typically 4’ long and marked in 1/16”. It also has circumference measurements on the back side. Used for sheet metal layout.

Adjustable Trammel Points
The trammel points can be adjusted to any point on the bar. Used to scribe large circles or arcs.

Wing Dividers
Divider Tips Are Adjustable By Loosening A Set Screw And Spreading The Tips Apart.

Tin Snip
There are four types available; regular straight snip, curved (left and right) snip, and duckbill snip.
Metal Working

Aviation Snips
Available in straight, left, or right. Compound action makes cutting easier and the jaws are usually serrated. Also called Compound snips.

Sheet Metal Shear
Foot operated shear that cuts sheet metal.

Cut Off Saw
Cutting wheels may be disposable or with teeth. Used for cutting steel bar and pipe.

Bench Grinder
Used for sharpening and removing material. Stones are classified by diameter, width, and coarseness (i.e. 1" x 6" 80 grit).

Brake
Used for bending sheet metal.

Hydraulic Shear
Powered by a hydraulic pump and cylinder these shears commonly can cut flat stock, angle iron, and punch holes.

Angle Grinder
Available in sizes from 2 to 9 inch. May be used with a grinding, sanding, or wire brush wheel. Used to grind down, sand, or clean metal.
Woodworking

**Wood**

**Pine**
A softwood used for small projects and moldings.

**Pressure Treated Lumber**
Generally fir species that is treated to resist decay. Green in color.

**Plywood**
Composed of layers of wood sheets with the grain of each sheet glued at right angles. Very strong. Used for flooring, roof sheathing, and shear walls. Comes in various grades denoted by letters. A=best, D=worst. For example AC would be A on one side and C on the other. Plywood can be designated as interior or exterior depending on the type of glue used in its manufacture.

**Oriented Strand Board (OSB)**
Primarily made from wood chips. Used for shear walls and roof sheeting.

**Cedar**
Known for its resistance to decay. Used for fencing.

**Particle Board**
Primarily made from sawdust. Used for subfloor where shear strength is not needed.

**Douglass Fir**
Used primarily for structural framing. Very strong.
Woodworking

Redwood
Known for its resistance to decay. Used for landscaping, decking, etc.

Oak
A hardwood used for cabinets and similar applications. The grain is very distinctive. May be used as a solid wood or as a veneer on plywood or particle board.

Birch
A hardwood used for cabinets, door veneer, and similar applications. May be used as a solid wood or as a veneer on plywood or particle board.

Hammers (Wood)

Tack Hammer
One side of the head is magnetic and used for starting short tacks.

Curved Claw Hammer
Used for driving and pulling nails. Face is commonly rounded for finish work. Weight 13-16 oz.

Straight Claw Hammer
The hammer head is the same as a curved claw hammer, but the claw is nearly straight. Weight 16-28 oz. Head may be smooth or serrated. Also called a Ripping hammer. Primarily used for pounding nails into, or extracting nails from, some other object. Generally, a claw hammer is associated with woodworking but is not limited to use with wood products.

Mallet
Heads are made of wood, plastic, rawhide and rubber. Also called a Soft Headed Hammer. Used to drive a chisel or wedge.

Shingler's Hatchet
It has a gauge that can be adjusted for the desired shingle exposure and has a nail pulling slot in the back and above the cutting edge. Used to install shingles or other roofing materials.

Saws And Accessories
Woodworking

Back Saw
This saw should be used in a horizontal position. Used for making accurate, deep cuts in wood. Has fine teeth.

Keyhole or Compass Saw
Used for sawing curves, especially where the cut must be started from a hole bored with an auger bit.

Hand Cross Cut Saw
The standard length is 26 inches. Typically 8-12 teeth/inch. Used in carpentry for cutting against the grain. Teeth are pointed.

Coping Saw
The blade is installed to cut on the pull stroke. Used to cut intricate external shapes and interior cutouts in woodworking or carpentry. Primary use is for "coping" or fitting moldings.

Hand Rip Saw
The edges of the teeth are not beveled, but are shaped like chisels. Typically 4-7 teeth/inch. Used for cutting wood with the grain.

Circular Saw
Primarily used for cutting wood, however many blades types are available for cutting sheet metal, metal, stone, and various other products. Available as a direct drive or worm drive (gear).

Power Tools

Belt Sander
Sands or cuts using a sanding belt. Used for course sanding of large surfaces.

Jack Plane
Planing should be done with the grain of the wood. Note tail behind the handle. Used for general smoothing of the edges.
Woodworking

Smooth Plane
Sizes range from 5 1/2 to 10 inches long and 1 1/4 to 2 3/8 inches wide. The smoothing plane is typically the last plane used on a wood surface - when used properly, the finish it gives will be far superior to that made by sandpaper or scrapers. The smooth finish is the result of planing the wood off in strips, rather than by successive buffing and scratching.

Finishing Sander
Sands by a vibrating action.

Routing
Depth of cut is adjustable. Used to shape wood (ex. round the edge of a board).

