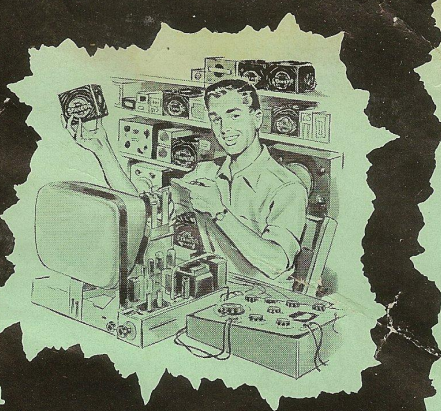


# Stan Cor's Corner

TIPS  
for the Serviceman



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## SERVICE SHOP SHORT CUTS

The various ideas, gadgets, and service hints listed here are designed to help you save time.

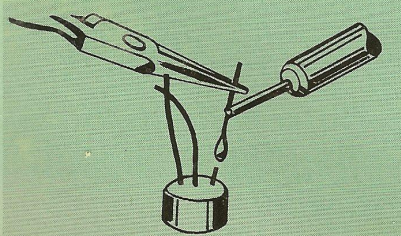
### Protect Those Transistors:

Transistors should be protected from any blows that are likely to injure them internally. Try slipping a rubber grommet over the transistor's case. It will make a protective bumper that wards off damaging blows; and grommets are available to fit almost every round or oval transistor. If the transistor has a tendency to get hot, split the grommet lengthwise so that more of the transistor surface will be exposed for heat dissipation.

### Salvaging Transistors:

Here's how to salvage a transistor when a lead breaks off flush or close to the case. Take a 2 or 3" length of tinned #26 or #28 wire. Form a drop of solder on one end of this wire. Apply the soldering iron an inch away from the wire's end and let the drop of molten solder touch the stub of lead at the transistor. Remove the iron and hold steady until set.

In this operation the use of paste flux is tolerated; however, when the



job is done, wash well with alcohol or carbon tetrachloride. Pliers are useful here to hold the lead in position and to dissipate residual heat rapidly after the soldering iron is removed.

### Transistor Mounting Clips:

The right techniques for handling nickel resistors or dime capacitors are not necessarily sensible when you are dealing with a delicate item like a transistor that may cost several dollars. This is especially true in experiments where circuits are changed often.

Many transistors have pigtail leads and are often soldered into a circuit. After several soldering and unsolderings the leads become messed up and if you are not careful there is always the possibility of heat damage from the soldering gun.

You can avoid these problems and protect your investment in transistors by fastening three fahnestock clips to the lugs of three lug terminal strips. The clips are firmly bound to the lugs with short pieces of wire and soldered together. Circuit leads are then soldered to the clips and only after all soldering is completed are the transistor leads inserted in them.

Another technique that is useful when you have several pieces of equipment that use the same transistor, is to permanently mount it in an ultra-miniature male plug, that fits into a tube

socket. The tube socket is wired into the equipment and you can transfer the transistor from one piece of equipment to another, just as you would transfer a vacuum tube.

### Spaghetti for Miniature Circuits

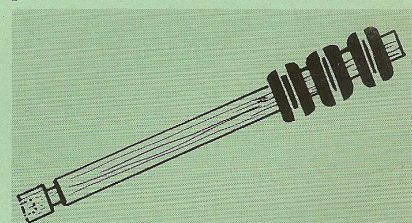
Component leads are used a great deal more by the experimenter in miniature circuit construction than in conventional sized construction projects. Transistor leads are usually soldered directly to other components in the circuit.

Since the leads of transistors and miniature components are naturally smaller than those on standard size units, the builder will have difficulty if he tries to use standard spaghetti for insulation.

Try saving the plastic insulation you strip off #22 hook up wire. You will find it is ideal for use as spaghetti in miniature circuits because of its flexibility and small size.

### Tube Tapper and Wire Pusher:

Placing two, three or four rubber grommets on a 7 or 8" dowel section makes a handy tube tapper. Form a dimple in the other end of the dowel with a small twist drill. The dimple will stop the dowel from slipping off lug and wire ends when it's used as a pusher to dress lugs, etc. You can ring the dimpled end with a shallow hack saw cut

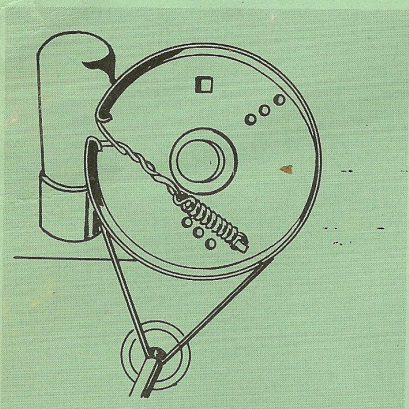


and use it for pushing leads into better dress.

If you don't have a dowel handy, you can use an ordinary lead pencil.

