

Servicing Telpro Colour Receivers

Barry F. Pamplin

TELPRO colour TV sets, marketed under the Carnival emblem, were manufactured at Kearsley, Lancs., initially by the Telpro company, a subsidiary of the rental firm Telefusion Ltd., and later, when the factory changed hands, by ITT Ltd. There were three models, the 20in. Model C501, the 22in. Model C561 and the 26in. Model C671.

Designed along similar lines to the Decca 30 series chassis, and using the same "mix" of Mullard and Baird circuits, the Telpro chassis is electrically similar to the 30 series but the physical layout is different, giving better accessibility for service – clearly a number one priority for any rental company embarking upon TV production.

Because of the basic similarity to the Decca chassis, many of the comments made by R. W. Thomson in the June/August 1976 issues of *Television* apply equally to the Telpro sets. The purpose of this article is to note the faults which have shown themselves to be common on the Telpro chassis in addition to those already dealt with in the earlier articles. Guidance is also included on the remedial action to take in those cases where experience has shown that a modification to the original circuit produces more reliable operation.

Front End Troubles

The Telpro chassis uses a varicap tuner which is prone, under certain circumstances, to produce patterning problems. These problems occur because of the tuner's poor image rejection performance.

Without going into too much detail, the problem arises when the channel spacing between programmes gives rise to an image frequency which beats with the i.f. to produce a visible pattern on the screen. To take, as an example, the Winter Hill transmitter in Lancashire. Here the channel spacing is 32MHz, and if the image rejection of the tuner is poor this channel difference frequency will beat with the 38.15MHz sound i.f. to produce a 150kHz herringbone pattern on the screen. Known in the esoteric language of tuner designers as $N + 4$ interference, the only answer is to replace the tuner with one having a better image rejection such as the ELC1043/05 unit (67dB rejection as compared with only 38dB for the Elpro unit fitted). Another area of the country where a similar problem occurs, only this time it is $N + 10$, is Portsmouth.

Another cause of patterning in the tuner circuit is the capacitor C96 (6.4 μ F) which is mounted on the tuner control unit. Moving the capacitor from this position to a position on the tuner printed board immediately beneath the tuner unit will often clear up minor patterning problems.

Fuse Troubles

The tendency exhibited by the Decca chassis for intermittent fuse blowing occurs with equal regularity in the Telpro sets. The 500mA h.t. line fuse F1, which is mounted on the power supply/sound panel, is frequently ruptured by flashovers in the PL519, the PY500 and the c.r.t. The understandable tendency simply to fit a "fatter" fuse should be resisted. Nine times out of ten one gets away with it, but in the tenth case the line output transformer really does get alight with expensive damage to the adjacent cable forms.

The most satisfactory solution to the problem is to

remove the fuse altogether and to replace it with a fusible 10 Ω resistor rated at about 5W. This will open up in the event of a "solid" fault occurring, but the thermal inertia will avoid spurious failure due to flashovers and the like.

Rupturing of the 2A mains fuse F3 is nearly always caused by the h.t. rectifier diode D600 (BY127) being damaged by transients created by the on/off switch. Very often its series 3.9 Ω resistor R603 goes open-circuit as well. On unmodified sets this failure happens very frequently: the way to prevent recalls is to fit a VA1005 thermistor in series with the resistor.

Valve Troubles

One of the consequences of the physical arrangement of the chassis is that the PCF802 line oscillator valve is tucked away in the "depths" of the set, where it gets very hot and irritable! This shows up when the viewer complains that the line takes a long time to settle down when the set is switched on or when the channel is changed. In most chassis this would indicate flywheel sync diode trouble – in the Telpro chassis it's invariably caused by the PCF802 ageing – often within a few months of replacement.

The two other valves that seem to give regular trouble are the PL508 field output pentode which produces field fold up, and the PCL82 sound output valve which, even allowing for its known tricks, seems to suffer from open-circuit heater troubles in this chassis.

Field Timebase Faults

Apart from valve trouble, the two components which cause most trouble in this area are the main linearity control VR421 (100k Ω) and – guess what – the *tripler*!!

The linearity control on the Decca chassis is a big beefy component, whilst that on the Telpro sets is a miniature preset mounted in a position where it can cook gently. If the linearity control has a white control ring it should be changed on sight since it will otherwise give trouble sooner or later – usually causing a jittering picture.

Just how the tripler can cause field troubles is only obvious to those who have dealt with the Telpro chassis through the hot summer days as well as the long winter nights!

The subject usually arises innocently enough with a phone call to say that the picture has collapsed to a horizontal white line. Invariably however by the time the engineer calls the line has reverted to a picture, and no amount of prodding around the field timebase panel will produce a collapse. This sequence of events will repeat itself at intervals of anything from a few days to a few weeks, during which time the PCF80 and the PL508 will have been changed once – if not twice – the height control replaced and, depending upon the sagacity of the engineer, a completely different field timebase board fitted.

Eventually, with the viewer frustrated and the engineer cussing, the set will be dragged into the workshop for a soak test. Once there, and assuming that the fault occurs, it will be found that the field collapse is due to an open-circuit(s) in the four leads feeding the field output transformer. These leads, which are very thin, run very close to the tripler and corona discharge from the case of the tripler causes them to become corroded and fracture. Simple once you've found it!