Block Plane
Sizes range from 5 1/2 to 7 inches long and 1 3/8 to 1 5/8 inches wide. Used to plane the end of a board.

Jig Saw
Many variations of blades are available for cutting wood, plastics, and other soft materials. Also called a Saber Saw. Used to cut in the interior of a project (e.g.; a hole) and cut curves.

Power Miter Saw
Used to cut wood. The saw pivots on the miter box to cut angles.

Circular Saw Blade
The size is determined by the diameter of the blade.
Woodworking

Nail Gun
Nails are fed automatically from a loading chamber and are dispensed by pulling the trigger. Available to drive brads, box and finish nails, roofing nails, and staples. Air powered or powered with a gas charge.

Reciprocating Saw
Similar to the jig saw but much larger and used for heavy duty work. Commonly used to cut materials such as nails, pipe, as well as wood.

Hole Saw
Hole saws come in sizes from ¾ to 2 1/2 inches and one mandrel fits all. This blade creates a hole in the work piece without having to cut up the core material.

Surface Planer
Used for planing wood surfaces. Commonly as stationary tool, but also available as portable tool. A power version of a hand plane.

Disc Sander
A stationary power tool with a 6-12 inch sanding disc.

Auger Bit
The straight round shank adapted for power drills.

Boring Tools (Wood)

Forstner Bit
A power bit for drilling flat bottomed holes in wood. Commonly found in sizes 3/8-2 inch.

Spade Bit
A wood boring bit with a hex shaft to be used in a power hand drill or drill press.
**Woodworking**

**Expansive Bit**
The shank is a square taper, adapted for the bit brace.

**Woodworking Tools**

**Surform Tool**
A tool like a wood rasp with a replaceable cutter. Available in flat, round, and half round shapes.

**Nail Set**
A nail punch also called a nail set, is used to drive the head of a nail flush with a surface.

**Hand Screw Clamp**
The wooden handles are mounted on opposite sides of the jaws. Used to clamp wood projects.

**Cat's Paw**
A tool used to pull nails

**Wood Chisel**
It is sharpened only on one side to a 25 or 30 degree angle and may be used with or across the grain. A sharp wood chisel can cut mortises, shave rough surfaces, chop out corners and scrape off glue.

**Wood Rasp**
Used to shape wood. Much courser than a metal file. Other rasps are 4-in-hand and horse rasps.

**Nail Puller**
Used to remove nails from a work, commonly used in demolition. A pair of jaws is driven into the wood below the nail head by impact action of the handle.

**Utility Knife**
A sharp knife for cutting drywall, roofing felt, etc.
Woodworking

Drywall Trowel
A flexible trowel for applying drywall compound and tapping.

Drywall Saw
A tapered hand saw for cutting drywall.

Stationary Power Tools

Band Saw
Used for making curved cuts in wood or metal.

Radial Arm Saw
A saw designed to cross cut and rip with the ability to cut compound angles.

Drill Press
A stationary drill that can be equipped with specific bits that are designed to drill through different wood and metal materials.

Table Saw
A stationary saw used primarily for ripping lumber and sheet materials.
Concrete

**Concrete Tools And Supplies**

**Portland Cement**
Fine power made from limestone. Used to make concrete and mortar. Commonly sold in 94 lb. bags (1 cubic foot).

**Sand**
Fine aggregate less than 1/4" in size.

**Gravel**
Course aggregate greater than 1/4” and commonly less than 1 1/2” in size. Used in concrete production, road paving, landscaping, etc.

**Concrete**
A mix of cement, sand, and gravel. Typically in a ratio of 1:2:3 or 1:2:4. Used for building pads, sidewalks, and equipment pads.

**Mortar**
A mix of cement, lime, and sand used to lay bricks or concrete blocks.

**Sponge Rubber Float**
Must be dipped continuously in water when working plaster to keep the plaster from adhering to the rubber. Used for plaster or grout application.

**Bull Float**
A large float with a long detachable handle. Made from wood or magnesium. Common sizes are 8 inches wide by 36 or 48 inches long. Used to flatten fresh concrete surfaces.

**Hand Float**
It is 4 to 5 inches wide and 13 inches long. Floats are used for rough finishing.
Concrete

Corner Trowel
Size is 2 1/2 by 2 1/2 wide and 6 inches long. Used to finish corner in curbs, steps, etc. The handle placement determines if the trowel is outside or inside. Outside corner trowel is also called a step trowel.

Fresno Trowel
This large finish trowel also has a long detachable handle. This trowel is used in hard-to-access areas or large areas of concrete where a traditional hand trowel floating is not possible.

Concrete Tamper
A tubular steel frame handle is attached to the top which allows a person to operate the tamper while walking in the concrete. Also called a Jitterbug. Used to force aggregate below the surface of the wet concrete.

Finishing Trowel
The finishing trowel is made of steel and is 4 inches wide by 14 inches long. Used to smooth, level, or texture the top layer of hardening concrete.

