

THE PROPAGATOR

MONTHLY NEWSLETTER OF THE ILLAWARRA AMATEUR RADIO SOCIETY

PO BOX 1838 WOLLONGONG NSW 2500

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MEETINGS ARE HELD ON THE SECOND MONDAY OF EACH MONTH (EXCEPT JANUARY) AT 7.30 P.M. IN THE CONGREGATIONAL HALL, CORNER OF COOMBE AND MARKET STREETS, WOLLONGONG. VISITORS ARE WELCOME TO ATTEND MEETINGS.

NOTICE OF MEETING:

The September General Meeting of the Illawarra Amateur Radio Society will be held on Monday September 13th at 7.30 p.m. in the Congregational Hall, Coombe Street, Wollongong. Guest Speaker will be Sue Brown, who is President of the N.S.W. Division of the W.I.A.

LAST MONTH'S MEETING:

Please see separate report inside.

THE MOONBOUNCE PROJECT:

A Working Bee will be held on Saturday September 18th at the Moonbounce Site. As many members as possible are urged to attend. It is hoped to hold a barbeque as long as there are no Fire Ban restrictions.

COMMITTEE MEETING:

This was held on Tuesday August 24th instead of August 31st as expected. It would be appreciated if somebody could arrange for all Committee members to be advised when there is a change from the usual last Tuesday in the month.

THE HAZARD OF CORRODED CADMIUM Many reports in the media have drawn attention to the potential risks of cadmium poisoning, for example in the vicinity of zinc smelting plants. Much less well known is the health hazard arising from the possibility of inhaling or ingesting the "woolly" white powder (cadmium salts of organic acids), which sometimes appears as a deposit on cadmium-plated metalwork (screw heads, switches, etc.) in electronic equipment. It is therefore advisable to take reasonable precautions to remove any such deposits which are due to corrosion and which tend to occur in equipment that is inadequately ventilated so that heat generated in the unit may cause fatty acids, as found in transformer impregnation and sometimes in the coatings of printed circuits boards, to migrate to any cadmium-plated metalwork. Cadmium corrosion can be removed provided that the following safety procedure is followed carefully: Never attempt to blow away the white powder, for instance by using an air jet. Use disposable plastic gloves and open and deal with the equipment in a well-ventilated area. Then, using a swab dampened with water, wipe away all corrosion products in the affected area, changing the swab after each wipe in order to prevent any spreading of the powder. Afterwards the used swabs and gloves should be placed in a plastic bag and burnt in an incinerator. Make sure the treated surfaces are clean and dry, and then apply varnish to the area.

R.S.G.B. BULLETIN, from "The Lyrebird"

LAST MONTH'S MEETING

THE AUGUST MEETING OF THE IARS ATTRACTED SOME 45 TO 50 MEMBERS. THIS WAS VERY GOOD CONSIDERING THAT, DUE TO PRODUCTION DIFFICULTIES, THE AUGUST PROPAGATOR HAD BEEN DELAYED AND HENCE COULD NOT REMIND MEMBERS OF THE DATE OF THE MEETING.

THE MEETING WAS OPENED BY PRESIDENT KEITH VK2OB WHO APOLOGISED FOR THE DELAY WITH THE PROPAGATOR FOR REASONS TOO COMPLEX TO GO INTO, AND ALSO FOR THE LACK OF A SPEAKER. ON BEHALF OF THE MEMBERS HE THEN WELCOMED SEVERAL FIRST-TIME VISITORS TO THE CLUB (INCLUDING A YL) AND THEY RECEIVED THE CUSTOMARY ACCLAMATION.

AMONG MATTERS BROUGHT TO THE ATTENTION OF THE MEETING WERE THE CONSIDERABLE NUMBER OF QSL CARDS AWAITING COLLECTION. FOR DETAILS OF THESE PLEASE CONTACT THE QSL MANAGERS. (SEE BACK PAGE)

ALSO MEMBERS WERE REMINDED THAT JOTA (JAMBOREE OF THE AIR) IS FAST APPROACHING. THIS YEAR IT WILL BE HELD ON OCTOBER 15TH AND 16TH AT THREE VENUES. THE HELIPAD NEAR SUBLIME POINT, MT KEIRA GUIDE CAMP AND AT BASS POINT. WE HOPE FOR BETTER LUCK WITH THE WEATHER THIS YEAR AS LAST YEAR THE MEETING AT BASS POINT WAS WASHED OUT.

THE MEETING WAS TOLD THAT SWARS (SOUTH WEST AREA RADIO SOCIETY) HAS UNFORTUNATELY FOLDED AND THE CONFERENCE OF CLUBS HAD SHOWN THAT SEVERAL OTHER CLUBS HAD BECOME INACTIVE. DENIS VK2DMR POINTED OUT THAT THE EXISTENCE OF A CLUB DEPENDED ON THE PARTICIPATION OF ITS MEMBERS, AND LEAVING THE RUNNING OF THE CLUB TO 'THE OTHER CHAPS' IS A SURE WAY TO BRING ABOUT ITS DEMISE. MEMBERS WERE TOLD THAT WHILST THERE HAD BEEN SEVERAL WELCOME CONTRIBUTIONS TO THE CLUB MAGAZINE RECENTLY, TO MAINTAIN ITS STANDARD MORE ARE REQUIRED, ITEMS OF INTEREST ARE ALWAYS WELCOME AND WE'LL DO ANY NECESSARY REWRITING, EDITING AND TYPING UP.

