

# KOLSTER-BRANDES 642 A.C.-D.C. FIVE

**CIRCUIT.**—The aerial input is by a series aerial condenser and a coupling condenser. A 5,000-ohms resistance is shunted between the aerial socket and chassis. Coupling to V1, a triode hexode frequency changer, is effected by a set of tuned aerial coils.

The signal, converted to the I.F., passes by an I.F. transformer to V2, an H.F. pentode. By a second I.F. transformer, V2 is coupled to the demodulating diode of V3, a double diode triode.

The second diode of V3, fed by coupling condenser C15, provides a D.C. potential used to provide A.V.C. for V1 and V2. A manual volume control varies the input to the grid of the triode section of V3.

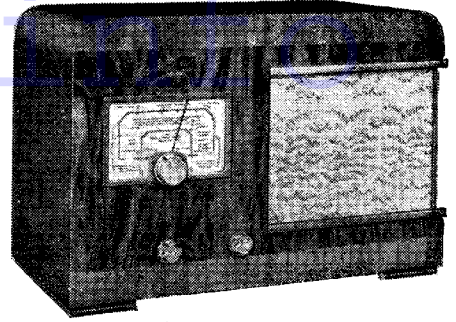
V3 is resistance capacity coupled to the output valve V4, a pentode. A pentode compensator condenser is connected between the anode of V4 and chassis.

Mains equipment consists of a mains voltage adjustment resistance, a half-wave rectifying valve V5, electrolytic smoothing condensers, and a smoothing choke consisting of the speaker energising coil.

**Chassis Removal.**—The receiver has a false bottom (held by four wood screws) that enables the underside of the chassis to be inspected. Remove the back of the set and also the three control knobs (grub screws).

Remove the two wood bars from the base of the cabinet. This enables the four chassis-fixing bolts to be removed. Remove also the mains switch from the side of the cabinet.

For complete withdrawal of the set the mains safety device must be removed from the side of the cabinet, the mains lead uncleaned, and either the leads to the speaker unsoldered or the speaker

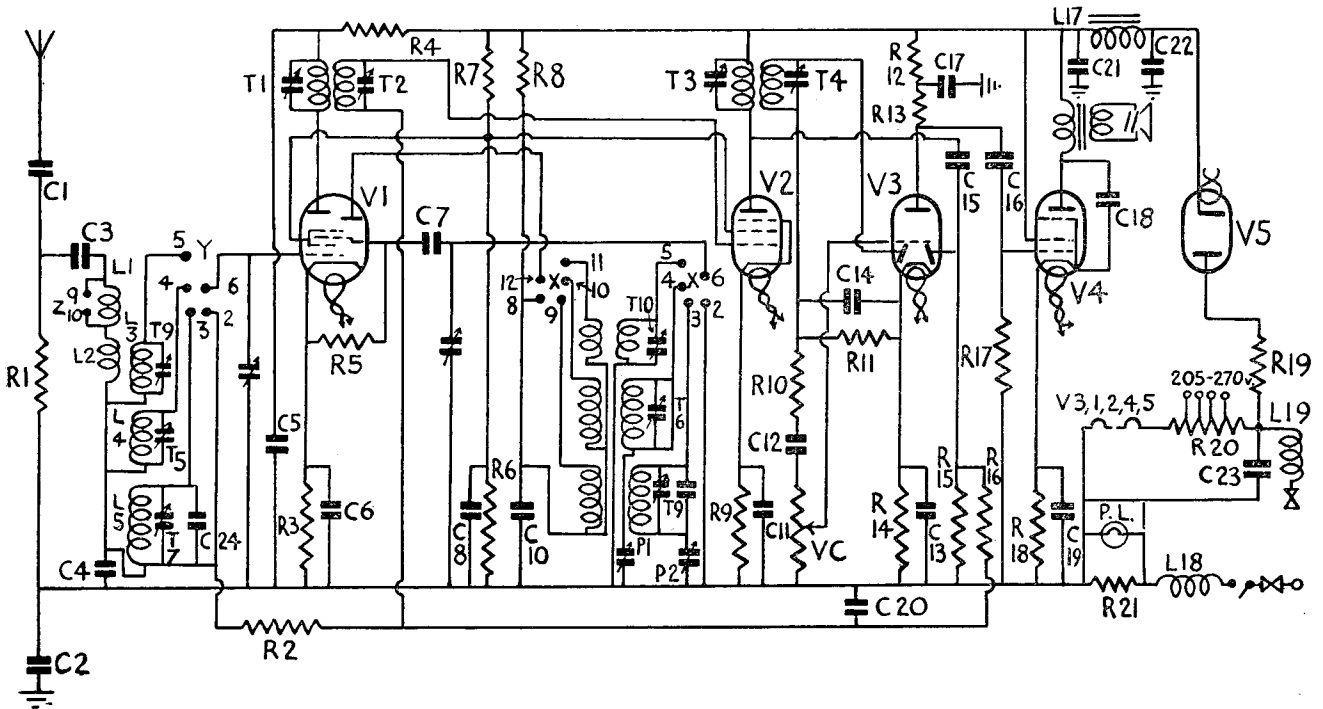


Four valves and a half-wave rectifier are used in the K.B. 642. The set is a three-band superhet with a good performance. The retail price is 10 gns.

