H.M.V. 469 FOUR BAND EIGHT VALVE A.C.

Two tone controls, a high fidelity switch, a visual tuning indicator and an elliptical speaker are features of the H.M.V. 469.

CIRCUIT.—The aerial is coupled to the grid of V1, a pentode H.F. amplifier, via a set of transformer coils. Arrangements are included for both a single wire aerial and one of the all-wave types using a transmission line.

V1 is tuned anode coupled to V2, a heptode frequency changer. The oscillator is V3, an H.F. pentode connected as a tetrode. An additional reaction coil is included to ensure stable oscillation on the shortest wavelengths.

Converted to the I.F. the signal passes via an I.F. transformer of the controlled band width type to the I.F. amplifier V4, an H.F. pentode. Another transformer of similar construction leads to the demodulating diode of V5. The other diode, fed by a coupling condenser, provides a D.C. potential utilised for the visual tuning indicator and A.V.C.

The coupling arrangements to V6, an H.F. pentode connected to operate as a tetrode, include a manual volume control. V6 is resistance-capacity transformer coupled to the output valve V7. A variable resistance and condenser connected across the secondary of the inter-valve transformer provide a tone control. A similar arrangement is connected between the primary of the transformer and earth. A negative feed back arrangement is provided by C35 and R29.

Mains equipment consists of a full wave rectifying valve V8, a mains transformer, electrolytic smoothing condensers and smoothing chokes.

Special Notes.—There are seven sockets on an insulating panel mounted at the top rear of the chassis back. Three of these provide connections for a pick-up and the screening of the pick-up leads. The remaining four sockets are designed for matching the receiver either to an ordinary single-wire aerial or to an all-wave aerial of the transmission line type.

(*Continued on page 6.*)