LYLE VK2ALU THEN GAVE DETAILS OF PROGRESS ON THE E-M-E MOON BOUNCE PROJECT, AND DAVE VK2VAV WAS WISHED BON VOYAGE FOR HIS FORTH-COMING TRIP OVERSEAS, AND THANKED FOR THE USE OF HIS COPYING MACHINE.

FIRST PRIZE IN THE RAFFLE - A METRIC SOCKET SET - WAS WON BY RAY VK2PHD, SECOND PRIZE OF A SET OF DRAWERS BEING WON BY BILL VK2DYU.

THE FORMAL PART OF THE MEETING THEN CONCLUDED AND TURNED INTO A RAG-CHEW. BUSINESS AT THE CLUB STORE APPEARED TO BE BRISK, SALES BEING ABLY HANDLED BY PAUL VK2DZJ AND SON GRANT WHO HAS THE MAKINGS OF A GREAT SALESMAN (ANOTHER D.S.?)

WITH DUE MODESTY YOUR SCRIBE VK2DOI REPORTS THAT HE DEMONSTRATED HIS CMOS KEYSER/INSTRUCTOR, DESCRIBED IN THE PROPAGATOR LAST AUGUST AND SEPTEMBER, AND IT APPEARED TO AROUSE CONSIDERABLE INTEREST. NED VK2AGV SHOWED US THE FINE PC BOARD ARTWORK HE HAD MADE FOR HIS KEYSER AND EXPLAINED THE MODIFICATIONS HE HAD FOUND NECESSARY BUT DESPITE HIS DESIRE TO RUN A LOGIC PROBE OVER THE INTERNALS OF MY UNIT, THE COVER REMAINED FIRMLY IN PLACE. MY VEROBOARD LAYOUT WITH ITS RATS-NEST OF WIRES IS BETTER LEFT HIDDEN.

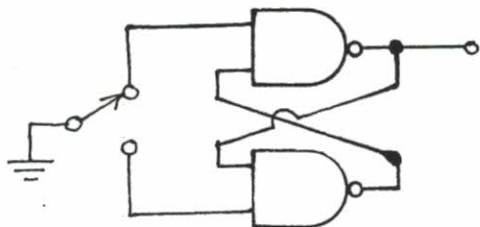
THE MEETING CLOSED WITH THE USUAL REFRESHMENTS.

Did you hear about the send-off party in the completely automated office? The computer got loaded and tried to unfasten the electric typewriter's ribbon.

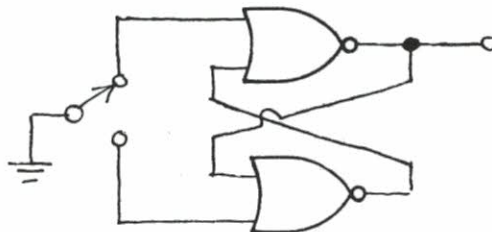
"The Lyrebird"

When a switch or pushbutton is operated, the imperfect sliding action of the contacts causes many brief on/off pulses to occur before the switch output finally settles to "off" or "on". A debouncing circuit converts the "ragged" switch output into a single clean transition, which is especially important in digital counting circuits.

A very common debounce circuit uses a double-throw pushbutton and an RS flipflop made from a pair of NAND or NOR gates:



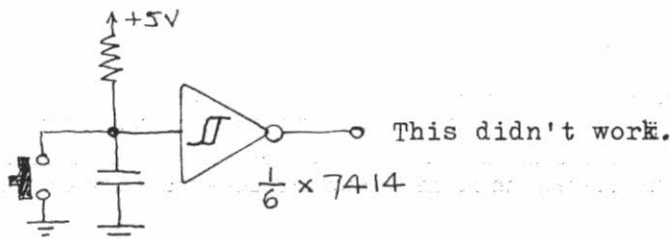
$\frac{1}{2} \times 7400$



$\frac{1}{2} \times 7402$

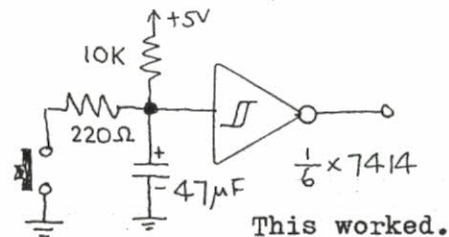
These work very well, and have the advantage that the second gate can provide a complementary output. However, double-throw pushbuttons are expensive (\$2-30 in a well-known catalog). If you already have a keyboard or pushbutton with only a momentary-on contact, they are of no use.

There don't seem to be many circuits around for debouncing single-throw pushbuttons, but one which was found and tried is shown:



As the capacitor is discharged by closing the switch, the schmitt trigger (1/6 of a 7414) should operate only once on the falling capacitor voltage. Unfortunately, it didn't - operation was erratic and unpredictable, and much hair was torn out trying different combinations of resistor and capacitor.