Concrete Edger
The ends may be curved up slightly. Used to finish the edges of concrete.

Groover
It is 2 7/8 inches wide and 6 inches long with the ridge being 1/2 inch deep and 1/2 inch wide. Use to place groves in concrete slabs.

Mortar Hoe
It also has a 5 1/2 foot handle and holes in the hoe to aid mixing.

Mud Pan
Used mostly with small trowels or putty knifes to hold dry wall taping compound or mortar.
Concrete

Hawks
The size is 13 x 13 inches square. Use to carry mortar.

Star Drill
It is operated by striking with a hammer while rotating by hand. Used for making holes in stones or masonry projects.

Masonry Bit
Used to drill in brick, block, and concrete. The tip is treated with tungsten carbide to resist heat and wear.

Brick Layer’s Hammer
The wedge shaped end is for scoring and cutting brick, and the other end is for tapping bricks into place when leveling. Used to break bricks, stones, and other hardscape materials.

Brick Jointer
The jointer is bent at each end at about 20 degrees to allow the mason to use one end as a handle and the other as a jointer. The tool is used to finish the joints between bricks.

Brick Chisel
Blade is 3 1/2 inches wide, overall length is 7 inches. Used to make smooth cuts on bricks.

Brick Trowel
It is pointed and measures 4 ¾ inches by 11 inches. Used in masonry.

Reinforcing Bar
Available in 20, 30, and 40 foot lengths. Common sizes (diameter) of 3/8” to 1” are use in small construction projects. Numbered sizes are 1/8s of an inch in diameter.
Plumbing Tools and Supplies

PVC Pipe Cutter
This cutter makes smooth clean cuts on small diameter PVC pipe. Also used with polyethylene (PEX) tubing.

Pipe Cutter
Used to cut steel pipe. Too much pressure on the handle may cause the cutting wheel to break.

Pipe or Burring Reamer
This type of reamer is made with bit brace shank, round shank, or “T” handle.

Pipe Die Stock
Operates as a ratchet in both directions. Hold the pipe die.

Flaring Tool
Used to make flared ends for soft tempered tubing.

Copper Fitting Brush
Used to clean metal parts to be soldered or welded and for cleaning pipe threads.

Teflon Tape
Used for sealing threads on metal and PVC pipe and on valves.

O.D. Tube Cleaning Brush
A wire brush used to clean copper pipe or tubing for soldering. Comes in sizes 1/2” to 1”.

Pipe Die
Pipe dies should not be used for bolt threading as they are tapered.
Plumbing Tools And Supplies

Pipe Tap
Used to cut internal threads in pipe fittings.

Pipe Wrench
Adjustable and is used to turn pipe or conduit or round stock. Sizes 6” – 18” in length are common, but can be much larger.

ABS Cement
Used to connect ABS Plastic pipe and fitting. Black in color. Not compatible with PVC Pipe.

Pipe Vise
Used for holding pipe while cutting and threading.

Acid Brush
Used for applying pipe joint compound on threaded pipe and thinner’s fluid (acid) or flux on copper pipe for soldering. The handle is tubular sheet metal 3/8 inch in diameter and 6 inches long. Also useful in woodworking to apply glue.

Propane Torch
A propane/air torch that develops temperatures suitable for soldering.

Solid Solder
It is available in 1 or 5 pound spools. Lead free solder is used for plumbing of domestic copper pipe.

PVC Glue
When gluing, apply glue to both the fitting and the pipe, slide the two pieces together and rotate 1/4 turn for good adhesion. Glue comes in a variety of thicknesses, set times, and colors.
Plumbing Tools And Supplies

**Tubing Cutter**
Used to cut copper and aluminum tubing.

**PEX Crimp Tool**
Use to close the crimp fasteners that hold PEX pipe to fittings. There are a number of other systems in use.

**PEX Cinch Tool**
Use to close the cinch fasteners that hold PEX pipe to fittings. There are a number of other systems in use.

**PVC Primer**
Used to clean and soften PVC pipe before applying cement. Generally recommended for pipe 1" and larger.

**SxSxS PVC Tee**
Used to connect three pieces of PVC pipe together. Outlet is commonly smaller than the ends. A typical designation is 1" x 1" x 1/2 SSS Tee. If the outlet is threaded then the designation would be SST.

**SxT PVC Street Elbow**
Used to connect PVC pipe to threaded pipe at an angle. May be threaded on both ends, slip on both ends, or slip-thread.

**SxT PVC Reducer Bushing**
Used to connect PVC pipe to a smaller diameter threaded pipe.

**SxT PVC Elbow**
Used to connect PVC pipe to threaded pipe at a 45 or 90 degree angle. May change sizes. Such as 3/4" x 1/2" ST Elbow.

**PVC Pipe And Fittings**
**Plumbing Tools And Supplies**

**PVC Pipe**
Used for cold water purposes, sizes range from 1/2 to 2 inch and it comes in 20 foot lengths.

**SxS PVC Coupling**
Used to connect two pieces of pipe together in a straight line.

**Compression Coupling**
Can be used on steel or PVC pipe. Usually used for repair or temporary connections. Seals with a neoprene gasket.

