

SERVICE ENGINEER

KOLSTER-BRANDES MODEL 510 STRAIGHT A.C.3

CIRCUIT.—The aerial is inductively coupled to the H.F. valve, V1, an H.F. pentode. The signal is then fed to V2, a triode detector.

Coupling to the pentode output valve, V3, is a resistance-capacity network.

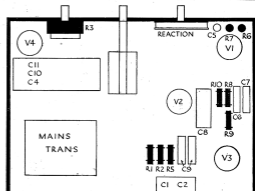
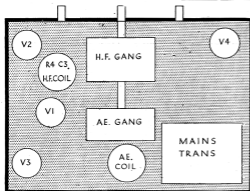
Mains equipment consists of a transformer, a full-wave R2 rectifier, V4, electrolytic condensers and the speaker field.

Special Notes.—V1 and V2 have heaters rated at 13 volts, while the output pentode, V3, and the rectifier have 4-volt heaters.

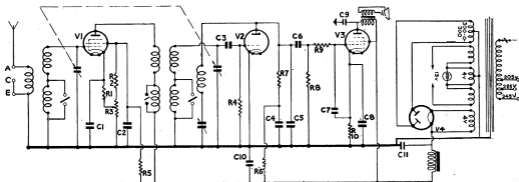
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| RESISTANCES | | |
|-------------|----------------------|---------|
| R. | Purpose. | Ohms. |
| 1 | V1 cathode bias | 300 |
| 2 | V1 screen decoupling | 15,000 |
| 3 | Volume control | 10,000 |
| 4 | V2 grid leak | 2 meg. |
| 5 | V1 screen feed | 25,000 |
| 6 | V2 anode feed | 10,000 |
| 7 | V2 anode decoupling | 25,000 |
| 8 | L.F. coupling | 250,000 |
| 9 | L.F. coupling | 100,000 |
| 10 | V3 cathode bias | 100 |

| CONDENSERS | | |
|------------|----------------------|-------|
| C. | Purpose. | Mfd. |
| 1 | V1 cathode by-pass | .1 |
| 2 | V1 screen by-pass | .1 |
| 3 | V2 grid | .0001 |
| 4 | V2 anode decoupling | .2 |
| 5 | H.F. by-pass | .001 |
| 6 | L.F. coupling | .05 |
| 7 | V3 grid by-pass | .0005 |
| 8 | V3 cathode by-pass | .25 |
| 9 | Pentode compensating | .008 |
| 10 | H.T. smoothing | .8 |
| 11 | H.T. smoothing | .8 |



As these two layout diagrams show, the Kolster-Brandes 510 A.C. is constructed on straightforward lines. The "tinted" diagram on the left shows how components are arranged on the top of the chassis. In the under view, right, all resistors are in solid black.



An H.F. pentode valve, a triode reactive detector and an output pentode are employed on the 510 A.C. An unusual feature is that two valves are 13-volt types and two 4-volt types.

KOLSTER-BRANDES MODEL 510 (Continued)

The pilot lamp is a 6-volt, .3 amp. type, and is secured to the scale reflector by a split rubber washer. To remove it, slide the holder vertically.

Exposing Chassis.—Practically all the work that is likely to be necessary can be done without removing the chassis. Simply remove the ventilator board from underneath the cabinet.

To remove the chassis take off the three knobs from the front of the cabinet, release the speaker lead from the securing cleats on the top and side of the cabinet, and remove four bolts from underneath the cabinet.

VALVE READINGS

Volume at maximum. No reaction. 300 v. mains.

| V. | Type. | Electrode. | Volts. | M.A. |
|----|-------------------------|------------|--------|------|
| 1 | Brimar 6DS (7) | anode | 236 | 6.25 |
| | | screen | 93 | 1.5 |
| 2 | Mailard HL 13c met. (7) | anode | 109 | 4.5 |
| 3 | Mailard Pen. 4 VR (7) | anode | 220 | 36 |
| | | screen | 330 | 4.5 |
| 4 | Brimar R2 (4) | filament | 345 | — |



The model 510 A.C. receiver produced by Kolster-Brandes Ltd., is a simple inexpensive set which has a good performance by virtue of efficient design. Control is simplified by a push-pull action of the tuning control which provides wave band switching. Volume control is by bias and screen-voltage adjustment.

