



# The Serviceman

## Handyman successes—and failures

The do-it-yourself types who attempt their own TV repairs experience varying degrees of success—ranging all the way from doing a good job at a considerable cost saving to complete failure, plus unnecessary expense and, sometimes, adding more damage to the original fault.

With the advent of colour, and a new colour TV set, a lot of people find themselves with a monochrome receiver on their hands earmarked as a second set for the rumpus room or children's den.

If, or when, it gives trouble there is a strong temptation to "have a go" themselves, on the basis that it is no longer the main set, not worth very much, and that the cost of a complete overhaul may well be more than it is worth. So, on the basis that there is little to lose, they tackle it themselves.

The average handyman prides himself on being able to repair just about anything around the home—from the lawnmower to the family car; from the electric iron cord to the TV set. As readers can well imagine, this last one is often his Waterloo.

He usually tackles the TV set by cleaning out the accumulated dust and then purchasing new valves to replace any suspect ones. The reasons for suspecting particular valves are many and varied.

"It doesn't light up as bright as the others."

"It looks crook."

"It gets too hot."

And so on . . .

A common trap is the EHT rectifier.

"It's got to be that one, 'cos it's the only one that doesn't light."

There are two traps here. One is the fact that the design and/or location of some EHT rectifiers makes it almost impossible to see the filament. The other is the fact that this filament is not supplied from the normal heater line, but from a loop around the EHT transformer.

As a result, any malfunction which seriously upsets the operation of the line output stage will most likely show up as failure of the EHT rectifier filament. But try to convince some customers of this. On more than one occasion I have failed to get this message across, the customer insisting on buying a new valve. Later, when it has failed to cure the trouble, he comes back, somewhat sheepishly, for more assistance.

I was prompted in this brief reminiscence by my most recent do-it-yourself type. He walked into the shop on a Saturday morning and handed me a piece of paper with "23FSP4" written on it and asked, "Have you got one of those?"

He went on to explain that his TV set had suffered from a very dark picture for some time, and had now lost the picture entirely. Since a friend had a similar set, with similar symptoms, which had been fixed by fitting a new picture tube, he reasoned that his could be fixed in the same way.

Also, he had made a careful study of how the tube was fitted in the cabinet and felt quite sure that, if he took care, he wouldn't have any trouble fitting the new tube.

It so happened that I did have such a tube in stock but, before handing it over I advised him of the dangers associated with careless handling of a picture tube, the damage they could cause if they imploded, and the main precautions to take in handling them.

Then, the transaction completed, he loaded the tube into his car and drove off to an interesting Saturday afternoon's work fitting it in the cabinet.

I don't suppose I was really surprised when he turned up on the following Monday morning, together with the set and the rather sheepish confession that it still did not work. Would I have a look at it and give him a report when he called back late in the afternoon?

My first step was to check his installation of the tube. I was agreeably surprised to find that he had done everything correctly; I could not have done a better job myself.

Next I switched the set on and checked the EHT, which was exactly zero. This set uses a 6AL3 damper diode with a 27 ohm fusible resistor in the plate circuit, the latter intended to provide protection in the event of circuit malfunctions, particularly any which affects the line drive to the 6CM5 line output valve. This resistor was cooked.

Leaving it for the moment I checked for bias on the grid of the 6CM5. There was none—a clear indication of lack of line drive and, equally, of the failure of the line oscillator stage.

From previous experience I knew that the most likely cause of such a failure was an open circuit horizontal oscillator coil. Sure enough, a quick check with the ohmmeter confirmed this.

It needed only a few minutes to replace the faulty coil and faulty resistor, after which the set sprang into life. I aligned the new oscillator coil and gave all the other controls and adjustments a routine check.

The set was now working reasonably well, but I went over the valves and checked each one in the tester, experience having taught me that this model set, at this age, usually had one or two just about ready to replace.

In this case I found a weak 6X9 in the IF strip and, when this was replaced, the old set turned in a virtually new performance. It was a very happy customer who picked up his set late that afternoon; not only because it was working well, but also because it had turned out to be such a simple fault. Also, I suspect, because of his personal involvement in the job.

And did the old picture tube really need to be replaced? I have no way of knowing and I felt it more diplomatic not to raise the point. Doubtless the customer had asked himself the same question but would prefer not to be reminded of the possibility that he had bought a new tube unnecessarily. So, while ever the question remained unanswered, he could at least console himself with the possibility that it was weak.

But I suspect he may hesitate in future before he makes such a sweeping diagnosis.

Still on the do-it-yourself theme, here are a couple of letters from readers whose efforts have been rather more successful. The first is from a Mr G. P. of Perth, WA, who, while only an amateur in matters electronic, was still able to carry out a worthwhile overhaul on an old TV set. He writes:

"Carried out a satisfying exercise on our B&W TV set which is some 17 years old. Received a letter from the maintenance firm saying that they were discontinuing the contract owing the inability to obtain spare parts.