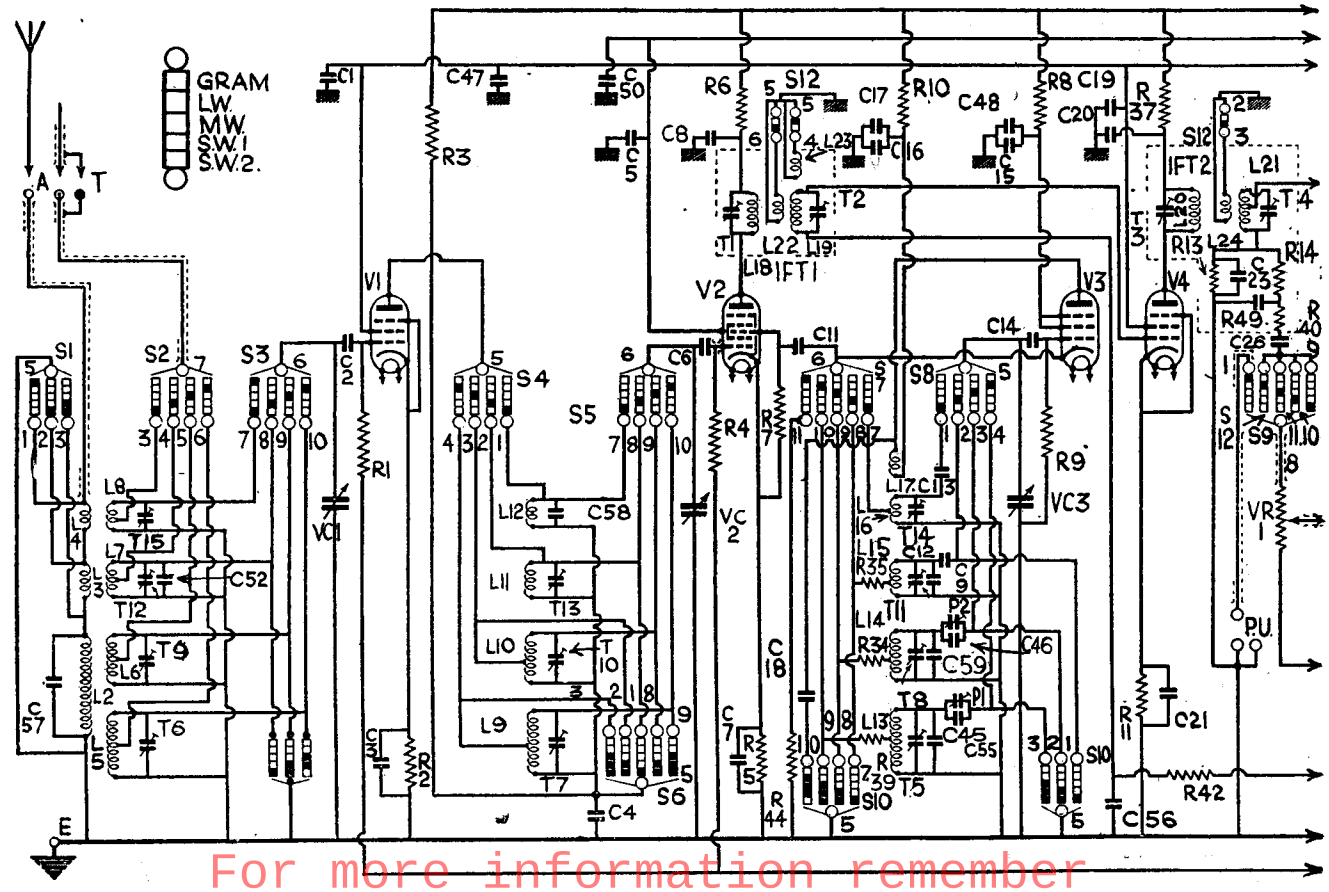
VALVE READINGS

No signal. Volume maximum. M.W. band. 230 volt A.C. mains.

V.	Type.	Electrode.	Volts.	Ma.
	All Marconi Octals.			
1	W63	Anode ..	200	6.5
		Screen ..	95	2.
2	X64	Anode ..	210	3.5
		Screen ..	130	7.5
3	Z63	Anode ..	195	8.
		Screen ..	190	3.
4	W63	Anode ..	215	5.
		Screen ..	95	1.2
5	D63	Diodes ..	—	—
6	Z63	Anode ..	95	1.9
7	KT66	Anode ..	230	32.
		Screen ..	240	5.
8	U50	Cathode..	350	—

WINDINGS

Winding.	Ohms.	Winding.	Ohms.
L2+L3+L4 ..	48	L10	6.
L3+L4 ..	9	L11	2.
L4	1	L12	1.
L5	19	L13	5.
L6	6.	L14	6.
L7	.2	L15	.1
L8	.1	L16	.1
L9	19	L17	8.5
		L18, 19, 20 21(each)	6.7



CONDENSERS

C.	Purpose.	Mfds.
1	V1 screen decoupling (part). .	.01
2	V1 grid isolator	.00005
3	V1 cathode bias . .	.1
4	V1 anode decoupling . .	.1
5	V2 screen decoupling (part). .	.01
6	V2 grid coupling	.00005
7	V2 cathode bias shunt . .	.01
8	V2 anode decoupling. . . .	.1
9	SW1 oscillator fixed trimmer	.000015
10	V1 injection coupling . .	.00005
12	SW1 fixed padder	.0023
13	SW2 fixed padder	.007
14	V3 grid	.0001
15	V3 screen decoupling (part). .	.001
16	V3 anode decoupling (part). .	.005
17	V3 anode decoupling (part). .	2
18	Decoupling	.001
19	V4 screen decoupling . .	.1
20	V4 anode decoupling . .	.1
21	V4 cathode bias shunt . .	.5
22	V1 and V2 AVC decoupling. .	.05
23	HF bypass	.00005
24	AVC diode coupling	.00005
25	V5 cathode bypass	.01
26	LF coupling	.1
33	V6 anode decoupling . .	2
34	V6 cathode bias shunt . .	25
35	LF coupling	.5
36	V7 cathode bias shunt . .	25
37	Negative feed back condenser	.05
39	HT smoothing	32
40	HT smoothing	12
41	HT smoothing	16
42	Bass control	0.15
43	Top control	.005
45	LW oscillator fixed padder . .	.00015
46	MW oscillator fixed padder . .	.00035
47	V1 screen decoupling (part). .	1
48	V3 screen decoupling (part). .	2
49	HF bypass	.00005
50	V2 screen decoupling (part). .	8
52	SW1 aerial coil fixed trimmer	.00001
55	LW oscillator fixed trimmer	.000023
56	V4 AVC decoupling	.05