CIRCUIT ALIGNMENT NOTES

Calibration.—The pointer is secured by two screws on the condenser spindle. These are the two nearest the gang condenser.

Tune the set to a transmission of known wavelength, and if the pointer disagrees, loosen it by means of the two screws and adjust it.

Gang.—Connect modulated oscillator across the aerial and earth terminals, and an output meter across the speaker terminals.

Tune both oscillator and set to 200 metres, and with volume at maximum and reaction at minimum, adjust the trimmers on the two-gang condenser for maximum.

QUICK TESTS

Quick tests are available on the terminal strip of the speaker. Volts measured between this and the chassis should be:—
Black lead, smoothed H.T., 240 volts.
Red lead, unsmoothed H.T., 350 volts.

Practical Jottings for the Service Man

CERTAIN A.C.-D.C. receivers, particularly some of the models issued up to about a year ago, often produce a considerably higher hum level than is normal with the usual "straight" type of A.C. receiver.

This high hum level generally occurs at the detector stage, and in most cases is not due to an insufficiently smoothed H.T. supply. Universal valves which have the grid at the top connection usually have a lower hum level than those having the grid brought out to a base pin, but, owing to the compactness of some of these universal receivers, noise is sometimes picked up at this point owing to the fact that the grid connection is within the field of the speaker magnet coil.

In at least one make of this type of receiver, the hum level can be reduced at

least 50 per cent. by screening this grid connection.

One of the screened hood-type valve connector caps can be used, or a small piece of metal about 1½ in. square, bent to shape, and fastened by a nut and bolt to the top of the nearest coil screening can, and placed into position so it is just over the valve cap connection.

This is one of those small service jobs which are very easily done, and can be charged for at a profitable rate, and—more important still—will gain a very satisfied customer.

A WELL-KNOWN make of A.C. receiver, which was otherwise working perfectly, showed peculiar noise symptoms. A continuous buzzing noise provided a constant background from one

end of the dial to the other. This was definitely not due to any outside source as the receiver was tried in more than one location, and the noise still persisted.

Checks on valves or any of the usually-to-be-suspected components did not produce anything useful. The trouble was finally found to be in a faulty dial lamp, which was actually arcing inside the glass bulb whenever the set was switched on. Substitution of a new dial lamp provided an immediate cure.

A somewhat similar source of noise which had persisted for several hours at a location where more than one set was in use, and was equally troublesome on either set, was finally traced to an arcing lamp in an electric lift in the same building. In this case, the lamp itself produced an actual hum.

Dubilier Oil Immersed Condensers



| Type | Cap. acy. Mfd. | D.C. Working Volts. | D.C. Test Volts. | Height | Width | Depth | List Price |
|------|----------------|---------------------|------------------|--------|--------|--------|------------|
| 950 | 0.1 | 1,500 | 3,000 | 2 1/2" | 1 1/2" | 1 1/2" | 10/9 |
| 950 | 1 | 1,000 | 2,000 | 2 1/2" | 1 1/2" | 1 1/2" | 11/4 |
| 951 | 1 | 2,000 | 4,000 | 5 1/2" | 3 1/2" | 1 1/2" | 15/- |
| 951 | 2 | 2,000 | 4,000 | 5 1/2" | 3 1/2" | 2" | 17/6 |
| 951 | 4 | 1,000 | 2,000 | 5 1/2" | 3 1/2" | 1 1/2" | 17/6 |
| 951 | 4 | 2,000 | 4,000 | 5 1/2" | 3 1/2" | 3 1/2" | 21/- |
| 951 | 10 | 750 | 1,500 | 5 1/2" | 3 1/2" | 5" | 17/- |

Capacity Tolerance ± 15 per cent.

... a new feature to the technique of radio and amplifier design—a boon to designers of apparatus for Television, Radio and low-frequency Amplifiers, using the higher voltages. Each condenser comprises a multiple paper dielectric element, impregnated and oil-immersed and hermetically sealed into a sheet metal container. Leakage of oil is impossible, but expansion is adequately accommodated. In capacity and working voltage these condensers are small and most compact. Their low price enables a capacity value hitherto prohibitive to be used in resistance capacity coupled amplifiers.

DUBILIER

CONDENSER CO. (1925), LTD.

DUCON WORKS, VICTORIA RD., NORTH ACTON, W.3