

“SERVICE ENGINEER” TABLE OF COMMON FAULTS

TROUBLE FINDING CHART

THE object of this chart is to provide a rapid-reference check-up on probable faults. It indicates the particular parts of each stage which are most likely to cause particular symptoms.

It does not suggest any system or method of tracing faults. The chart is for use *after* the region in which a fault has occurred has been traced and when the actual cause of the trouble proves elusive.

The area or stage in which a fault is present must be ascertained by the use of a systematic test procedure, and it is not proposed that a receiver should be checked stage-by-stage and part-by-part as listed in the chart.

The best method to locate the stage in which a fault is present is as follows:—

First check all external wires, try the pick-up, if any, to check the L.F. side of the instrument, and try an extra speaker to check the one in the set.

Then, if possible, measure the voltages accessible at the tags of the speaker transformer (these are the measurements given in the “Service Engineer” Quick Test panels). The readings across the speaker field coil show if the rectifier is delivering its voltage, and if the receiver is drawing its current. If either the power valve or the main H.T. lead to the remaining valves is defective, this will probably be clear from the difference between the actual current passing through the field and the correct current.

The next step is to proceed to valve tests, comparing the voltage and current readings obtained with the values given under “Service Engineer” Valve Readings. Current readings should be watched long enough for intermittent variations to be detected.

If still a fault refuses to be pinned down to a particular stage, L.F., I.F. and R.F. signals should be injected point by point, working back from the grid of the output valve. In the case of noise, sections of the circuits should be shorted out in turn, working from the aerial end.

Once the region of the trouble is known the Trouble Finding Chart will enable the actual fault to be discovered in a few minutes.

| RECEIVER STAGE. | COMPLETE FAILURE. |
|-------------------------------------|---|
| Radio-frequency amplifier | Open or shorted coil Dirty wave switch contacts Shorted tuning or tuning condenser Open anode or cathode component |
| Frequency changer | Open oscillator anode resistance Open first I.F. coil primary Open or shorting oscillator trimmer Open to first detector anode |
| Intermediate - frequency amplifiers | Open or shorted I.F. coil Open anode decoupling resistor Shorted trimmer condenser Anode or grid to earth short |
| Demodulator (second detector) | Open or shorted diode or anode load resistor Shorted trimmer condenser Open diode filter choke Open volume control |
| Low-frequency amplifier | Open anode or cathode resistor Open L.F. coupling condenser Shorted by-pass condenser Shorted decoupling condenser |
| Output | Open or shorting primary of output transformer Open or shorting transformer secondary Open cathode resistor Open or shorting grid condenser Shorting tone control |
| Speaker | Open speech coil Open transformer secondary Coil leads open or shorting |
| Rectifier | Shorted smoothing condenser Open smooth choke or field winding Open or shorted mains transformer Open transformer negative connections |

LISTED STAGE-BY-STAGE UNDER SYMPTOM HEADINGS

| INTERMITTENCE, FADING. | INSTABILITY, NOISE. | DISTORTION, HUM. |
|---|---|---|
| Shorting trimming condenser Leaking anode, screen or cathode by-pass condenser Wave switch making poor contact Loose connections on coil | Dirty rotor contacts on gang condenser Open anode, screen or cathode by-pass condenser Shorted bias resistor Alignment too sharp | Aerial too long, causing overloading Shorted aerial condenser Shielding making bad contact Shorted filament by-pass condensers |
| Poor insulation on oscillator trimmer Open grid resistor High resistance connections to oscillator coil Dirty wave switch contacts | Open grid coil Faulty cathode by-pass condenser Faulty shielding Shorted decoupling resistor | Leaky anode by-pass condenser Shorted cathode by-pass condenser Open grid condenser Oscillator poorly aligned |
| Faulty I.F. coil connections A.V.C. network defective Shorting trimmers Faulty screening | Screen by-pass condenser open I.F. coil out of alignment Shorted bias resistor Poor coil connections | Open cathode by-pass condenser I.F. peak too sharp I.F. coil off tune High resistance coil connection |
| Load resistor by-pass condenser shorting High resistance in I.F. secondary R.F. by-pass condenser shorting Defective volume control | Open anode or grid by-pass Defective volume control I.F. out of alignment Defective load resistor | Leaky anode coupling condenser Load resistor too high Leaky by-pass condenser Defective volume control |
| Faulty L.F. transformer primary Leaky grid or anode condenser Faulty anode resistor Defective volume control | Shorted decoupling resistor Shorted cathode by-pass Open anode by-pass Defective transformer primary | Shorted grid or anode condenser Shorted cathode by-pass Primary-secondary transformer leak Open or shorting transformer |
| Defective transformer primary or secondary Intermittent bias resistor Defective grid condenser Faulty bias by-pass condenser Defective tone control | Open bias by-pass condenser Shorting bias resistor Leaky grid condenser Defective tone control Leaky output transformer | Open screen-grid circuit Unbalanced push-pull valves Shorted turns on output transformer Shorted cathode by-pass condenser |
| Filings in gap Faulty coil connections Faulty field winding Poor field coil connections | Cone out of centre Filings in gap or gramophone needles touching coil Coil winding loose Warped cone | Smoothing condensers disconnected Faulty field coil Hum bucking coil reversed or shorted Cone out of centre |
| Defective smoothing condenser Poor connections on valve contacts Faulty mains switch Smoothing choke leaking to earth | Open smoothing condenser Shorting voltage drop arrangements Leaking smoothing choke Leaky rectifier by-pass | Open or shorting smoothing condenser Open filament centre-tap Transformer leak Shorting pilot lamp leads |