(*Continued in next column*)

CONDENSERS — *Continued*

57	LW aerial shunt	.00005
58	SW2 HF coil fixed trimmer. .	.000005
59	MW oscillator fixed trimmer	.00001

RESISTANCES

R.	Purpose.	Ohms.
1	V1 AVC feed	500,000
2	V1 cathode bias	150
3	V1 anode decoupling . .	5,000
4	V2 AVC feed	500,000
5	V2 cathode bias	350
6	V2 anode decoupling . .	5,000
7	V2 grid leak	50,000
8	V3 screen decoupling . .	15,000
9	Oscillator grid leak	50,000
10	V3 anode decoupling . .	5,000
11	V4 cathode bias	500
13	Demodulating diode load . .	350,000
14	HF filter	100,000
15	V1 AVC decoupling	500,000
16	AVC diode load (part) . .	500,000
18	T.I. anode feed	1 meg.
20	V6 cathode bias (part) . .	15,000
21	V6 cathode bias (part) . .	500
22	V6 anode decoupling . .	23,000
23	V6 anode load	50,000
25	V2 screen decoupling . .	5,000
26	V1F V4 screen potr. (part) . .	9,000
27	T.I. cathode bias	75
28	V7 cathode bias	200
29	Negative feed back	5 meg.
33	Tone control	10,000
34	MW regeneration modifier . .	500
35	SW regeneration modifier . .	150
37	V4 anode decoupling . .	3,500
38	V1 and V4 screen potr. (part)	3,100
39	LW regeneration modifier . .	230
40	HF filter	100,000
41	AVC diode load (part) . .	500,000
42	V4 AVC decoupling	1 meg.
44	V3, cathode	500
VR1	Volume control	2 meg.
VR2	Bass control	2 meg.
VR3	Brilliance control	1 meg.

H.M.V. 469 on Test

MODEL 469.—Standard model for A.C. operation, 200-255 volts, 40-100 cycles. Price 19 gns.

DESCRIPTION.—Four-band, eight-valve, including rectifier, superhet table model receiver.

FEATURES. — Full-vision scale marked in metres and station names. Concentric tuning with micro dial for short waves. Wave selection switch operates an indicator on the wavelength dial. Bass and brilliance tone controls with high fidelity switch. Combined volume and master switch. Visual tuning indicator. Sockets for external speakers, pick-up and all-wave aerial. Eliptical speaker.

LOADING.—127 watts.