"When it duly failed, I took a deep breath, and removed the back panel. The most impressive feature was the number of old paper capacitors, many of which had shed their wax content with the summer heat here. Some were covered in dust which was arranged in a sort of corona pattern built up around the capacitor.

"Needless to say, many of the said capacitors were functioning more as resistors. Tore the whole board down, and replaced everything with modern plastic equivalents, plus new valves and electrolytics.

"With careful alignment the result was quite startling, as it now pulls in a country TV station about a hundred miles from here, doubtless due to some freak reception effect."

Well, that's one enthusiast's solution to the problem of keeping an old TV set going for a few more years. Whether it is worthwhile depends a good deal on who does the work. If it is by a professional serviceman the labour cost might well be far more than the set was worth, particularly if a nasty fault was discovered half way through the exercise.

But where, as in this case, it can be done by the owner the only tangible expense is that for new parts. Not only does the labour not cost anything, the person supplying it might actually enjoy the exercise, and learn something into the bargain.

And from another reader comes a tip which is worth remembering. He is Mr E.R., of Moorabbin, Victoria. He writes:

"An article by you several years ago referred to faulty valves caused by the deposit of a metallised film on the mica separators inside the envelope.

"My aged mantel receiver recently suffered fluctuating sensitivity in the front end and a VTVM check of the 6BE6 converter valve showed the grid to be slightly positive. A resistance check revealed some 30M between the grid pin and the plate and screen pins.

"I pushed a piece of hookup wire over the grid pin so that the wire was in contact with it and making sure that the insulation completely covered it. Another lead was connected to the plate and screen pins.

"I connected the plate/screen lead to a suitable chassis point on my car and the grid pin to one of the HT leads removed from a spark plug. Starting the engine did the rest. An ohmmeter check revealed no readable conductance between the grid and other pins. More importantly, the set now behaved normally."

In lighter vein, here is a story which demonstrates some kind of poetic justice. It was related to me by my amateur friend, who found himself caught up in a typical TV interference problem, of which he stood accused.

More specifically, three of his neighbours confronted him one morning with the accusation that his amateur transmissions were causing interference to their TV sets. One of the three, who seemed to have adopted the role of spokesman, was particularly indignant, demanding that "... something be done about it!"

My friend, on the other hand, decided to play it cool. For one thing, he was pretty well convinced that he was not to blame. As he put it to me, "Whenever anyone experiences interference on radio or TV, and there is an amateur in the district, he is sure to cop the blame. In fact, the amount of interference caused by amateurs is minimal and, what is more, is controllable. So I knew that, one way or another, I could clear

myself."

To them he explained that he is required, under the terms of his licence, to keep a log of all transmissions. Therefore, if they would keep a record of all cases of interference over, say, the next week, this could then be compared with his log and it would be easy to see which of his transmissions, if any, was the likely cause.

They agreed to this, though without much enthusiasm. But they did turn up the next weekend with a list of interference times. When these were compared with the log book it was obvious that none of the times coincided with the transmissions.

"But", said my friend, "they didn't believe me. While they didn't say as much, it was obvious that they thought I had faked the log book."

On the other hand, there was now no doubt in his mind that he was not responsible, so he could afford to be a bit cocky. "Well," he told them, "since it is not being caused by my transmissions, there is little more I can do to help you. I suggest that you contact the Radio Branch and ask for their help. They are well equipped to track down such interference, and will be quite willing to help."

But, for some reason best known to themselves, they elected not to take his advice but continued to complain, to other people, about his transmissions. The next thing that happened was that my friend's annual holidays fell due, and he took off down the coast for several hundred miles, where he remained for the next three weeks. And during this time the interference continued.

By now the group were forced to admit, rather reluctantly, that "... he probably was not to blame."

And that was the last my friend heard of the matter, at least directly and for several months. Then the sequel filtered back to him via a friend of a friend, etc.

It seemed that, a few weeks after my friend's holidays, the spokesman's TV set packed up and was forced to call in a serviceman. The serviceman quickly found the trouble — the technical details were lost in transit — and, as he was fixing it, he commented, "This fault would have been causing interference on your picture. Not only that, it has probably been causing interference to all the sets in the immediate vicinity."

As I said at the beginning, some kind of poetic justice. And, of course, it also explains why the group, and the spokesman in particular, suddenly fell silent after making such a fuss.

As to the nature of the fault, I can only guess. The most likely explanation is an EHT fault similar to that which I described in the May 1976 issue. This was a dry joint in the top cap of the EHT rectifier, the resultant arc causing severe interference in both the set itself, and also in a neighbouring set. ♀