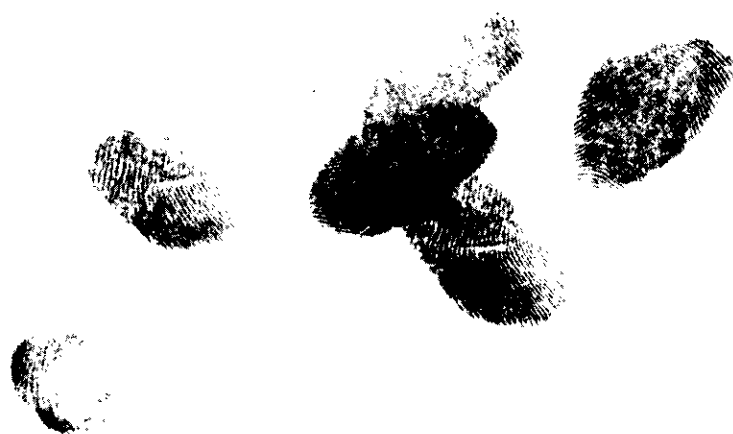




Charles Phillips



### Part I Wet-Washing

*Have you ever noticed how much better your car seems to run when it has just been washed or polished? This is a psychological reaction of course, but the improved appearance does cause us to value our car more highly and take better care of it until the next rain storm messes it up again.*

## Servicescope

## Tektronix products get dirty, too!

**N**ot as rapidly as our car, perhaps, but with a more detrimental effect on its operation. Thorough cleaning of a dirty instrument not only improves its appearance, but improves its performance and reliability as well.

Many of you are aware that Tektronix people have, for many years, been washing instruments sent to our service centers for repair and calibration. Some customers with large numbers of instruments have installed their own wash facilities as an aid in keeping their instruments in top shape.

With the use of printed circuit boards and solid state devices in instruments comes the question, "Is it still necessary to wash instruments and, if so, what precautions do I need to observe?" While it is true that solid state instruments do not usually get dirty as quickly as their vacuum tube counterparts, they too, can benefit from a periodic cleaning. We find they are easy to wash and no particular precautions, other than those applying to vacuum-tube type instruments, need be observed.

### Equipment Needed

There are several items you will need to do an effective job. They are as follows:

- (a) Liquid silver cleaner used to remove tarnish from connectors.
- (b) Brushes used to clean knobs and connectors.
- (c) Paint brush used for dry method of cleaning, etc. Ajax cleaner, or equivalent, for wiping off front panel, etc.
- (d) Sponge for applying cleaner to remove marks on aluminum.
- (e) Non-sterile cotton-tip applicators used for miscellaneous cleaning chores.
- (f) Piece of plastic light filter or graticule used to remove labels and adhesive after soaking them with solvent.
- (g) WD-40 or furniture polish, applied sparingly to pots and switches as needed (before wash).
- (h) Kimwipes, or equivalent, for wiping off front panel, etc.
- (i) Spray paint used to touch up cabinets and side panels.
- (j) Screwdriver for removing slotted screws.
- (k) Screwdriver for removing Phillips screws.
- (l) Glass and plastic cleaner.



The other items needed in the wash area are:

- (a) A source of compressed air with approximately ten feet of hose.
- (b) A spray gun with eight feet of hose (Devilbiss Type GDV Series 510 or equivalent).
- (c) A rubber siphon hose three to four feet in length.
- (d) Hot and cold water.
- (e) Detergent (Kelite or equivalent, mixed approximately 1 part detergent to 20 parts water).
- (f) A drying oven. There are a number of commercially available ovens suitable for this purpose. The primary considerations in selecting one are size and the capability of providing circulating air at a temperature of 125°F to 150°F.

#### **Steps Prior to Cleaning** (for wet washing only)

- (1) Check for water-soluble lacquer. Some early Tektronix instruments used water soluble ink for chassis markings. The chassis have a shiny appearance as compared to those with permanent markings. If you suspect you are washing such an instrument use very little detergent and cold water.
- (2) Paper covers on electrolytic capacitors should be replaced with plastic covers or sprayed with a water repellent such as WD-40.
- (3) Leather handles should be sprayed with WD-40 or other type water repellent to prevent cracking.
- (4) Capacitors leaking oil should be tagged for replacement.
- (5) Labels and adhesive should be removed unless specified otherwise. If stubborn, soak with Flux Remover during wash.
- (6) Use liquid silver cleaner (available at hardware and grocery stores) with a Q Tip or tooth brush to remove tarnish from silver anodized VHF-BNC and other connectors. After cleaning connectors be sure to protect them by washing with detergent and water or using WD-40—otherwise you will develop a small potential from the connector to ground and it will appear as grid or input leakage.
- (7) Aluminum graticule covers and panels can be made to look like new by using a wet sponge and a little Ajax and rubbing the scratches or marks until clean.
- (8) Knobs can be restored to like new by using a stiff bristle brush and detergent with water (from sprayer) and scrubbing them.

We no longer consider it necessary to remove the CRT, shields, vacuum tubes, etc. to do a thorough cleaning job. Experience has shown that warm water and detergent under pressure penetrates these areas adequately without completely exposing them.

The cabinet sides and bottom are removed and washed separately. They can be put back on the instrument before placing the instrument in the oven for

drying, if desired. The 7000-Series plug-ins are washed with the side panels in place. This saves time and prevents a mix-up in panels.

#### **Washing Procedure**

After preparation, place the instrument in the wash booth and spray lightly with detergent and warm water. (Do not spray detergent directly on power transformers or paper items.)

Rinse thoroughly with warm water.

Remove excess water from the instrument (especially the front panel) with air.

Place the instrument (with washed plug-ins installed) in the oven and dry for at least 24 hours. (Oven makes good storage place until item is needed to be worked on. More drying time is o.k.)

The graticule and light filter are cleaned at the work bench using a glass or plastic cleaner.

#### **After Washing and Drying**

It is well to take a few minutes to apply lubricant to the switches, motors, etc., particularly on the older instruments. A lubrication kit designed specifically for this purpose is available under Tektronix Part No. 003-0342-01.

Switches—Lube detents with a light grease and contacts with No-noise.

Motors—Apply 1-2 drops of thin oil. (WD-40 is suitable).

Potentiometers—Apply 1-2 drops of No-noise or WD-40 to the shaft, contacts and open spots around the cover. Use a hypo and needle, or spray can with nozzle. Cover removal is neither necessary nor desirable. Rotate rapidly if necessary to eliminate noise.

#### **Painting\* Panels and Related Items**

- (a) Be sure panels are clean and dry.
- (b) Use proper color paint. Available locally or from Tektronix.
- (c) Use long sweeping strokes when spraying (short strokes will cause blotches) and stay several inches away from item to be sprayed.

\*Local paint shops also do this type work for a moderate fee.

#### **Waxing and Polishing**

The appearance of the instrument can be enhanced by applying WD-40 or furniture polish.

Front panels—spray WD-40 on an absorbent towel, not directly on the panel, and wipe. Also use a soft 1" paint brush sprayed with WD-40 and get in around and on the knobs and switches.

Side panels and handles—treat the same as front panel, knobs and switches—combination of towel and brush.

#### **Summary**

You will find that the time spent in properly cleaning an instrument will result in fewer calibration problems, a longer period between calibrations and greater operator satisfaction with both the instrument and the service center. 