**SxS PVC Reducer Bushing**
Used to connect PVC pipes of different diameters.

**SxS PVC Elbow**
Comes in 45 and 90 degree angles. Both ends are glued.

**Male Adaptor**
The PVC slip end is female and the threaded end is male thread.

**S PVC Cap**
Used to stop the flow on PVC pipe. Slip cap is shown, but can be threaded.

**SxS PVC Street Elbow**
Used to connect two pieces of PVC pipe at an 90 degree angle. One end is male and other is female.

**Female Adaptor**
Used to connect PVC pipe to threaded pipe, has female ends.
SxSxT PVC Tee
Used to connect a straight length of PVC pipe to a threaded pipe at an intersection. Sizes are given as end, end, middle such as 3/4" x 3/4" x 1/2" SST.

PEX Pinch Clamp
Use to fasten PEX pipe to barbed fittings. Used with a cinch tool. Made of stainless steel.

PEX Tee
A barbed tee fitting used with PEX pipe systems. Commonly described by the size or each opening such as 1/2" x 1/2" x 3/4" (end, end, middle).

T PVC Cap
Used to stop the flow on threaded pipe.

PEX Crimp Ring
Used to hold the PEX pipe on the barbed fitting. Used with a crimp tool. Commonly made of copper.

PEX Elbow
A 90 degree barbed elbow used with PEX systems

PEX Coupling
Couples PEX pipe.

PEX Female Adapter
An adapter from the PEX barbed system to female iron pipe threads.

PEX Pipe
Cross-linked polyethylene plastic pipe (tubing) is used for hot and cold water. It is easily worked and used with barbed fittings.

PEX Pipe And Fittings
**PEX Male Adapter**
An adapter from the PEX barbed system to male iron pipe threads.

**PEX Stubout**
An adapter to copper pipe. Commonly used to with shutoff valves with compression fittings for water supply lines.

**Copper Pipe and Copper Pipe**
Rigid pipe used for water supply plumbing. Sizes commonly 1/2” - 2”. Connections are soldered. Copper pipe is available in three basic types: Type M is thin-walled, Type L is medium-walled and Type K is thick-walled.

**Copper Tubing**
Flexible tubing used for water applications. Sizes commonly 1/4”-2” O.D. Connections are soldered, flared, or compression type.

**CxC Street Ell**
A street elbow for use with copper fittings. Often used with a C x C Ell to make a odd angle.

**CxC Union**
Used to connect two copper pipes together when neither can be moved.

**C Cap**
Used to stop the flow of liquid or gas in a copper pipe.
Plumbing Tools And Supplies

Paste Flux
Flux is used in soldering to clean pipe allowing solder to flow easily.

CxT Adaptor or Male Adapter
Used to connect copper pipe to threaded pipe.

CxCxT Tee
Used to connect two copper pipes to a threaded pipe.

CxC Coupling
Used to connect two copper pipes together.

CxC Reducing Coupling
Used to connect copper pipes of different diameters.

CxC Elbow
 Comes in 45 and 90 degree angles.

CxCxC Tee
Used to connect three pieces of copper pipe together.

CxT Female Adapter
Used to adapt to female threads

Steel Pipe and Fittings

90 Degree Elbow
A elbow that changes direction by 90 degrees. Both ends are female threads.
Floor Flange

It is a steel flange with female threads in the center and holes drilled on the edge of the flange for bolts or screws.

Galvanized Pipe

Steel pipe with a galvanized coating to prevent corrosion. It Should Not Be Used In Hydraulic Systems.

Union

A three piece fitting. The center piece is hex shaped to accommodate a wrench and tighten the two outer pieces. Used to join two pipes so they can be easily disconnected or join threaded pipe in the middle of a piping run.

Nipple

Short pieces of threaded pipe, nipples are classified as close, short and medium, or are measured in inches of length.

Coupling

It is used to connect two pieces of pipe in a straight line.

Bushing

Used to reduce pipe size. One end is hex shaped to receive a wrench.

Black Pipe

Pipe lines may be constructed with threaded fittings or may be welded. Used for natural gas not water.

45 Degree Elbow

A elbow that changes direction by 45 degrees. Both ends are female threads.
Plumbing Tools And Supplies

Cross
It is shaped like a cross and is threaded inside at the four ends.

Pipe Plug
The end is square to accommodate a wrench.

Bell Reducer
Similar to a coupling, but changes pipe sizes.

Street Ell
An elbow with male thread on one end and female threads on the other. Available in 90 and 45 degree angles.

Cap
Used to screw over the threaded end of a pipe to seal the opening.

Pipe Clamp
For 1/2 to 2 inch pipe. Used for repairing small leaks in steel pipe.

Tee
Used to connect lateral branches of a pipe.

Close Nipple
A nipple that is as short as possible (threads touch).