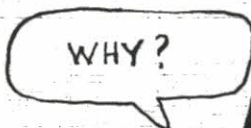
Fortunately, success was achieved with the modified circuit shown:



The 220 ohm resistor in series with the switch slows the discharge rate of the capacitor sufficiently to allow the schmitt trigger to operate once.

In hundreds of operations with a cheap and nasty pushbutton it has produced single, clean output transitions. Recovery time is short, requiring

an unusually fast button-finger to get only one output pulse for two pushes.



MOONBOUNCE REPORT- September 1982.

Construction of the 1296MHz transmitter is continuing. The power supply is almost completed. Aluminium pipes have been obtained for the dish feed tripod. Mounting accessories for the tripod will have to be made up. 1000 metres yes, 1000 metres! of 440 volt cable has been received for the many runs of 240 volt power and control cable between the operating building and the dish and dish cubicles.

A list of work which we would like the University to do on the permanent installation (ie the dish) has been supplied to them at their suggestion, but their assistance is expected to be limited to 'spare time' work.

Some Club members have expressed interest in joining in by doing work at the EME site. It would be appreciated if anyone who feels that they would like to help would fill in the note at the bottom of the page (or wherever it appears Hi!) and give it to me at the next meeting so that we may know where we stand.

Alternately it can be sent to my home address or ring me on home phone number Wgong. 296984. I am at home after 6pm most nights.

By the way, if anyone has a light (eg. aluminium) ladder of the extension type of 10ft./17ft. size which they could loan to the project during the construction and installation of equipment on the dish, then it will provide an essential need. It will be stored in the locked operating building when not in use. Please let me know of its availability by the above means.

Lyle VK2ALU.

I would like to join in the VK2AMW Moonbounce Project by providing assistance at the EME site.

Name..... Callsign, if any.....
 Address..... Home phone No.....
 General availability for work.....
 Any special equipment which could be used (ie. utility or truck, 240V welding set or oxy welding gear etc.).....
 Other comments.....

P.S.-you can also use my other postal address, which is Lyle Patison PO Box 1108 Wollongong, to send this form to me.

SUBLIME POINT

OUR APPLICATIONS ARE STILL BEING PROCESSED BY DOC AND IT APPEARS THAT WE WILL HAVE A TEMPORARY LICENCE FOR THE 2 METRE REPEATER IN ABOUT 3 WEEKS AND A BIT LONGER FOR THE 70CM. ONE.

THE 2 METRE REPEATER IS ABOUT 60% CONSTRUCTED WITH THE TRANSMITTER, CONTROL UNIT AND IDENT UNITS STILL TO BE COMPLETED. THE 70CM. REPEATER REQUIRES ONLY AN IDENT UNIT TO MAKE IT OPERATIONAL.

IT LOOKS AS IF THE EQUIPMENT AND LICENCES WILL BE READY BEFORE THE SITE IS, AND IF THIS IS SO WE WILL TEST THE EQUIPMENT AT THE QTH OF AN AMATEUR IN THE NORTHERN SUBURBS UNTIL SUBLIME POINT IS READY FOR OCCUPATION.

HILL 60

THE 70CM. UHF REPEATER CHANNEL 8225 (CHANNEL 9) HAS BEEN WORKING FAULTLESSLY SINCE IT WAS INSTALLED ON 26TH JUNE. IT GIVES GOOD MOBILE COVERAGE FROM HELENSBURGH TO KIAMA, AND CAN BE TRIGGERED FROM HILETOPS IN SYDNEY AND VINCENTIA.

MOST OPERATORS SEEM TO BE USING HAND-HELD UNITS OF ONE OF TWO WATTS. WORKING FROM HANDHELD INSIDE THE CAR IS SATISFACTORY AROUND TOWN, BUT AN AERIAL MOUNTED ON THE CAR EXTENDS THE RANGE TO THE WHOLE ILLAWARRA DISTRICT.

PATRONAGE HAS INCREASED FROM HALF A DOZEN A COUPLE OF MONTHS AGO TO 15 OR SO.

HEARD ON THE REPEATER IN THE LAST COUPLE OF WEEKS.....

VK2'S KCV EMV DMR FE CAG ZHU YKQ YVF KFI AGV KEY BDJ
OB BUB ALU BOU ZVX ZYL AKK DF AVG BZH AQQ ZZT

MOUNT MURRAY CHANNEL 6850 (CHANNEL 5)

ALL THE HARD YAKKA OF EARTH MOVING, ROAD MAKING, MAST ERECTING, CABLE LAYING, CONCRETING, ETC., IS BEGINNING TO PRODUCE SOME NOTICEABLE RESULTS.

THIS MONTH THE ERECTION OF THE NEW MAST AND GUY WIRE SYSTEM WAS COMPLETED AND FITTED WITH A NEW 6.4DB GAIN OMNI-DIRECTIONAL AERIAL AT 15 METRES ABOVE GROUND LEVEL.