WINDINGS			
Winding	Ohms.	Winding	Ohms.
L1	15.8	L9	3.5
L2	.2	L10	2.2
L3	.2	L11	6.7
L4	2.8	L12,13,14,15, each	7.6
L5	11.8	L16	408
L6	.2	L17	1,000
L7	1.1	L18	4
L8	1.8	L19	4.4

RESISTANCES		
R.	Purpose.	Ohms.
1	Aerial shunt	5,000
2	V1 A.V.C. decoupling	100,000
3	V1 cathode bias	70
4	V1 anode decoupling	5,000
5	Oscillator grid leak	50,000
6	V1, V2 screen pot. (part)	50,000
7	V1, V2 screen pot. (part)	20,000
8	Oscillator anode decoupling	20,000
9	V2 cathode bias	250
10	H.F. stopper	1 meg.
11	Demodulating diode load	500,000
12	V3 anode decoupling	50,000
13	V3 anode loads	250,000
14	V3 cathode bias	10,000
15	A.V.C. diode load	500,000
16	A.V.C. line decoupling	500,000
17	V4 grid leak	100,000
18	V4 cathode bias	150
19	Rectifier safety resistance	75
20	Mains heater resistance	386
21	Ditto and pilot lamp shunt	75
V.C.	Volume Control	500,000

CONDENSERS		
C.	Purpose.	Mfds.
1	Series aerial	.01
2	Chassis isolating	.01
3	Aerial coupling	.0005
4	V1 A.V.C. decoupling	.005
5	V1 anode decoupling	.1
6	V1 cathode bias shunt	.1
7	Oscillator grid	.0001
8	V1 and V2 screen decoupling	.1
9	L.W. oscillator fixed trimmer	.00007
10	Oscillator anode decoupling	.1
11	V2 cathode bias shunt	.02
12	L.F. coupling	.02
13	V3 cathode bias shunt	.25
14	H.F. bypass	.0005
15	A.V.C. diode coupling	.00005
16	L.F. coupling	.02
17	V3 anode decoupling	.2
18	Pentode compensator	.005
19	V4 cathode bias shunt	.25
20	A.V.C. line decoupling	.1
21	H.T. smoothing	16
22	H.T. smoothing	8
23	Mains suppressor	.01



A perfectly orthodox circuit is employed in the 642. The valves are series connected and there are suppressor chokes, L18 and 19, in the mains input leads.

removed. There are four leads connected to the speaker panel. The black goes to the earthing tag on the speaker frame, the red and blue lead to the fourth and fifth tags from the left, and the remaining lead to the first tag on the left.

**Special Notes.**—The mains input leads include a mains suppressor arrangement consisting of twin chokes by-passed by a fixed condenser. Two metallic contacts fixed to the back of the cabinet prevent operation of the receiver when the back is off. For service work the bakelite panel holding the contacts must be unscrewed from the back of the cabinet and inserted in the safety device.

The mains adjustment resistance at the rear of the chassis enables voltages of between 195 and 270 to be used. Looking from the rear of the chassis and counting from left to right, the first terminal is for 256 to 270, second for 236 to 255, third for 216 to 235, and fourth for 195 to 215 volts.

A single dial lamp is an Osram 6 volt 3 amp. fitted with an M.E.S. base.

There are no sockets for an external speaker. One can be fitted by connecting the speech coil, which should be of 2 ohms, in parallel with the speech coil of the internal speaker.

In our particular chassis, R3 was found to have a value of 65 ohms. C24 is made of two pieces of insulated wire twisted together.

**Switch Contacts.**—The switch banks are lettered in the under-chassis diagram to correspond with the circuit. The contacts, which are numbered on the circuit, are easily identified on the banks. Looking

from the front of the chassis and starting from the left-hand mounting bolt, the contacts are numbered from one to twelve in clockwise order.

### Circuit Alignment Notes

**I.F. Circuits.**—Connect an output meter across the primary of the speaker transformer. Set wavechange switch to M.W. band, gang condenser to maximum capacity and volume control to maximum. Connect a modulated oscillator between the top grid cap of V1 and chassis.

Tune oscillator to 464 kc. and adjust T1, T2, T3 and T4, in that order, for maximum, reducing the input from the oscillator as the circuits come into line to keep the A.V.C. inoperative.

**Signal Circuits.**—Connect the oscillator to the A and E sockets. Only feed sufficient input from the oscillator to obtain definite peaks in the output meter so as to keep below the A.V.C. point.

**Medium Waves.**—Tune set and oscillator to 214 metres (1,400 kc.) and adjust first T5 and then T6 for maximum.

Tune set and oscillator to 500 metres (600 kc.) and adjust P1 (nut of double-padding condenser) for maximum, simultaneously rocking the gang.

Repeat both operations until no further improvement is noticed.