ABS Pipe and Fittings
ABS Pipe
Acrylonitrile-Butadiene-Styrene (ABS) pipe used for sewer applications. Pipe is black plastic. ABS fittings are glued like other plastic pipe systems. Male and female ends are designated as "spigot" and "hub" respectively. Elbows are not designated by degrees, but rather by the part of the circle (ex. 1/4 bend = 90 degrees). Pipe commonly is found in sizes from 1 1/4" to 6" and 20 foot lengths.

Double Wye Hub
Used for connecting two lines at a 45 degree angle to a straight ABS pipe.

Female Adaptor-Hub X Female
Used to connect ABS pipe to threaded pipe.

Wye Hub
Used for attaching a line at a 45 degree angle to a straight line.

Adaptor-Spigot X Female Pipe
Used to connect female ABS pipe fitting to male pipe thread. Often used for cleanouts.

Long Sweep 1/4 Bend Hub
Used to connect ABS pipe at a 90 degree angle and allows for easy clean out when using a drain auger or plumbers snake to clean out lines.

Male Adaptor-Hub X Male Pipe
Used to connect ABS pipe to female pipe threads.

P Trap Hub With Union
Liquid is held in the base of the P Trap to prevent the passage of air or gasses.

Valves
Plumbing Tools And Supplies

Hose Bib
It has standard pipe threads on one end and hose coupling threads on the other.

Globe Valve
The flow is stopped when the wedge or gate is lowered into the seat. Used as a shutoff valve. Should be only fully open or fully closed. Low pressure loss due to the straight through design.

Gate Valve
The flow is stopped when the wedge or gate is lowered into the seat. Used as a shutoff valve. Should be only fully open or fully closed. Low pressure loss due to the straight through design.

Ball Valve
By rotating the ball with the handle the valve closes or opens. Can be used to control flow. Low pressure loss due to the straight through design. Quick action since the lever is turned 90 degrees between open and closed.

Check Valve
Once liquid has passed through the valve it cannot flow back.

Cock Valve
Used to stop the flow of liquid or gas through a pipe. Also called a Stop Cock.

Misc Plumbing
Drain Auger
By rotating the auger while feeding it into the line the auger bit tip cuts away the obstruction in the line.
Pipe Joint Compound
Used to seal threaded fittings. May be formulated for use with plastic pipe or steel pipe only.

Plumbers Tape
A galvanized flexible steel tape with holes for screws or nails used to secure plumbing. It is cut to length on the job, wrapped around the pipe and secured with a nail or screw.

Hose Clamp
Used with rubber hose and polyethylene pipe. It consists of a circular steel collar with a tightening screw to secure the hose in place on a barbed fitting.
Electrical Tools

Voltage Tester
Used for testing voltage on electrical outlets, fuse clips, and circuit breakers will test voltage from 120 to 600 volts.

Wire Stripper
Used to strip plastic coating from solid electrical wires without damaging the wire. Can be adjusted to be used on various wire sizes.

Conduit Bender
This enables an electrician to make accurate 45 and 90 degree bends in conduit. Bender may be designated for EMT or rigid conduit.

Continuity Tester
A device used to test the continuity of a circuit.

Limen's Pliers
They are used on both bare and insulated wire. Note: These tools are also used for fence work and tying concrete rebar.

Multi-Tester or Volt-Ohm Meter
An analog or digital meter that commonly will measure AC volts, DC volts, Ohms, and milli-amps.

Non-Metallic Cable Ripper
Made of a thin “U” shaped metal piece. When you pull the wire ripper down the length of the cable, the cutting head penetrates the outer cable but leaves the inner wires untouched.

NM Cable Cutter
A cutter for cutting Type NM cable.

Long Nose Pliers
Used for stripping wire, making eyes in wire and holding wire in place while inserting screws.
Electrical

Wire Stripper And Crimping Tool
Used for stripping wire, cutting wire and crimping wire terminals on stripped wire ends.

Fish Tape
Fish tapes come in 25, 50 and 100 foot lengths. Used by electricians to pull wiring through walls and electrical conduit.

Soldering Gun
It is fitted with a replaceable tip and operates on 115-volt AC. Used primarily for soldering wires.

Fuse Puller
Made of plastic to prevent electrician from being shocked while installing or removing fuses.

Hickey
The Hickey or bender is used for short radius bends in rigid conduit.

Armored Cable
This cable must run from box to box without splices. Often used in basements and other areas where the wire is not encased in a finished wall.

Knockout Punch
Sizes range from 1/2 to 2 1/2 inches. Used to create a hole in panel for connecting conduit.

Electric Soldering Iron
It has a replaceable copper tip. Soldering irons are sized from very light duty for soldering fine wires to heavy duty for soldering sheet metal.
**Electrical**

**Knife Fuse**
The knife fuse is made in several sizes for service of 60 to 600 amps and is not interchangeable with cartridge fuses or knife fuses of different capacities. Used to protect asymmetrical circuits.