ON AUGUST 19TH THE 80 WATT TRANSMITTER WAS TAKEN OUT OF SERVICE FROM THE OLD LOCATION ON THE NORTH-EASTERN SLOPE OF MOUNT MURRAY AND REPLACED WITH A SOLID STATE 25 WATT TRANSMITTER CO-SITED WITH THE RECEIVER AT THE SUMMIT. THE TRANSMITTER IS CONNECTED TO THE NEW AERIAL AND THE ORIGINAL DIPOLE IS STILL BEING USED FOR RECEPTION. BOTH AERIALS ARE SIDE BY SIDE ABOUT 15 METRES APART AND THE RECEIVE ONE ABOUT 8 METRES BELOW THE TRANSMIT ONE. 4 CAVITY RESONATORS HAVE BEEN FITTED TO ELIMINATE DE-SENSING OF THE RECEIVER WHICH OCCURED BECAUSE OF THE CLOSE PROXIMITY TO THE TRANSMIT AERIAL.

THIS AERIAL ARRANGEMENT WILL REMAIN UNTIL THE DIPLEXER HAS BEEN MADE.

RESULTS SO FAR SHOW THAT THE BETTER AERIAL AND LOCATION HAS MORE THAN OFFSET THE REDUCTION IN POWER.

THE FOLLOWING OBSERVATIONS HAVE BEEN MADE SO FAR ON SIGNAL STRENGTH
SINCE THE MOVE. :::::::::::

WOLLONGONG: IN AREAS WHERE RECEPTION WAS PREVIOUSLY BAD THE SIGNAL
IS BETTER, BUT SOME NULL SPOTS HAVE APPEARED WHICH DID NOT EXIST
BEFORE --- AVERAGE STRENGTH IS MUCH THE SAME BUT THE 'PEAKS AND NULLS'
ARE IN DIFFERENT PLACES.

NORTHERN SUBURBS: SLIGHT OVERALL IMPROVEMENT.

BLUE MOUNTAINS: NO SIGNIFICANT CHANGE.

SOUTHERN SUBURBS: NO AUDIBLE CHANGE BUT GENERALLY HIGHER 5 METER
READINGS.

SOUTH FROM KIAMA TO VINCENTIA: 1 TO 2 S POINTS STRONGER AND WORK-
ABLE MOBILE IN ULLADULLA IN PLACES WHERE NOTHING WAS HEARD BEFORE.

SOUTH-WEST: THE REPEATER IS NOW USEABLE FROM BUNDANOON WHERE IT
COULD NOT BE HEARD BEFORE.
THE GREATEST IMPROVEMENT IS EXPECTED TO BE IN THE SOUTH-WEST AREA
WHICH WAS PREVIOUSLY SHADOWED BY MOUNT MURRAY.

CHANGES IN REPEATER CHARACTERISTICS.

1. THE REPEATER CANNOT BE TRIGGERED DURING VIA BROADCAST RELAYS,
BECAUSE THE RECEIVING AERIAL IS AUTOMATICALLY SWITCHED OVER TO THE
LINK RECEIVER TO TAKE THE BROADCAST FROM THE TIA ON 145.6MHZ.

2. A LOW PITCHED IDENT IS NORMAL.
HOWEVER, IF THE IDENT IS HIGH-PITCHED IT MEANS LOSS OF AC POWER AND
THE REPEATER IS RUNNING ON THE BATTERY. THE REASON MAY BE A BLACK-
OUT, OR A LANDLINE FAILURE. SO IF YOU HEAR A HIGH PITCHED TONE,
PLEASE RESTRICT YOUR USE OF THE REPEATER TO A MINIMUM TO CONSERVE
THE BATTERY LIFE.
NOTE THAT FULL POWER OUTPUT IS MAINTAINED AT ALL TIMES EVEN IF
THE AC SUPPLY FAILS.

3. THE REPEATER WILL NOW IDENTIFY EVERY 5 MINUTES, BUT ONLY
WHILE IT IS IN USE. THE IDENT COMES UP 3 SECONDS AFTER CARRIER DROPS
OFF, THEN IS INHIBITED FOR 5 MINUTES, THEN AGAIN 3SECONDS AFTER THE
NEXT PAUSE IN CARRIER.
IF YOU HEAR NO IDENT AFTER TRIGGERING THE REPEATER IT MEANS ONLY
THAT THERE HAS BEEN SOME ACTIVITY ON THE CHANNEL WITHIN THE LAST
5 MINUTES. THE IDENT DOES NOT COME ON DURING PERIODS OF INACTIVITY.
THIS HELPS TO CONSERVE POWER WHILE COMPLYING WITH DOC REQUIREMENTS.

STOP PRESS STOP PRESS STOP PRESS STOP PRESS STOP PRESS

THE CLUB HAS FOR SALE A NUMBER OF SIEMENS TELETYPES AT A
SURPRISINGLY LOW PRICE. THESE ARE THE ONES ADVERTISED IN THE
RTTY BROADCAST. SOME WILL BE ON DISPLAY AT THE NEXT MEETING,
AND PAUL LUN STOREMAN WILL BE MORE THAN HAPPY TO TAKE ORDERS.

HEATSHRINK TUBING

A neat finish to a solder tag connection is made by slipping a piece of heatshrink tubing over the wire before soldering, shrinking it over the wire and shank of the tag afterwards.

You can make these short lengths yourself out of conventional 'spaghetti'. Push a piece over the points of a pair of longnose wiring pliers and stretch to size under a hot tap. Still keeping tension on the pliers, immediately put under the cold tap and the 'spag' will stay stretched until heated with hot water or soldering iron.

