collector, or excessively high EHT resulting in HV shut-down.

Because this tester uses impulses of only 650mV to minimize the forward biasing of semiconductors, such defects will not be reflected in the ring count. Under these circumstances, I check for measurable leakage resistance between the EHT cap and the other LOPT pins. It should be unmeasurable, otherwise the LOPT is defective.

If I have gone through the above tests and have these symptoms and a normal ring count on the tester, the diagnosis can usually be confirmed only by substituting a known-good identical LOPT, or by testing with a chopper similar to the one described in Sam Goldwasser's Electronics Repair FAQ, located on the Internet at ***http://pacwest.net/byron13/sam/flytest.htm.***

Something else I do when testing a LOPT is to supply it with a reduced B+ to enable scoping the HOT and measuring EHT (in situations where the monitor goes into HV shutdown). To reduce the B+, I use two light bulbs in series, one end to B+ supply, centre-tap to LOPT B+ connection, other end to ground. One bulb is 60 watts, the other is 100, so I can reverse the end leads and increase or decrease the B+ value used in testing.

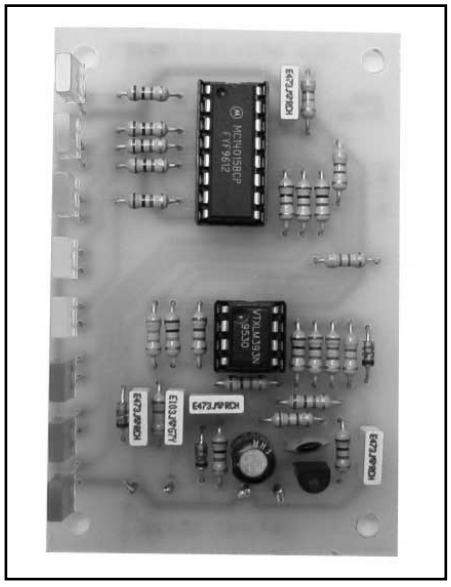
At the outset, when I have power supply cycling but have confirmed there are no shorts from HOT-C to ground, I substitute a dummy load (60W bulb) for the LOPT where the B+ enters, to see if the power supply works with the LOPT out of the equation.

Screw Size and Allocation Guide

Printed Circuit Board to Spacers
4 x Screw M3 x 6mm (zinc plated)

Front Panel to Spacers
4 x Screw Countersunk M3 x 6mm (Blk)

Front Panel To Case
4 x Screw Countersunk No4 x 6mm (Blk)



The assembled PCB, which supports virtually all of the circuitry.

Overall, the LOPT tester can identify about 80% of LOPT failures. When trying to solve a puzzle, if someone offers information that is right 80% of the time, it's a lot better than having to guess 100% of the time, especially if the ante is the price of a LOPT and wasted, valuable time.

Michael Caplan does general electronic servicing in Ottawa, and added the following useful points in relation to TVs:

It's pretty straightforward to use, with the usual precautions of ensuring that the under-test unit power is off and any caps are discharged.

When testing an LOPT in circuit, it might be necessary to disconnect some of the LOPT terminals, and/or yoke plugs that could load it down and upset the readings. The tester will often not detect bad HV diodes in integrated split-diode LOPT units, nor shorts/arcing that is voltage dependent - but then no other passive tester does either.

I have found it useful for checking TV deflection yokes, both horizontal and vertical. A good yoke lights at least five and typically the full eight LEDs. However, many yokes have built-in parallel or series damping resistors, and these must be temporarily disconnected. Otherwise the reading will be low, even though the winding itself is fine.

The tester can be used for checking high-Q transformers such as those used in SMPS's. However, my experience has shown that it will not provide more than a two or three LED indication for good TV horizontal drive transformers. It can be used for these, however - to indicate shorts (no LEDs lit). On the other hand the ESR Meter (Dick Smith catalog number K-7204) can do much the same with these low resistance transformers.

Wayne Scicluna services TVs in Sydney, and is the technician who talked me into developing the tester in the first place. Here are his hints:

If you've already checked for the more obvious leaky and shorted semiconductors and capacitors etc., and are still getting a low reading on the tester, there are some other traps to avoid.

You need to get a good connection with the test leads, because contact resistance can cause a low reading. The same applies to defective solder joints in the horizontal output stage, especially on the LOPT itself and HOT. In fact connecting the tester with clip leads, flexing the board and wiggling components is a good way to show up bad solder joints in this area.

Body conductivity can also cause a lower than normal reading if you're touching the test leads and your skin is damp. Low readings can also be caused by having the test leads reversed, i.e., connecting 'HOT Collector' to chassis, and by faults in an external voltage tripler.

How to build it

Before soldering anything to the printed circuit board, hold it up to a bright light and examine the copper side carefully for fine track breaks and especially whiskers or bridges - particularly where tracks pass close to component solder pads.

Referring to the board overlay in Fig.3, begin installing the components, starting with the resistors and diodes and working your way up to the tall ones including the four PCB pins for `GND', `HOT' and `+6V' terminal connections- but leaving

Resistor Colour Codes

Value	4 Band (1%)	5 Band (1%)
270R	Red-Vio-Brn-Brn	Red-Vio-Blk-Blk-Brn
1K	Brn-Blk-Red-Brn	Brn-Blk-Blk-Brn-Brn
4.7K	Yel-Vio-Red-Brn	Yel-Vio-Blk-Brn-Brn
10K	Brn-Blk-Org-Brn	Brn-Blk-Blk-Red-Brn
33K	Org-Org-Org-Brn	Org-Org-Blk-Red-Brn
47K	Yel-Vio-Org-Brn	Yel-Vio-Blk-Red-Brn
150K	Brn-Grn-Yel-Brn	Brn-Grn-Blk-Org-Brn
1M	Brn-Blk-Grn-Brn	Brn-Blk-Blk-Yel-Brn
2.2M	Red-Red-Grn-Brn	Red-Red-Blk-Yel-Brn

Capacitor Codes

Value	IEC Code	EIA Code
100pF	100p	101K
0.01uF	10n	103K
0.047uF	47n	473K