**Circuit Breaker**
Used to protect the wire in a circuit. Rated in amps.

**Wire Nut**
Used to connect AC wires. Color coded to denote capacity.

**Solderless Connector**
Used where a permanent connection is desired. Connectors can be insulated or un-insulated. Commonly used for wiring on mobile equipment.

**Plastic Tape**
It is used alone without friction tape.

**Ground Rod**
It is connected to the electrical service box or meter can by a shielded ground wire and a ground clamp.

**Ground Rod Clamp**
Connects a ground wire to a grounding rod, reinforcing bar, or metal water pipe. This provides for a good ground in the event of a power spike or lightning strike.

**Friction Tape**
Used over rubber insulating tape on wire Splices and is used to replace the outer braid.

**Electric Cord**
A flexible cable used for extension cords and connecting power tools (e.g., Type SJ). May be plastic or rubber covered.
**Electrical**

**Conduit Strap**
Conduit is placed in the curved portion and strap is secured by nails or screws. Single foot and double foot styles. Sized for EMT and rigid/PVC conduit.

**Insulated Staple**
Commonly used for low voltage wire used in applications such as door bells or sprinkler controllers. It should not be used 120-volt lines.

**Non-metallic Cable Staples**
Staples used to secure type NM cable to wood.

**Cartridge Fuse**
It is a cylinder shaped like a cartridge case and has metal ferrules at each end and a soft fusible element inside. Used to protect motors and branch circuits where higher amps or volt ratings are required.

**Core Solder**
It is available in spools. Rosin core is used to solder wires and acid core to solder sheet metal.

**Non-Metallic Clamp**
The cable is secured by means of a bracket tightened with screws. Used to secure a NM cable to a box.

**Conduit Drive Strap**
Used to secure conduit to wood, it is driven into wood with a hammer with conduit resting in curved end.
### Electrical

**UF Cable**
A solid plastic covering is used on this cable making it suitable for direct burial of the cable. UF cable is sized like NM cable. Generally used as feeder to outside post lamps, pumps, and other loads or apparatus fed from a distribution point in an existing building as specified in the National Electrical Code.

**Non-Metallic Cable**
A cable with a plastic cover used for residential indoor wiring. Commonly found with 3 and 4 conductor in sizes 14-6. For example "14-2 w/ ground" will have 3 14 gauge conductors, 1 black, one white, and one bare. Commonly used in many electrical projects.

**Service Entrance Panel (SEP)**
Used to distribute power in a building. Contains a main disconnect and circuit breakers.

**Single Conductor**
A single conductor with thermal plastic insulation. Wire may be solid or stranded. Typical types are TW and THHN. Common sizes 14-0

**Rubber Tape**
Used on high voltage connections. It is covered with friction tape or plastic tape.

**EMT & Flex Conduit**
It consists of a heavily zinc coated steel strip wound spiraling, with interlocked construction permitting greater flexibility. Ground wires are required.

**Flexible Conduit**
Electrical

**Electrical Metallic Tubing**
A thin walled conduit. Commonly abbreviated as EMT. It is coupled with special fittings and is smooth inside. Manufactured in 10 foot lengths. Common sizes 1/2"-2". Approved for

**EMT Connector**
Used to connect EMT conduit to a box, panel, or other threaded fitting.

**Rigid Conduit**
Steel pipe used where strength is important or where the conduit must be sealed. It is available in galvanized and enamel finishes.

**EMT Sweep**
A pre-formed bend used with EMT. Attached with EMT couplings. Commonly used with larger EMT where hand bending is difficult.

**Ridged Conduit**
Made of galvanized steel used to couple rigid conduit.

**Ridged Entrance Ellbow**
Has female thread on each end and has removable cap for access to wire for splicing or pulling.

**Ridged Coupling**
Made of galvanized steel used to couple rigid conduit.

**Ridged Elbow or Sweep**
Sizes range from 1/2 to 2 inch. Threaded on both ends.

**Raintite Hub**
Made of cast aluminum and has a flange with pre-drilled holes for mounting to panel, and threaded inlet for conduit.
**Electrical**

**Service Entrance Cap**
Made of cast aluminum or PVC.

**PVC Conduit Elbow or Sweep**
It has a long radius and is connected by gluing couplings on elbow and pipe.

**Cord Cap**
It is sometimes called a male plug. Used on extension cords and power tool cords.

**PVC Conduit**
PVC conduit is used inside, outside or underground. Gray in color. Glued connections make it waterproof.

**PVC Conduit Male Adaptor**
Adapts PVC conduit to a threaded fitting for connecting to a box, panel, etc.

**Cord Connectors**
This connecting body is designed to accommodate the cord cap and is sometimes called a female plug.

**PVC Conduit Coupling**
Used to connect PVC conduit, must be glued and once connected cannot be removed.

**PVC Pull Elbow**
Used to make 90 degree bends and has removable cap for splicing or pulling wire. Glues to PVC conduit. Types denote the location of the cover (e.g. LB, LR)

**Lampholder**
A plastic or porcelain device that holds a lamp.

**Boxes and Devices**

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Electrical

Duplex Receptacle
Receptacles may be installed in outlet boxes flush with the wall or in surface mounted boxes or junction boxes. Available in 15 or 20 Amp capacity.

