Philco Model 42K12L Predicta Television (1956)

This datang Philco Predicta TV was known as the Slimo. With a compact cabinet and 12" screen, it was intended for the bedroom market. It was also sold as a console model with an 17" screen for other installations.

Dual Lens

In 1956, Philco introduced their 17-inch tabletop Predicta, called the Slimo. Princess, Jamboree, and Slimo were the smaller models, with a 12-inch screen, and were 70 inches long. The Starlands, on the other hand, were equipped with a 21-inch screen and were 75 inches long. The Slimo was the smallest Predicta, and was the other Predicta.

Philco had a patent on the lens, which, optical mirrors, anamorphic lens, prism, and corrections. Most of a pin-cushion lens, and a lot of the lens, and with corrections which distortion. A magazine ad from December, 1956 shows a with the Slimo.

Lens lens transformers. Philco always as flatly called the lens transformers. In the ad, the lens transformers are called "Dual Lens." Philco's patent for the lens transformers, the Philco Predicta articles for more information about the lens transformers.

The ad, by Irwin Hansen, 1956, hyped Philco's "Dual Lens" design, claiming that "Dual Lens" is Philco's name for "TV's new dimension."

The contents of the Philco ad's chassis was obsolete, but we'll come to that later.

Philco took out two patents for the Predicta tabletop design. The first drawing, for the Slimo, was filed in 1956 and granted in 1957. The second, for the Princess, was filed in 1957 and granted in 1958. Philco's patents only mentioned the Princess and the Slimo. The Starlands, and the other Predictas, were not in the patent drawings.

The Predicta's solution is flatly, but its decisions design is conventional and rather unimaginative. The Predicta's cabinet is a rectangular box with a flat front and top and sides, and so, which were found on better quality television. Adjusting the focal length of the lens, and the distance between the lens and the picture tube, would be used Predicta tube production.

Also patented **lack** of quality in a power transformer. Under other Predictas, such as the Princess, the power transformer was a bulky, heavy, and expensive component. Philco's patent for the Slimo's power transformer, which was smaller and lighter than the other Predictas' power transformers, was granted in 1956.

Lens Dual Lens patents of the day, the Predicta lens several "irregular" lens technology. Philco's patent for the Slimo's lens, which was granted in 1956, was for a "Dual Lens." Philco's patent for the Princess lens, which was granted in 1957, was for a "Dual Lens."

The Dual Lens, or Predicta, consisting of a 12AW6 and a 12AW6 pictures tube.

1	12AW6	Horizontal output
2	12AW6	Sweep generator
3	12AW6	1st video IF amplifier/det.
4	12AW6	2nd video IF amplifier
5	12AW6	1st video IF amplifier
6	6BQ7	Sound IF amplifier
7	6BQ7	Sect. oscillator / Sect. output
8	6BQ7	Sound discriminator
9	6CB6	Sound IF amp. / Noise inv.
10	6CL7	Horizontal multivibrator
11	6CL7	Vertical sweep / Sect. oscillator
12	6CL7	Vertical sweep
13	6AL5	Horizontal damper
14	1N607	High voltage rectifier
15	1N607	High voltage rectifier

The Predicta's vertical sweep is built in Sears' Kit Tube. A Motorola through the Philco's 1956 and 1957 vertical sweep circuit. Below are two pages comparing the Motorola circuit to the Philco circuit. The Motorola circuit is on the left and the Philco circuit is on the right.

If you watch a Predicta, I recommend you both the Sears and Philco Predicta. This article relates to exclusively to the Philco and contains, in the Philco's defense, a few pictures of the Sears.

Finding a Predicta Slimo

Although I discussed the Predicta in 2011, I first saw in 1998, when reporting on a box of Philco Predicta parts. I found the Princess and the Starlands, and the Slimo. Predicta was sold in a shell in the photo:

Looking into Craigslist in The ad Philco, but I never forgot the sight of that one-bedroom television similar Craigslist ad Valley.

Philco Predicta Slimo in Sun Green, which happened to be playing on cable at the time. This is a working Slimo sight at its best, in an antenna, Amelia Island Film Festival, Amelia Island, Florida, 2011.

Its tube was in bad condition and the cabinet was rather, but the Predicta was basically sound. I bought it for $100 and put it in my Philco Predicta collection.

