

## Electronic Hombrewer's "Hints & Kinks"

by Paul Harden, NA5N

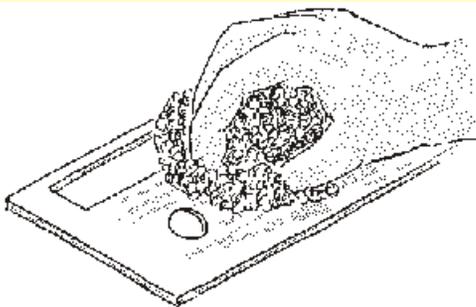
### Painting & Labeling Equipment Enclosures

This *Hints & Kinks* contains information for building your own equipment enclosures – mostly painting and labeling. No matter if you are putting an electronic project in a "store bought" enclosure, one of your own making, or a surplus item, a careful application of paint will give it that professional appearance.

*A good paint and labeling job can give your homebrew project that professional look – and something to be truly proud of.*

### Surface Preparation

Metal or aluminum surface to be painted should be free of burrs (from drilling) and clean of oils or finger prints. A thin coat of oil is often applied to ready-made enclosures to keep them shiny while in storage - and must be removed for proper painting.



Smooth surface with steel wool or emery cloth to remove deep scratches and blemishes. If previously painted, buff-up with steel wool as well. Wash clean with warm water and soap (or alcohol) to remove polishing residue and oils.

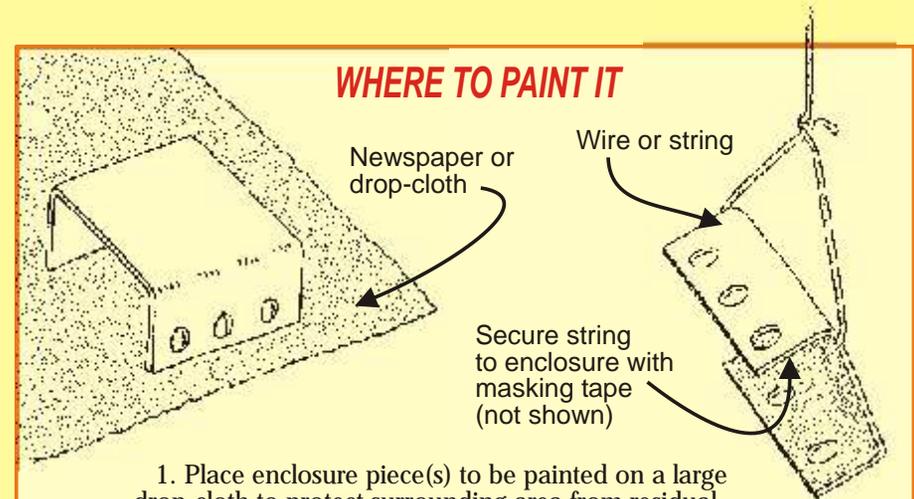
No need to polish "mirror" smooth. The minute scratches left from the steel wool or emery cloth actually help the paint adhere to the surface.

From the home office in Socorro, New Mexico ...

### Bob Villa's TOP TEN HINTS OF PAINTING

1. **Don't get in a hurry!** Take your time. Patience is the key to success.
2. Surface to be painted must be smooth of burrs and clean of oil & finger prints.
3. Two thin coats are better than one heavy coat.
4. If possible, first coat should be a primer coat for better adhesion to metal surface.
5. Let first coat dry overnight. (Primer paint dries faster)
6. Let 2nd coat dry overnight.
7. Don't handle painted items until it is thoroughly dry.
8. The operative word here is "let it dry" - like really good.
9. Paint in a well ventilated space (like on your wife's dining room table!)
10. If all else fails ... call Bob Villa.

### WHERE TO PAINT IT

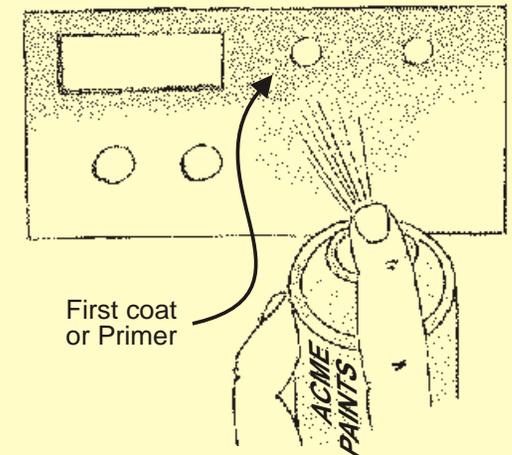


1. Place enclosure piece(s) to be painted on a large drop-cloth to protect surrounding area from residual paint spray. Position so you have access to all areas to be painted without having to move by hand. You can then reposition enclosure for painting by moving the drop-cloth or paper.
2. Hang piece to be painted by string or wire. This allows easy access to all areas to be painted. Let it hang until dry.

### The PRIMER or FIRST COAT

The first coat should be a primer coat, if possible. Primer paints are made of iron or zinc oxides (and hence their bloody red color) for strong adhesion to the metal and/or aluminum surface. The finish paint (final color) will stick better to the dull primer finish than to the aluminum. Most primer paints are fast drying, allowing the finish coat to be applied within an hour or so (read directions). Clean surfaces to be painted with water and soap to remove any oil residue to prevent "bubbles" or "blisters" from forming later on. If painting over new paint, either use primer or buff dull with emery cloth or steel wool.

If you DON'T use a primer, then the first coat will be the same paint as the finish coat, or use another paint with a dull or matte finish. In this case, apply a fairly thin but even coat. Use the steel wool or emery cloth to buff out blemishes before the 2nd coat.