Plastic Box
Commonly constructed of PVC plastic and used with NM cable. May be attached with nails (shown) or screws. Comes in 1-4 gang sizes and varying depths.

Surface Cover
Used with 4" junction boxes to adapt the box to a specific device when the box is mounted on the surface of a wall. In this case a switch and DR, but they come in many configurations. Blank (flat) covers are also used when no device is mounted in the box.

Switch Box
 Comes with knockouts for non-metallic sheathed cable or electrical metallic tubing. Boxes must be covered either with a cover or a fixture.

Junction Box
Usually made of metal in square or octagon shaped boxes. Boxes must be covered either with a cover or a fixture.

Plaster Ring
Used with 4" junction boxes to adapt the box to a specific device where the box will be behind drywall or stucco. In this case used for a switch or DR, but they come in many configurations and in different depths. Also called a mud ring.

Box Cover
Used to cover a device such as a switch or DR. Many configurations are available.
Toggle Switch
When the toggle switch is pushed up the service is on and off when pushed down.

Three-Way Toggle Switch
Used to control a device from two locations. Traveler or go between wires connect to lighter colored brass screws; hot wire is connected to the darker colored brass screw.

4 way switch
A toggle switch that is used between three way switches. More than one 4 way switch may be used between 3 ways switches to control a load (lights) at multiple locations.
Impact Wrench
Available in 3/8, 1/2 and ¾ inch drive. Used to tighten or loosen stubborn bolts and nuts.

Power Timing Light
Operates on 6 or 12 volt DC producing a blue-white flash for reading of timing mark.

Torque Wrench
Comes in 1/4, 3/8, 1/2, and ¾ inch drives. Used to precisely set the tightness of a bolt on engines and machinery.

Compression Gauge
Ranges from 0 to 300 pounds. Used as a diagnostic tool check engine compression.

Spark Plug Gauge Set
Usually ranges from .020 to .040 thick wire sizes.

Battery Pliers
Used for removing battery terminals. The end clearance prevents cell-cover damage.

Retaining Ring Pliers
User for remove and install internal and external retaining (snap) rings.

Tachometer
Useful for checking speed on tools, machines, and engines.

Expansion or Adjustable Reamer
Used for reaming piston pin holes, king pin holes, holes for water pump bushings, valve stem guides and other precision reaming jobs.

Grease Guns And Fittings
Air Pressure Type Grease Gun
It is portable but must be attached to an air line.

Lever Type Grease Gun
It is filled by hand, cartridge, or from an air pressure gun.

Zerk Grease Fitting
This fitting will withstand high pressure. The grease gun "snaps on" to the fitting.
Welding

Arc Welding Tools

Arc Welder Power Supply
Converts AC power to welding current. SMAW and GTAW processes use constant current power supplies and GMAW processes use constant voltage power supplies.

GMAW Welder
A constant voltage power supply with a wire electrode feed. May be used with solid or flux core wire. Commonly used with a shielding gas (required for solid wire electrode). Common shielding gasses are carbon dioxide and argon.

SMAW and GTAW processes use constant current power supplies and GMAW processes use constant voltage power supplies.

Plasma Cutter
Uses an arc and compressed gas to create a plasma stream for cutting and gouging of ferrous and non-ferrous metals.

Electrode Holder
Connected to the welding cable and holds the electrode for SMAW process welding.

Welding Helmet
A colored lens filters out harmful light rays. Len shades are typically 10-12 (dark). Some helmets are equipped with an electronic lens that will "auto darken".

Ground Clamp
Used to connect one of the cable leads from the welding machine to the welding table or the material being welded so as to make a complete circuit.

Leather Gloves
Gauntlet style gloves are recommended.

GTAW Torch
Holds a non-consumable electrode and directs shielding gas to the weld.
Welding

**MIG Gun**
Used with a constant voltage power supply and a gas source (e.g. carbon dioxide, argon) for GMAW process.

**Gas Flow Regulator**
Used with GMAW and GTAW to control the flow of shielding gas.

**Tungsten Electrode**
Non-consumable electrode used for GTAW process welding.

**Tubular Wire Electrode**
Tubular electrode (e.g. E-70T-L) is flux cored, and the last number is position and usability capabilities, as no gas is required for tubular flux cored rod. See Solid Welding Wire Electrode. Also called insershield wire since the shielding flux is "inside".