Whilst on the subject of triplers, it's worth mentioning that

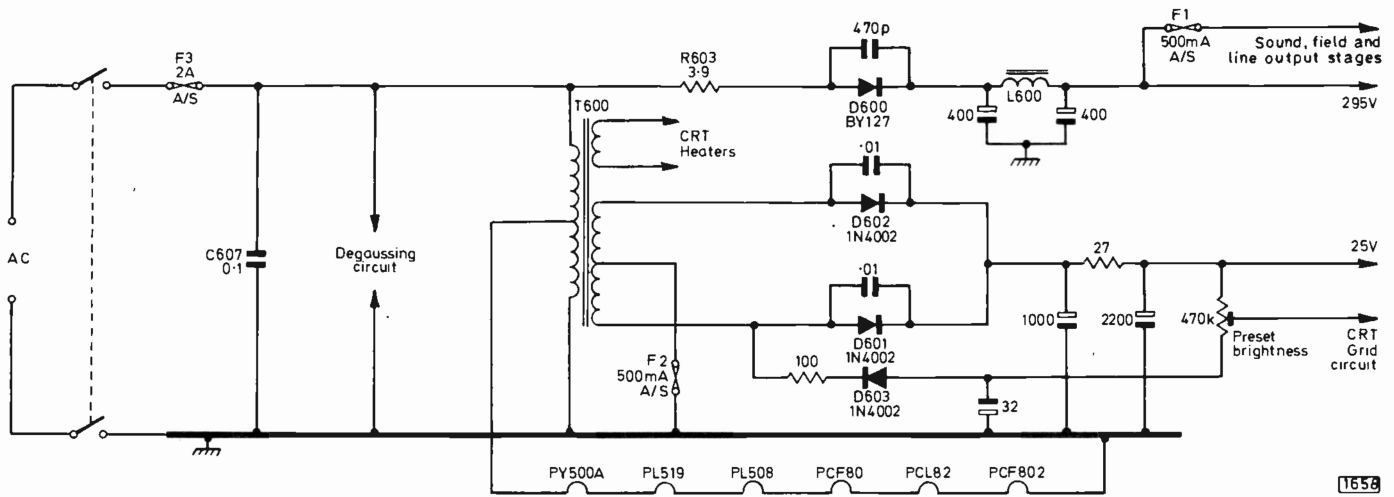


Fig. 1: Circuit diagram of the power supplies.

in cases where the line output stage appears to be operating normally but the e.h.t. is excessive (28-30kV) the culprit is usually the tripler. Just what happens to cause this effect I do not know – only that it occurs.

In both the Decca 10 and 30 series and these sets there is a tendency for R402 (820kΩ) to increase in value. Since it's in series with the height control the result is loss of height.

Decoder Troubles

The decoder and colour drive circuits are, with a few exceptions, trouble free. In the decoder proper the two most common culprits are the d.c. amplifier (TR212) in the reference oscillator control loop and the i.c. MC1327P.

Loss or excess of one colour is usually due to one of the two small preset controls associated with each output transistor becoming defective. The effect is usually intermittent, and when tracking it down it's important to get the viewer to observe what happens to the monochrome picture when the fault occurs. If the viewer tells you that the picture keeps flicking to purple, for example, then the remedy is to change the two presets associated with the green channel.

Early production panels had output transistors with flat heatsinks. These are not reliable and should be replaced with BF337s with circular corrugated heatsinks.

Intermittent loss of luminance and sync is usually due to a dry-joint on the luminance delay line where it joins the printed board. Complete loss of luminance and sync is usually caused by a faulty delay line – either an open-circuit winding or a short between the winding and the earthed inner foil.

Vague complaints about the picture flickering can be due to a poor contact at either end of the lead carrying the sync pulses from the decoder panel to the timebase panel. If in doubt, waggle each end of the lead in turn whilst watching the screen.

Sundry Troubles

Apart from the faults listed above, there are one or two other points which deserve a mention. The two hinge down assemblies at each side of the chassis, especially the one carrying the decoder panel, can trap wires when replaced into the closed position.

In some sets the original convergence assembly has been replaced by a Mullard unit, and the clearance between the red convergence components on the yoke and the timebase assembly is very tight – extra care is then needed when hinging the unit down.

In cases where there is an obvious dead short between h.t. and chassis it's worth checking the PL519's screen grid decoupler C432 (0.1μF) before embarking on a long sortie through all the plugs and sockets to track down the culprit.

Getting Spares

Because ITT ended the production of the Telpro chassis soon after they acquired the factory the total number of sets produced was fairly small and the supply of spares can sometimes be difficult.

As far as the writer is aware there are no panel repair facilities, and getting hold of some of the smaller items such as the front panel controls is difficult. The similarity to the Decca 30 series means that the line output transformer, field output transformer and mains transformer used on that chassis can be fitted to the Telpro without much modification.

As far as service data is concerned, the Decca 30 series circuit diagram can be used, most of the component reference numbers being identical. There are only minor circuit variations.

Acknowledgement

The author wishes to thank the directors and engineers of Telefunson Ltd. for their assistance in the preparation of this article.

Tristar

These sets were also sold through Trident Discount outlets under the Tristar name.

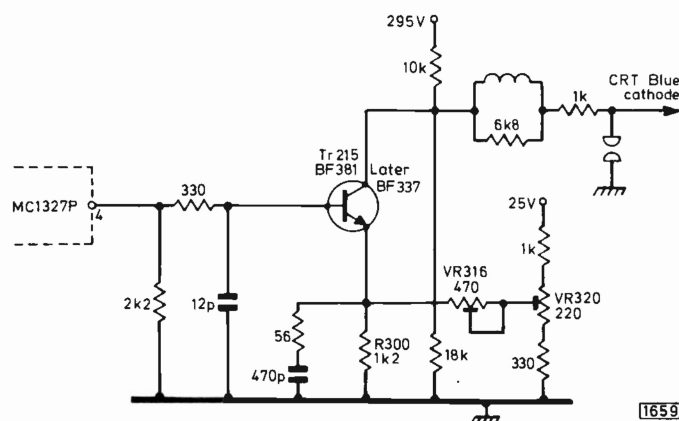


Fig. 2: One of the RGB output stages.