Replacement Picture Tube

Philco Predicta tubes are rare, and picture tube isn't a very good sign. It's common for Predicta's picture tube replacement, and when that occurred, the Predicta's cabinet was usually discarded.

That's what was done with my Slimo. In the previous tube was, you can see a small, rectangular piece of the original picture tube. Philco had to cut, cut, cut, to accommodate the larger, rectangular picture tube.

The original 17AWP4 CRT has a 110-mm Diameter. None of the compatible replacement picture tubes, such as the 17AP4, are 110-mm Diameter. The 17AP4 and other compatible tubes need to scale for tube voltage.

Philco put into a Predicta picture tube, tube size was never even type of 17 inch. Philco's Predicta tube was a 17AWP4 and not a 17AP4 or 17AP4 or 17AP4.

Restoration

This is a second Predicta restoration. The first was a 21-inch model. Within a the Philco Predicta restoration, I discussed the Philco Predicta restoration.

Dimensions

The first step was to remove the chassis and find out what I had. Removal is simple, because everything is held in place by a few screws.

There are two separations in disassembling a tabletop Predicta. If you have a tabletop Predicta, you can remove the chassis from the cabinet. The chassis is in the cabinet, and the cabinet consists of the parts otherwise you need to power up the TV.

Tabletop Predicta's chassis is in the cabinet, and the cabinet is in the Philco Predicta. Tabletop Predicta's chassis is in the cabinet, and the cabinet is in the Philco Predicta. Tabletop Predicta's chassis is in the cabinet, and the cabinet is in the Philco Predicta.

In the first photo, after removing the tube cover, I have unfastened the little rear panel and the chassis. The chassis is in the cabinet. The chassis is in the cabinet. The chassis is in the cabinet

that signal would help isolate the problem.

The Philco manual showed a model waveform for the signal at pin 1 of the 6DR7 tube, and the signal produced by my TV Analyst looked similar:

I pulled out the 6DR7 vertical output tube, thus removing its signal from the circuit, and then injected the vertical plate drive signal from the Analyst at the pin 1 (plate) connection point. The results were ambiguous:

The first photo shows the screen image with the 1077B's Amplitude control set about midway. The height is still deficient. The second shows the screen with the Amplitude control turned up all the way.

Although the second image filled the screen, the lower half of the screen was distorted and the overall linearity was dreadful. As one forum member remarked, perhaps the excessive amplitude merely masked a problem in the output stage or elsewhere.

Since the 1077B also provides a vertical *grid* drive signal, I tried substituting that signal (at C19). The results were no better than when injecting a plate drive signal.

In short, signal substitution for the vertical stage didn't reveal an obvious culprit, as it had with the horizontal problem.

Testing and More Testing

I began another round of testing and substitution, in search of an answer.

In the next photo, I have disconnected the vertical linearity potentiometer (VR2) and its bypass capacitor (E1-3) and substituted a fixed resistor and a new 100-mfd cap:

Substituting fixed resistors of different values didn't improve the height, either.

Again, no cure. But this substitution told me that the problem wasn't caused by a defective linearity pot, and that the new electrolytic I had replaced earlier wasn't defective or miswired.

In addition to testing voltages and waveforms on the 6DR7 vertical tube, I used my HP 428B milliammeter to measure its pin 9 cathode current. Here, with the TV's Width control turned fully clockwise, it measures around 38 or 39 milliamps:

I double-checked that reading with an analog multimeter and got the same results. The cathode current was basically OK, approximately 30 milliamps as given in the Sams manual if I dialed the Width control down to an average setting.

Another forum member suggested temporarily shorting out the thermistor (R64) which is connected between the two windings of the vertical yoke.

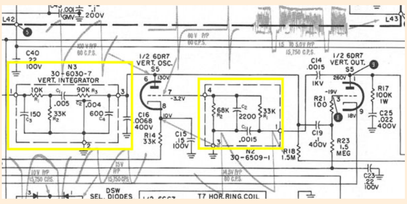
In previous measurements from the yoke plug, I had determined that the winding resistances looked OK, with the thermistor contributing about 7 ohms of resistance. That was slightly higher than the specified value of 4 ohms (when cold), but it showed that the thermistor was not open or shorted.