**Solid Welding Wire Electrode**
Identified in a similar manner as SMAW rod. For example ER-70S-4. Solid wire is classified in a ER means it is an electrode, 70 is tensile strength, S means it is solid wire, 4 is type of shielding gas. Shield Gases: 2. CO2-A, CO2-B, 3. CO2-A, 4. CO2, 5. CO2, 6. CO2-A, 7. CO2-A, CO2 and CO2=Carbon Dioxide, CO2-A=Carbon Dioxide, Argon and Oxygen, A-CO2 = Argon and CO2

**Chipping Hammer**
One end of the head is shaped with a blunt point, and the other end is shaped like a cold chisel. Also called Slag hammer.

**Arc Welding Electrodes**
SMAW Electrode
Electrode used in the SMAW process for example E-6010. E meaning it is an electrode, 60 means it has a tensile strength of 60,000 PSI, 1 indicates welding in all positions, 0 indicates the coating to be cellulose sodium and the welding current is DCEP or direct current electrode positive.

Heating Tip
A tip with multiple orifices used to for heating metal usually for bending. Also called a rosebud.

Oxygen Regulator
Used to regulate the amount of oxygen flow. The threads on the hose connector are right hand.

Copper Coated Mild Steel Welding Rod
Available in 1/16 to 3/16 inch diameter and 36 inches long. Used for gas welding of steel.

Tip Cleaner
Used to clean welding tips. It consists of several needle-like round files of different sizes.

Torch Handle
A torch handle holds the torch in place and serves as a place to hold the torch. It is quite often called a torch butt.

Oxyacetylene Welding Tools

Hard Facing Electrode
Hard facing arc rod is not classified by a numbering system. Each manufacturer has their own nomenclature for their particular rod.

Cutting Tip
The larger center hole is for pure oxygen to oxidize or cut the metal. Replaceable tip for a cutting torch.
Welding Goggles
Used to protect the eyes from harmful rays and from spatter when using the welding torch. Commonly shade 5.

Acetylene Regulator
Regulates the amount of acetylene allowed to flow in the welder. The threads on the hose connector are left hand.

Spot Welder
Used for welding sheet metal. Uses electric current to fuse metal in a small "spot".

Welding Tip
The tips come in various sizes. Used for welding and brazing.

Flux Coated Brazing Rod
Generally available in 1/8 inch diameter rod. Used for brazing applications.

Cutting Torch
Used to cut steel to specific sizes and shapes. It consists of valves for mixing oxygen and acetylene, and a valve lever attached to the torch handle to release oxygen which does the cutting.

Brazing Rod
Rod used to braze metal materials together. Available in 1/16 to 3/16 inch diameter and 36 inches long. Used with powered flux.

Other Welding Equipment
Painting And Glazing Equipment

Non-woven Abrasive Pads
A plastic abrasive pad. Non-rusting and washable. Commonly called Scotch-Brite pads (3M brand name).

Paint Brush
Natural bristle brushes are used for oil based paints. Polyester and nylon brushes are used with water based paints. Sizes are commonly found from 1” to 6” widths. Clean immediately after using with solvent appropriate for the type of paint used.

Masking Tape
It will adhere to paper, glass, walls and metal and is easily removed.

Caulking Gun
Used to apply tube caulking. One to two pound cartridge refills are available in various colors.

Mixing Paddle
Used in an electric drill to stir paint and other liquids.

Drop Cloth
Disposable cloths are made of paper or plastic and permanent cloths are made of canvas or soft cotton cloth.

Airless Paint Sprayer
No thinning is required and very little over-spray is developed. Uses a positive displacement pump to pump the paint at high pressure.

Dust Mask
Used to protect the user from dust (e.g.; sanding). This mask is disposable and should not be reused.
**Painting**

**Paint Filter**
Used to filter foreign material from paints, particularly those used in paint guns.

**High Volume Low Pressure Sprayer**
Similar in design to a compressed air sprayer, but low pressure produces less fine spray, causes less drift, and air pollution.

**Putty Knife**
Sizes range from 1 inch to 12 inches. Used to apply putty to the window sash to seal the glass. A flexible bladed knife for applying putty and spackle. Stiffer knives can be used for scraping.

**Glass Cutter**
Pressure applied on the glass from beneath the scratch or tapping gently will cause it to break cleanly along the cutter line.

**Steel Wool**
Comes in pads or rolls and size is designated by 4/0, 3/0, 2/0, 1/0, 0, 1, 2, 3, 4, with 4/0 being the finest and 4 being very coarse.

**Foam Brush**
Brushes should be cleaned immediately after painting with a suitable thinner or cleaning agent.

**Paint Roller And Pan**
Use to apply paint to flat wood and plaster surfaces. Roller covers are available in 1/4" to 1/2" nap. Special rollers are available for painting corners and trim.

**Respirator**
This filter system is far superior to the dust mask.

**Sandpaper**
Comes in various grits from very fine to very coarse.
Painting

Spray Gun

Used primarily for metal painting or wood lacquer applications. Paint must be fairly thin to spray. Should be used in a closed area with proper ventilation and good air filtration. Uses compressed air to spray the paint.

Glazier Points

The glazier points, triangular pieces of zinc coated metal, are driven into the sash about 6 inches apart to hold the glass in place.
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