Ken VK2DQ1

The Wicking Method Of Solder Removal

By Michael E. McBride, McBride Electronic Marketing, Santa Fe Springs, Cal.

Reworking Solder Joints

The importance of reliable desoldering equals and may exceed that of the original soldering operation. If desoldering is done haphazardly, more harm can be done than by careless soldering alone. A finished PC board, connector package, or any other soldered assembly represents a substantial investment in fabrication time and money. If adjacent components on the PC board experience damage during desoldering, the resultant degradation would cost many times more than the original faulty device. The desoldering operation, therefore, must be cost effective and reliable, and it must not inflict damage on the assembly being reworked.

The Task of Desoldering

Solder removal is necessary when a component soldered into an assembly becomes faulty, is mounted with reversed polarity, or is the wrong style/type.

A good desoldering operation will leave the PC board, holes, pads, terminals, connectors, lugs, etc. essentially free of solder. This will enable the resoldering operation to



Figure 1, the wicking process illustrated: (from left) before desoldering, wicking technique, and desoldered joint.

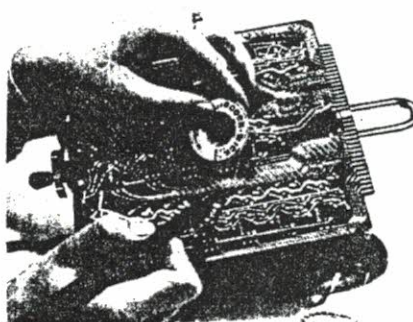


Figure 2, application of wick, using container as holding tool.

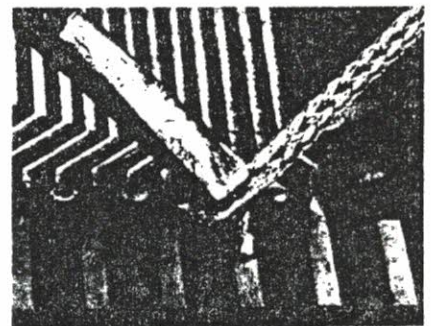


Figure 3, cleaning excess solder from connector fingers.

take place without obstruction from residual solder. The surfaces to be resoldered must retain all the characteristics of the original surface.

It is of paramount importance that the surface does not become damaged (either mechanically or through overheating) during the

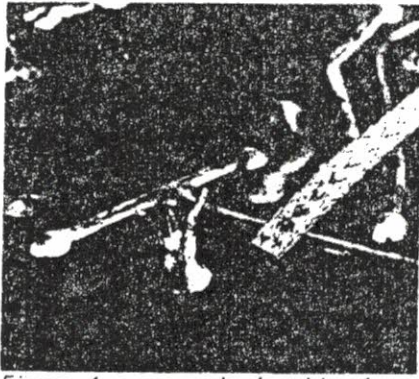


Figure 4a, removal of solder from multi-lead connection (before).

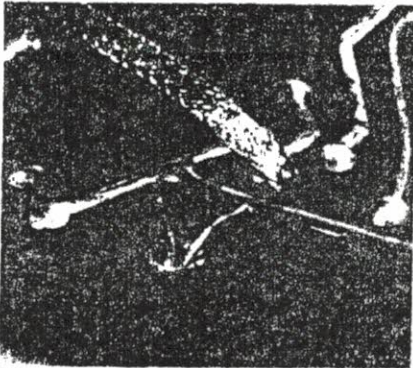


Figure 4b, removal of solder from multi-lead connection (after).

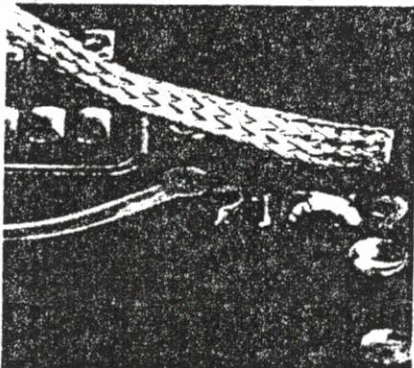


Figure 5a, removal of solder on obliterated script.

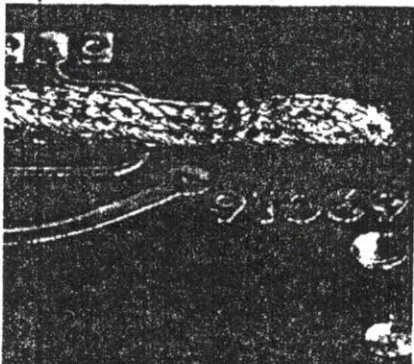


Figure 5b, with solder removed, script is clear.

solder removal process. Particularly in the use of PC boards, the bond between the copper pads (land areas) and the base laminate must not be weakened. The plated through-holes also must withstand the PC board thermal expansion without inducing cracks in the copper walls or electrically isolating interior copper paths of multilayer boards. The first indication of excessive heating on a PC board is the epoxy blistering (measling) on the surface surrounding the desoldered pad.

Compensation for severe heat damage is very costly, and repairs may be impractical. In certain instances, a whole PC board assembly may have to be scrapped.