#### Slipping Dial Cords:

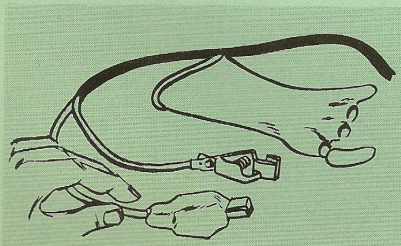
A dial cord does not always have to be restrung to keep it from slipping. At best, restringing is a difficult job, and much time can be saved if you can avoid it. First try washing off the tuning knob shaft with a non-toxic service cleaner. Grease or oil on the pulley wheel may be causing the slippage and this solvent will remove it. Often you can make the repair without even taking the chassis out of the cabinet.



Frequently a slipping dial cord can be corrected by merely tightening the cord. This can be accomplished, as shown in the illustration, by unhooking the cord at the point where it is attached to the pulley wheel and twisting it several times. This will, very often, tighten the cord sufficiently to eliminate slipping. If several twists do not accomplish this, the cord can be unhooked and twisted a few more times until the proper degree of tightness is obtained.

#### Insulating Jackets from Rubber Gloves:

When you don't have any insulating jackets handy and you have to install test clips for connection to live circuits, look for an old rubber glove. You can



cut insulating covers from the fingers and slip them over the clips. Make a small hole in the tip of the glove's finger in order to slip it over the test lead. Occasionally you may have to stretch the covers in order to get them to fit over large size clips.

#### Modeling Clay is a Useful Tool:

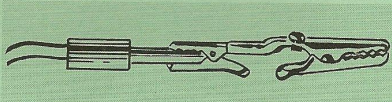
If you keep some children's modeling clay on your work bench, you'll find many uses for it. It can serve as a third hand in holding small parts for soldering. It can also be used to help hold extremely small screws or bolts in place in spots in the chassis where there isn't room for your fingers. You'll find it speeds up dial cord restringing if you use it to hold the cord in place on the pulleys.

#### Drilling Thin Metal:

When you are drilling thin metal you can brace it so it won't bend by using a soldering iron to stick on a blob of solder at the site of the center punch mark. The diameter of the solder should be slightly smaller than the drill used and it should be 1/16" thick. The solder readily gives way to the drill and holds it there until the hole is started. You can drill even more accurately if you flatten the top of the solder blob and make a new center punch mark.

#### Tricks with Alligator Clips:

This illustration shows a versatile twin clip that lets you make connections to an alligator clip quickly and easily in experimental work. Wire leads, fixed capacitors and resistors, variable resistors, germanium diodes, phone tips, banana plugs, and similar parts may be connected to the piggy back clip and then the main clip may be used in the normal way.



Here's how to make these twin clips: Just force the lug end of a Mueller #30 clip into the sleeve of a Mueller #60 clip. Mash the sleeve with a pair of pliers; a bit of solder will help make a solid joint.

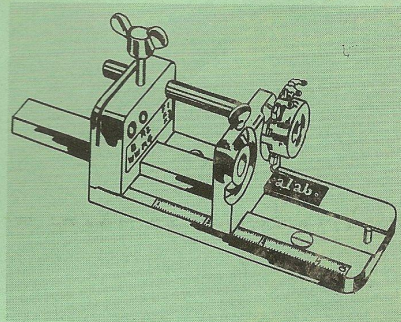
If you want the larger #60 clips on both ends, just squeeze one sleeve to a smaller diameter and force it into the other sleeve. Then run some solder over the joint.

#### Make Your Own Spaghetti:

When you need some spaghetti for a short length of wire or the lead of a component, make your own. You can buy a tube of plastic rubber at the hardware store, and apply a coating to the wire. In about 30 minutes, the coating will have formed into insulating spaghetti. This liquid latex rubber has about the same insulating qualities as ordinary latex rubber; and it won't ever dry out or become brittle. (If one coat of the insulation doesn't seem enough, apply a second coat about 15 minutes after the first.)

#### Shaft Cutting Device:

A problem frequently encountered by both the hobbyist and service technician is the accurate cutting of control and switch shafts. This is particularly true in the case of dual concentric control shafts. A device called the "Shaft-Kut Tool", that is available through electronic parts distributors, permits the cutting of shafts to an accuracy of 1/64" in a few seconds. The component is inserted into the tool, the jig is set at the length desired as shown on a scale, and the excess shaft is sawed off. The design of the unit is such as to make it virtually impossible to cut a shaft incorrectly.



The Shaft-Kut Tool is constructed of case-hardened tool steel and will withstand hard usage. It can also be used as a holder for a spool of solder, feeding the solder out through one of the holes used for shaft insertion and can serve as a vise or "third hand" when working with small components.

#### Keep Tape Reels from Slipping

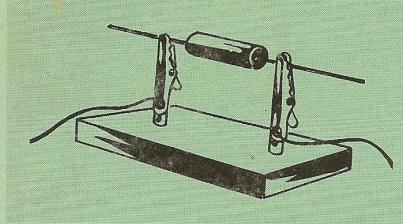
You're asking for trouble when you pick up a tape recorder by its carrying handle while there are reels of tape on the spindles.

To prevent the reels from slipping off and ending up on the floor in a tangled mess, take this simple precaution:

just slip a tight-fitting rubber grommet over each spindle, and stop worrying about the reels slipping off.