*Let paint dry for several hours or overnight before applying second coat. Front panels and large surfaces should be laid flat to allow paint to dry without running.*

## The 2nd or FINISH COAT

The second coat is the finish coat, and is applied after the first coat has dried. It should also be applied in a light, even coat, then intensifying for the desired finish and appearance. Of course care must be given to not apply too thick of a coat to prevent running and pooling of wet paint. Paint can should be held 6" or so away, painting in a back-and-forth or "S" pattern, from top to bottom, using even strokes. (From bottom to top can cause running). Stop and shake can periodically to ensure an even delivery of paint.

## The PAINT COLOR

The choice of color is, of course, yours. Browse the shelves at your hardware store to find a color that hits your fancy. Some rig colors that I have seen that look nice are:

- Light to dark grey, as the Wilderness Radio NC40A.
- Avocado Green, like some commercial test equipment.
- Black (dull or gloss) like MFJ, QRP+, etc. (Requires white labeling, however).
- Porcelain white, seen on a Kanga US R2 rig - nice.
- Ivory, such as used on the EmTech NW series rigs.
- Anodized bronze (sliding door touch up paint), the



## QUICK "PRIMER" ON SPRAY PAINTS

ENAMEL paints use synthetic and natural oils to carry the color pigments, and fit for most metals. 6-8 hour drying time.

ACRYLIC/LACQUER paints are synthetic resins carrying the pigments for most metals, in dull or gloss, with faster drying times and a hearty finish.

ALKYDS are another family of oil-based primers and finish paints for metals.

EPOXY/PORCELAIN paints dry very hard, usually a gloss finish. Use only oil-based for use on aluminum. (Some varieties are water based).

LATEX/WATER BASED paints are intended for wood, concrete, etc. and should not be used on metals.

*Use only an oil based paint. Check can for compatibility to painting aluminum.*

## Overcoat Finishes

There are spray paints that are intended for over-coat finishing ... such as Clear Lacquer and Polyethylene Clear Kotes. They are a "transparent" or clear paint applied over the final color coat to give a bright, glossy shine. Such paints should NOT be applied until after you are done with your labeling. The overcoat finishes dry slowly, so allow to dry overnight before handling. Some clear lacquers contain metal flake speckling for a unique finish.

## LABELING - The Final Touch

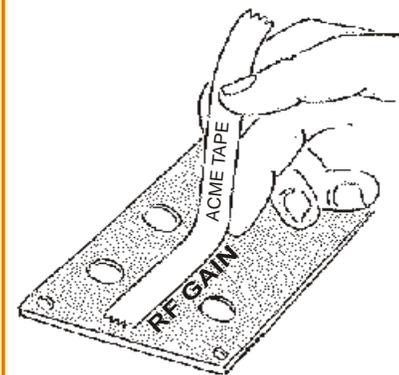
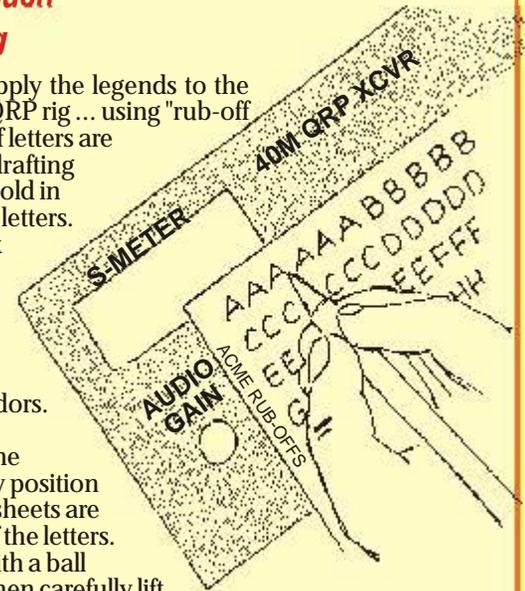
### Using "rub-off" lettering

There are various methods to apply the legends to the controls and indicators on your QRP rig ... using "rub-off letters" is discussed here. Rub-off letters are available from office supply's or drafting and art stores. They are usually sold in 8½x11 sheets in black (or white) letters.

For this usage, you'll want a block type style like Helvetica or Megaron in 8-12 point sizes.

*Letraset, Chart Pak and DecaDry* are brand names. *DataK* lettering sheets are specific to electronics and sold by some mail order vendors.

To apply rub-off lettering, place the sheet over the panel and carefully position the desired letter into place. The sheets are transparent to allow alignment of the letters. Once positioned, rub the letter with a ball point pen or hard-lead pencil. Then carefully lift up the sheet to separate the letter from the sheet onto the panel. Repeat for the next desired letters.



**Alignment can be tricky.** If you don't have an eagle-eye to keep the letters straight, you can use a strip of masking tape. Place the tape straight, just above or below where you want the letters to go, to act as a guide line. When the line is done, it can be moved to the next desired location. *Make sure the paint is completely dry and hard before applying the rub-off letters or the masking tape.*

Cover completed words with a piece of paper and rub again with the scribe or a fingernail to ensure they are well fixed. Spray with a clear lacquer (see previous page) or a protective spray such as "Krylon Fixatif." Spray on a couple of light coats - a heavy coat can dissolve the lettering! Experiment with a scrap piece of metal for practice.

Rub-off letters are quickly disappearing from office and art supply stores due to the proliferation of computer lettering. It is advisable to purchase a couple of sheets now while still available. A couple of sheets will last for years.

**Computer labeling.** There are also many means to make nice labels and even complete front panel overlay with a graphics program and a laser or color printer. Self-adhesive & plastic stocks are available at many office supplies.