Other situations which call for desoldering are areas where there is excess of unwanted solder somewhere on the assembly. This excess solder can take the form of icicles, bridges, blobs, or obliterated script. It must be removed for functional and/or cosmetic reasons. Such situations arise when using automatic flow solder equipment.

In summary, the goal of a good desoldering process is to restore the *status quo* which existed prior to the rework process.

The Working Principles Of Wick Desoldering

Most solder removal methods can be broken down into two or three operational stages. A typical three stage desoldering method is described as follows.

- 1) The solder is heated to a molten or liquidus state.
- 2) The solder operator judges when to trigger a vacuum device to "gobble up" the molten solder.
- 3) The molten solder is pulled from the joint area.

With wick desoldering, stage one is followed immediately and automatically by stage three without having to wait for the operator to initiate the removal action. The solder is heated into the molten phase by the soldering iron. Then the molten solder is removed by capillary attraction which takes place the instant the solder becomes liquidus, totally eliminating stage two. The greatest enemy of desoldering, namely excessive heat, is kept to a minimum with the wick process.

The solder removal method of using wick is very similar to the

original soldering operation. The solder joint is made by a careful manipulation of heat, flux, and solder to join copper with a variety of solderable lead materials. In the wick technique, the operator places a copper based braid (the wick) on the solder to be removed and applies heat (the soldering iron). The molten solder wicks away from the joint into the copper braid. Hence, the procedures and materials of the earlier soldering operation are reflected by this new joining activity, but solder is drawn away from the PC joint. The actual heat transmitted to the component lead, copper pad, or other areas is kept to a minimum, usually less than that of the original solder operation. Above all, there are no foreign materials or environments exposed to the desoldering area as in the case of other solder removal methods. Other methods may be capable of inducing damage from probe-like objects and/or thermal shock (sudden air flow over a heated surface).

Capillary Action

Solder removal by the wick method relies on the forces of capillarity. Capillary behavior describes the movement of liquid in narrow gaps or spaces. Provided the liquid wets the walls of the gap readily, it is drawn into the narrow opening with a force which is stronger as the gap becomes narrower. Thus, a narrow gap can suck liquid out of a wider one. The action of a piece of blotting paper relies on this phenomenon. So does the desoldering wick.

Braid Cleanliness and Protection

Braid cleanliness is essential for solderability/wettability. The fine copper wire surfaces must be cleaned initially and then protected by a guarding agent from oxidation (oxides, sulphates, etc.) to preserve the surface integrity and maintain the solderability of clean, oxide-free copper surfaces. This same protective agent also must afford further protection during the elevated temperature portion of the desoldering process. Ordinarily the copper surface, if unprotected during the heating stage of a solder removal process, will readily oxidize, which drastically reduces its wettability. In essence, the protective agent acts

like a flux, promoting good solderability. It should be completely non-conductive and non-corrosive and should conform to the same requirements set forth for fluxes used in the assemblies.

Use of Pretinned Copper Wire

The use of pretinned copper wire for desoldering wicks is of dubious value. With the fine-gauge wire used for desoldering braid, the tin coating is bound to be extremely thin. To be of value as far as the safeguarding of solderability is concerned, the tinning of the braided wire would have to be of quite exceptional quality and consistency. Uneven or too thin a tin coating can easily endanger the solderability of copper after a certain time, rather than protecting it. The biggest drawback of a tinned coated braid, however, is the lack of color contrast between the used and unused pre-tinned wick. The solder saturated wick and unused portion are similar in appearance. Some operators tend to discard much unused braid in proceeding from one wicking operation to the next.

Heating and Desoldering

As in any solder removal operation, the solder has to melt before it can be removed from a joint. The solder normally used in electronic assemblies contains 60% or 63% (eutectic) tin with the balance being lead. These solders (usually flux-cored) begin to melt at 360°F (183°C) and are fully liquidus at 374°F (190°C).

For desoldering, the wick is placed between the iron and the joint which is to be desoldered. Thus, the iron heats the wick, and the wick in turn heats and melts the solder. This guarantees a protection of the joint against overheating during desoldering. As soon as the solder begins to melt, the capillary function of the wick starts to operate. While the solder melts and flows, the temperature of the joint does not rise much further, because the heat of the soldering iron is employed in melting all the solder in the joint. Once the solder fillet begins to melt, the operator will sense a "set-down" action of the soldering iron tip and wick into the molten solder. Almost simultaneously a visible solder flow is visually

evident, penetrating the wick. After this occurs, usually in the neighborhood of one second, the operator should lift the soldering iron and wick together off the joint area. When the process is complete, only the intermetallic copper-tin alloy will remain on the desoldered copper surface.

Some Operational Hints

Good heat transfer between soldering iron, wick, and solder fillet is important for efficient desoldering. The tip of the soldering iron should carry a light coating of molten solder, such as is obtained by touching it with cored solder wire and then lightly wiping off the surplus solder. A soldering tip, which has been wiped completely dry of solder, does not make good thermal contact with the wick. This slows down the initial melting of the solder in the joint. On the other hand, a heavy drop of solder at the tip of the iron unnecessarily and prematurely saturates the business end of the wick. After a completed wick desoldering operation, the tinning on the iron is just in the right condition for the wicking operation. Thus, the iron need not be retinned or wiped clean between consecutive wicking operations.