#### Handy Connecting Stand:

This simple device lets you quickly connect or disconnect fixed capacitors, fixed resistors, germanium diodes, etc., in experimental circuits without damaging their leads. Germanium diodes can be easily and rapidly reversed by merely turning the diode around in the clips.



To make this handy connecting stand, drill two  $3/16''$  holes about  $2\frac{1}{2}''$  apart in a block of wood or plastic and force the sleeve of a 60 series Mueller alligator clip into each hole. Put a little all-purpose cement into each hole before mounting the clips. Wire leads connected to the screw terminals of the clips go to the experimental circuit.

#### Plastic Vials for Batteries:

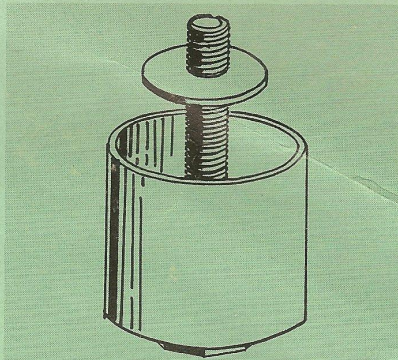
You will find that the small plastic vials often used as containers for ten cent store items can be made into ideal battery holders for compact transistor circuits. The vials are a perfect fit for penlight batteries. They are very easily fitted with screw contacts at either end for voltage pick up. The screw terminals can be tightened to hold the batteries very securely in the case, thus assuring positive contact at all times.

If exhausted batteries are accidentally left in the plastic holders, the holders won't be ruined by acid leakage, providing a big advantage over metal types. Many sizes of plastic vials that are used for filling prescriptions can be used in the same way.

#### Chassis Punch Care:

After your own two hands and your soldering gun, your chassis punch is probably your most useful tool if you are an electronics builder. Since chassis punches are relatively expensive, they should be given enough care to assure them a long useful life.

You can protect your punch by cutting a felt washer from an old felt hat,



saturating it with oil and slipping over each draw screw as shown. The rest of the punch is assembled in the usual way. The oil from the felt washer keeps the parts lubricated, makes the punch work easily and reduces the possibility of rust.

#### Renew Those Panel Markings:

The markings on any engraved name plate or instrument paneling can easily be restored to brand new appearance by the use of a china marking pencil. These can be obtained at any office supply house and at many variety stores. Although these come in several colors, red and white are probably best for electronic equipment panels.

Warm the instrument panel slightly under a 100 watt electric bulb and rub the pencil gently over the panel markings to fill the letters. Then rub off any excess on the panel with a piece of tissue paper or a soft cloth.

#### Tape Recorder Cleaning Hints:

An empty plastic squeeze bottle makes a handy addition to your cleaning and lubricating kit for your tape recorder. By prying out the neck plug, removing the inside spray tube and then replacing the plug, you will find you have a handy miniature air gun for blowing metallic dust particles from a recorder's mechanism. It can also be used to remove dust particles from any electronic gear.

#### Protection for Microphones:

The crystal element in a small hand held mike of the type used with home tape recorders is very delicate and may be damaged if the microphone is accidentally dropped. Try wrapping the microphone in a piece of sponge rubber held in place with a rubber band. Then in case of dropping, the sponge will cushion the fall.

#### Repairing Nichrome Elements:

When the nichrome element in an electric appliance breaks, you can save it by twisting the ends of a broken section together in a loose joint. Then sprinkle a little Borax over it and turn on the current. The resulting spark will fuse the connection and allow you to continue using the appliance.

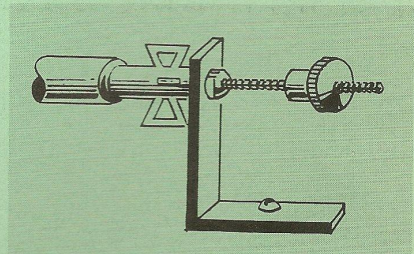
#### Protecting Old Electric Plugs:

Although breakable Bakelite plugs are not generally found anymore on brand new electric appliances, they are still found as replacements and on older equipment. Therefore broken plugs and loose dangling wires at the ends of plug cords are a familiar sight to the repairman. By stuffing these older type plugs with plastic wood, it becomes next to impossible to pull the cord from the plug. Furthermore, the stuffing supports the outer shell, reducing the chance of breakage if the plug should be stepped on.

#### Tooth Paste Tube Caps Make Fine Tuning Knobs

Sub-miniature ferrite coils with micrometric screws are a big improvement over the earlier hard-to-tune types. However, tuning is still very difficult because both the shaft diameter and the screw slot are very small.

You will find, though, that tooth paste or shaving cream tube caps make extremely practical and quite attractive knobs for these coils. Drill a hole in the cap slightly smaller than the shaft's diameter. Then cover the end of the shaft



with a good grade of multi-purpose cement, and force the cap on the shaft. After drying for 24 hours, it will remain tight and tune readily and easily.

If you hold the threaded shaft with pliers be sure to place a sheet of cardboard over the threads to prevent damage.

Ferrite coils make ideal inductances for tuning controls in transistor circuits. With this simple device, they can be very easily and rapidly adjusted.