Sensitivity and Selectivity

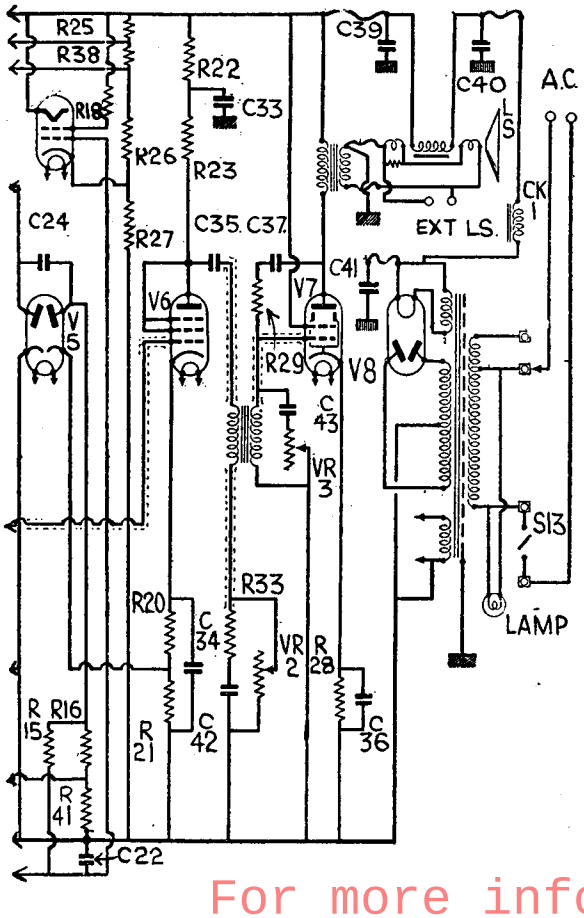
SHORT WAVES (35-100 and 11-35 metres).—Very good gain and selectivity without appreciable drift even at the end of the first short wave range.

MEDIUM WAVES (195-580 metres). —Very well maintained gain and good selectivity. Local stations spread only on adjacent channels in the most selective position.

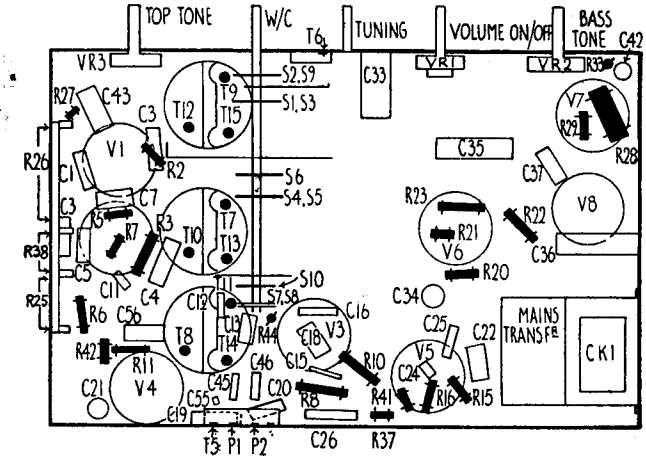
LONG WAVES (725-2,000 metres).—Good gain and excellent selectivity. Deutschlandsender received with only slight side splash.

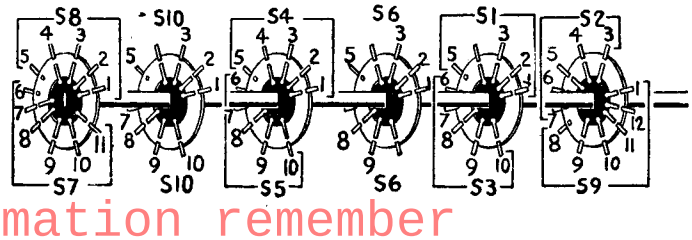
Acoustic Output

Ample volume for a large room with very pleasing speech and musical reproduction in the high fidelity positions. Attack crisp and clean and accompanied by very good low-note response. Separate controls for bass and treble very useful when working under difficult conditions.



Left is the circuit diagram of the H.M.V. 469 four band receiver. Immediately below is the diagram of the under side of the chassis, while at bottom is the diagram showing connections to the ganged switches.





H.M.V. 469 FOUR BAND

(*Continued from page 4.*)

The single dial light is connected across the mains supply and is rated at 230 volts 15 watts.