Depending on the configuration of the joint and its accessibility, the tip of the iron or its flank can be used to press the wick against the solder fillet. The latter point is important. As long as the operator thinks of the wick as a piece of blotting paper, there will be no difficulty in deciding against which part of the joint to press it with the hot iron; always against the solder itself, not against the component wire or the pad.

Desoldering wicks are available in a range of widths. The choice of which width of braid to use is governed by the size and bulk of the joint which must be desoldered. Table 1 may serve as a guide.

Soldering Iron Size

Generally speaking, it is advisable to choose a soldering iron of the same size or wattage for desoldering a given joint as one would use for soldering the same joint in the first place. When in doubt, it is wise to err on the side of a larger iron rather than one which is too small, because the iron will have to

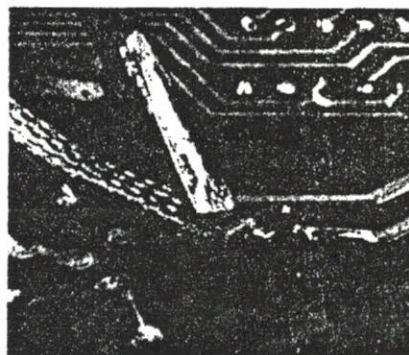


Figure 6a, removing solder icicle with wick.

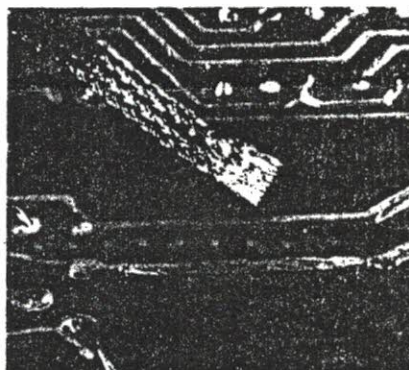


Figure 6b, clear circuit path after removal of icicle.

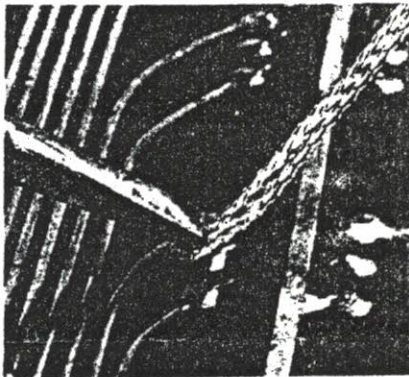


Figure 7a, component removal performed with braided wick.



Figure 7b, clear pads and component after removal.

TABLE 1 — DESOLDERING INSTRUMENT SIZE GUIDE

Size of joint or width of pad	Braid size	Braid width	Wattage of iron
0.060" (1.5mm) or smaller	#1	0.025" (0.65mm)	30-40 watt
0.60-0.125" (1.5-3.0mm)	#2	0.050" (1.25mm)	40-50 watt
0.125-0.190" (3.0-4.8mm)	#3	0.075" (2.0mm)	50-60 watt
0.190" (4.8mm) or larger	#4	0.100" (2.5mm)	60-70 watt
Lugs or terminals	#5	0.130" (3.3mm)	60-70 watt
Large lugs or terminals	#6	0.190" (4.8mm)	100-150 watt



Figure 8, removal of solder bridges.

heat not only the joint but a short length of braid as well. The width of the braid should match the size of the iron. Using too narrow a braid on a heavy joint with a large iron is inefficient, because the braid may absorb the bulk of the solder only, not removing solder completely. Also, there is the danger that the braid does not protect the joint from direct contact with the hot tip of the soldering iron. Using too wide a braid with a small miniature iron is equally ineffective. The solder does not get hot enough and may fail to melt altogether.

It is good desoldering practice to drain all the solder from a joint as completely as possible in one operation so that the component wire

is quite loose and free from any residual lumps or spikes of solder. If the end of the component wire has been bent over before soldering, it should be carefully straightened before the component is removed. Better still, the bent end should be removed with a wire cutter.

Working on Various Solder Joints

Having desoldered one joint, it is best to snip off the saturated end of braid and to start with a clean end of wick for the next operation. This makes it easier to manipulate and place the wick correctly.

The removal of bridges and icicles and the clearing of etched script are carried out following the

same rules as the desoldering of joints. Desoldering wicks should be supplied in a package that protects the wire from coming in contact with the operator's hands when in use. The package also protects the wick from physical damage on the bench or in a tool box. Use of a wick in random lengths cut from bulk supplies may cause contamination to the wire and promote waste of unused material that may even surpass the amount of used material.

In conclusion, it can be said that the desoldering wick is capable to deal efficiently with most desoldering situations. Generally speaking, any joint which can be made with a soldering iron can be desoldered with a desoldering wick.

Insulation/Circuits • December 1980

ANSWER FROM LAST MONTH



WANTED TO BUY

Reasonable priced VHF - UHF
Scanner receiver. AC/DC
(if possible)

Contact Bill (VK2NRS)

Noon to 6pm Mon.-Fri.