**Long Waves.**—Tune set and oscillator to 1,200 metres (250 kc.) and adjust T7 and then T8 for maximum.

Tune set and oscillator to 1,714 metres (175 kc.) and adjust P2 (screw of double-padding condenser) for maximum, simultaneously rocking the gang.

Repeat both operations until no further improvement is noticed.

**Short Waves.**—Tune set and oscillator to 17.6 metres (17 mc.) and adjust first T9 and then T10 for maximum.

The short-wave padding is fixed, but check calibration at 50 metres (6 mc.).

### Replacement Condensers

TWO replacement condensers are available from A. H. Hunt, Ltd., of Garratt Lane, Wandsworth, London, S.W.18. The first, a block containing C's 21, 22, 13 and 19, is list number 3,692. 11s. 6d. The other, for C17, is unit 3,479, at 1s. 9d.

## K.-B. 642 on Test

**MODEL 642.**—Standard model for A.C. or D.C. operation, 195-270 volts, 40-100 cycles. Price, 10 gns.

**DESCRIPTION.**—Three-band, five-valve, including rectifier, tube superhet.

**FEATURES.**—Full-vision dial marked in metres and station names. Controls for tuning, wave selection and volume. Separate master switch at side of cabinet. Mains safety device on back of cabinet.

**LOADING.**—52 watts.

**Selectivity and Sensitivity**  
**SHORT WAVES (16.5-50 metres).**—Representative gain and selectivity. Easy handling and no appreciable drift. Gain even over entire band.  
**MEDIUM WAVES (195-550 metres).**—Average gain well maintained over the band. Selectivity good for circuit used, local station spread being small. Background reasonably clear of whistles.  
**LONG WAVES (970-2,300 metres).**—Similar gain and selectivity to medium band. Slight interference on Deutschlandsender. All main stations easily received.

**Acoustic Output**  
 Adequate volume for an ordinary room. Tone well balanced, with very little coloration on speech. All musical reproduction pleasing. Slight mains hum noticeable at full volume.

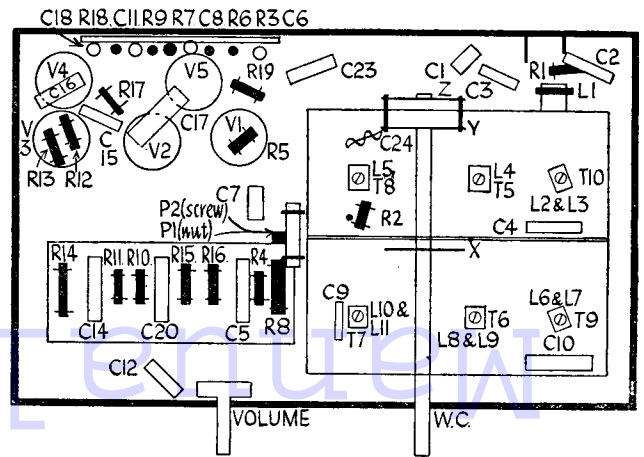
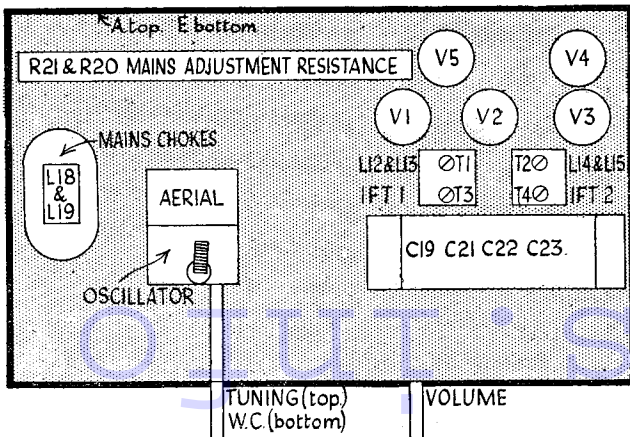
### COIL WINDING

"WIRELESS Coils, Chokes and Transformers and How to Make Them" is the title of a book edited by F. J. Camm and just published by George Newnes, Ltd. It is available from Odhams Press Book Dept. at 2s. 10d., post free.

There are some 170 pages and 126 drawings in the book, and it contains several useful tables and formulae.

Service engineers who undertake rewinding transformers and coils will find the book of assistance.

VALVE READINGS				
No signal. Volume maximum. Bottom M.W. band. 200 volt. A.C. mains.				
V.	Type.	Electrode.	Volts.	Ma.
1	(Mullard) TH 22C. met.(7)	Anode ..	150	1.9
		Screen ..	58	3.9
		Osc.anode	74	4.9
2	(Brimar) 9D2 (7)	Anode ..	168	3.9
		Screen ..	57	1
3	(Brimar) 11 D3 (7)	Anode ..	42	.5
4	(Brimar) 7 D6 (7)	Anode ..	158	18.4
		Screen ..	162	3.8
5	(Brimar) 1 D5 (5)	Filament	206	—



The components on the 642 chassis are easily identified with the aid of these diagrams. Condensers are shown in outline; resistors in solid black.