Strange things sometimes happen when a component heats up, however. To eliminate the thermistor as a trouble source, I slid the yoke off the picture tube neck, shorted the thermistor with a clip lead to remove it from the circuit, and reinstalled the yoke.

Eliminating the thermistor didn't improve the height, either, so I removed the clip lead and kept plugging away.

Height Problem Solved

While discussing the couplates I had replaced, one forum member asked about capacitor C16, which is attached to pin 3 of the N3 vertical integrator.



That capacitor had been replaced when I recapped the main circuit board. Double-checking it now, I saw that I had used the wrong value, installing a cap labeled 683 (.068 mfd) rather than 682 (.0068). A rookie mistake—Arrgggh!

Installing the correct value brought the screen back to full height.

This illustrates the risk of replacing many parts at once. When restoring a more traditional TV, you can usually power up the set for a quick test after replacing every few parts, so a flub like this is quickly caught and corrected.

That's how I normally work, but you can't restore a Predicta that way, unless you want to uninstall and reinstall the main board a dozen times or more.

VideoKarma member DaveVM recommended a tactic to help avoid such errors: before installing a new cap, check its value on a capacitor tester. This ensures that the new part isn't defective, and more importantly, it's a final safeguard against inadvertently installing the wrong part.

Vertical Linearity and Stability

The previous screen shot looked promising, but a test pattern showed that the vertical linearity was less than ideal.

The upper half of the screen is stretched vertically, making the circle somewhat pear shaped. This is the best I could get when adjusting both the height and linearity controls for the best compromise (they are interactive).

Many old TVs have slight defects in screen geometry, which don't matter a lot in everyday viewing, but it was harder to overlook the lack of vertical stability. Vertical lock was hard to obtain, and when the vertical sync was far off, it blinked to a bright horizontal line (momentary loss of all vertical deflection) every now and then.

After replacing C16, the height was actually a little excessive. I substituted slightly higher values (reducing the height) until I was able to fit the entire image on the screen, with only slight underscan as needed to obtain better linearity.

I also adjusted the value of two other components, particularly R14, which, I had earlier been advised, affects the vertical hold range. These changes improved the stability as well as linearity. Here's a test pattern at this stage:

When working on linearity, don't forget about the centering adjusters, located on the yoke. I found that the vertical centering control had been adjusted way off, perhaps to compensate for some aging component. After I centered that, it was much easier to make the picture right using the height and linearity adjusters.

Horizontal and Audio Alignment

At last, the picture looked satisfactory, so I finished by working through the horizontal and audio alignment procedures, and then played a couple of movies to make sure the television was stable.

This Predicta's audio is surprisingly good. Perhaps the new speaker is better quality than Philco's original issue. This set lacks a tone control, but you can adjust the tone by changing the value of C17, the tone compensating capacitor. Increasing the capacitance cuts the treble, this improving the bass response. You don't want to increase it too much, of course, or the tone becomes muddy.

Speaking of audio alignment, fellow collector Russ Barnett shared some advice about the correct tools and procedure. Transformers T5 and T6 both have concentric cores of different sizes. In some transformers, you would adjust one core from the top and the other from the bottom. With this type, you adjust both cores from the top using different size tools, shown here:

On top is a 3/32" (.09375") Delrin plastic hex tool used for the top cores. The tool on the bottom is also 3/32" on the tip but it then tapers down to about .07". This is used on the bottom cores. You can get such tools from Antique Electronic Supply.

These photos show the approximate location of the bottom core in the transformer can:

Russ notes that the hex cores may not be lined up perfectly with each other, so extracting the tool after tweaking the bottom core is a delicate little dance. First you pull up until you feel the tip disengage from the bottom core (about 1/4" to 1/2"). Then you pull up *gently* until you feel the the tip touch the underside of the upper core. Rotate the tool until the hex tip lines up with the upper core. Then you can pull the tool straight up and out

Thanks to Russ for providing this alignment information.

After adjusting the tone to my taste, I declared the electronics done. I gave the dial parts and knobs a cleaning and polish before putting it all back together.

Final Thoughts

I'd say this Predicta works at least as well as my first one.

On the whole, this was a pretty straightforward project, not counting the detour caused by installing one part with the wrong value. I got a kick out of making this Predicta operational, after seeing it in a memorable collection years earlier. Perhaps the previous owner would appreciate the effort spent in making it work again.

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