Ph. 848835

ILLAWARRA AMATEUR RADIO SOCIETY FACILITIES REGISTER

On a number of occasions the club has needed to know what sort of facilities are available to members. A couple of advantages of such a system will give you an idea why this is desirable.

Consider the case where there is an intruder (called a lid by our American friends) is using the repeater and continually timing out the machine or using bad language (as such types are wont to do). If the operators could be contacted to help direction find the miscreant. (another word for cretin)

During an emergency we may be asked to assist with communications by WICEN, SES or the police. A list of those operators in the club who have portable, hand-held or mobile transceivers would enable us to best use the facilities available.

I'm sure you can think of many other similar situations. Set out below is a questionnaire to enable such a register to be set up and kept up to date (we hope to have the list on a computer file in the near future).

If you think you would like to help please fill in the questionnaire below.

NAME.....CALLSIGN.....

STATION ADDRESS.....

Do you have a general coverage receiver operating from 1500 KHZ to 30 MHZ.....

Do you have a scanner for the vhf/uhf bands?.....Frequency range?....

Do you have HF tracing capability?.....Fixed station?.....
Hand-held?.....Frequency?.....
Mobile?.....
Portable (including self contained power)?.....

Do you have a directional HF antenna (a beam)?.....

On which bands does it operate?.....

Do you have a transceiver on 6 metres?.....If fixed channel which ones?.....

What modes can you use on 6 metres?.....

Do you have 2 metre transceiver?.....Which modes? AM/FM/SSB/CW

Fixed station only?.....

Hand-held a) fixed channel.....

b) PLL.....

Mobile a) fixed channel.....

b) PLL.....

Do you have 70 cm transceiver?.....Mode AM/FM/SSB/CW

Fixed station only?.....

Hand-held a) fixed.....

b) PLL.....

Mobile a) fixed.....

b) PLL.....

Do you have a directional antenna a) on 2 metres?.....

b) on 70 cm?.....

Would you make yourself available in an emergency if required?.....

THE ILLAWARRA AMATEUR RADIO SOCIETY

Meetings: Second Monday of each month except January at 7.30 PM in the Congregational Church Hall, Coombe Street, Wollongong.

Postal: The Secretary, I.A.R.S., P.O. Box 1838, Wollongong 2500.

Repeaters: VHF 6850 (146.250 in / 146.550 out) - VK2RAW

UHF 8225 (433.225 in / 438.225 out) - VK2RUW

Broadcasts: Club news on VHF 6850, UHF 8225 & by relays via VK2PBP on 23.460 Mhz and VK2YKQ on 3.565 Mhz at 7.15 PM on the Sunday night preceeding the monthly meeting. News to Eric Fien VK2YVF on telephone 71 6364 by 6.30 PM.

W.I.A. relays via VHF 6850 at 11.00 AM & 7.30 PM every Sunday.

Nets: 3.565 Mhz SSB on Sundays at 8.00 PM & 28.440 morse at 8.00 PM every Tuesday.

Newsletter: The Propagator is mailed to reach members in the week preceeding the meeting. Editor Leo Kleeborn, VK2YJK, telephone 84 9751 for news items and advertisements. Copy deadline is the last Tuesday of the month.

Membership: Write to the Secretary or contact any committee member. Annual dues are \$ 7.00 full member & \$ 4.00 pensioner or concessional member.

QSL Service: Available to members of the I.A.R.S. who are ALSO members of the W.I.A.

Bureau managers - Mike Keech (Inwards) & Ian Calcott (Outwards).

Award: The Award of the I.A.R.S. is the Lawrence Hargrave Award. VK stations must work 10 different I.A.R.S. members: Overseas stations must work 5 I.A.R.S. members. Alternatively any amateur who works the Club Station VK2AMW qualifies for the award. Send details of contacts - stations worked, day date, time and frequencies together with \$ 2.00 or 4 I.R.C.'s to the Secretary. QSL cards are not required.

Store: The store operates at each meeting. Contact Paul Ferguson for stock details.

Committee: President - Keith Curle, 24 Beach Drive, Woonona 2517. VK2OB

Vice President - Denis McKay, 17 Doncaster Street, Corrimal 2518. VK2DMR

Secretary - Dave Myers, P.O. Box 1838, Wollongong 2500. VK2PBP

Treasurer - Geoff Cuthbert, 2 Nioka Avenue, Keiraville 2500. VK2ZHU

Repeater Chairman - Graeme Dowse, VK2CAG. Repeater sub-committee :-

Pat Jordan, VK2KEY; Denis McKay, VK2DMR; Mike Keech, VK2VXS, Eric Fien, VK2YVF; Mark Ryan, VK2KFI.

Broadcast Officer: Eric Fien, 331 Cordeaux Road, Mount Kembla 2526. VK2YVF

QSL: Mike Keech VK2VXS & Ian Calcott VK2EXN.

Propagator Editors: Leo Kleeborn, VK2YJK & Ken Frost, VK2DOI. Cartoonist - VK2KING by Brian Wade, VK2AXI.

Store: Paul Ferguson, VK2DZJ.

Publicity: Dave Henderson, VK2YKQ.

General Committee: Jock Taylor, VK2JT; Ray Ball, VK2PHD & Morry Van de Vorstenbosch VK2EMV