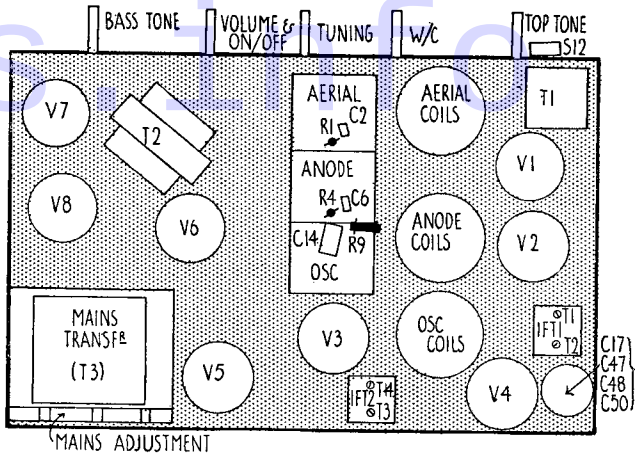
Two sockets on the side of the cabinet enable up to four external speakers to be operated. The extra speakers should be of the permanent magnet type, and the total speech coil impedance should be approximately 5 ohms.

Electrolytic smoothing condensers C39, C40 and C41 are mounted on a metal bracket near the speaker. R18 is on the visual tuning indicator holder. C52 and C57 are inside the aerial coils can, C58 in the anode coils can, C9, C59, R34, R35 and R39 are inside the oscillator can, and C23, C49, R13, R14 and R40 inside I.F.T.2.

Chassis Removal.—The cabinet has a false bottom for inspection. Remove the back of the cabinet and also the four smaller knobs from the front (grub screws). The two tuning knobs are detached by removing the grub screw securing the smaller knob.

Uncleat the speaker cable from the baffle and mains lead from the rear of the cabinet. The chassis can then be withdrawn.

If desired the speaker and associated electrolytic condensers (secured by four bolted clips) can be removed or, alternatively, the leads to the speaker panel can be unsoldered. For the reverse process, the red lead is connected to tag 7, red with black tracer to tag 6, black to 3, yellow to 1, yellow with black tracer to tag 5, and the black rubber lead to the earthing tag on the electrolytic condenser support.



The arrangement of components on the upper side of the chassis of the H.M.V. 469 receiver is shown here. The layout of the under side and the circuit and switch connection diagrams appear on pages 4 and 5.

Alignment Notes

I.F. Circuits.—Connect an output meter across the primary of the mains transformer and an oscillator between the top grid cap of V2 (*via* a .1-mfd. condenser) and chassis. Switch set to SW2 band, set gang to maximum, volume to maximum, bass control fully anti-clockwise and "top" tone control as far anti-clockwise as possible without switching off.

Tune oscillator to 465 kc. and adjust T1, T2, T3 and T4 for maximum response, reducing the input from the oscillator as the circuits come into line so as to render the A.V.C. inoperative.

Signal Circuits.—Connect service oscillator to aerial and earth sockets, and only feed sufficient input to obtain definite peaks in the output meter. Check wavelength scale by setting gang to minimum, noting the indication of the vernier dial and turning the gang condenser 10 degrees in (on the vernier scale). The pointer should then read 725 metres. If it does not, then slacken the pointer fixing screw and adjust.

Long Waves.—Set receiver and oscillator to 725 metres (413.8 kc.) and adjust T5 for maximum. Set oscillator to 850 metres (353 kc.), tune in signal in receiver and adjust T6 and T7 for maximum.

Set oscillator to 1,900 metres (157.9 kc.), tune in on receiver and adjust P1 for maximum, simultaneously rocking the gang.

Repeat until no further improvement results.

Medium Waves.—Set receiver and oscillator to 195 metres (1,538 kc.) and adjust T8 for maximum. Set oscillator to 210 metres (1,430 kc.), tune in on receiver, and adjust T9 and T10 for maximum.

Set oscillator to 530 metres (566 kc.), tune in on receiver and adjust P2 for maximum, simultaneously rocking the gang.

Repeat until no further improvement results.

Short Waveband 1 (35-100 metres).—Set receiver and oscillator to 35.2 metres (8.5 mc.) and adjust T11 for maximum. Set oscillator to 37.5 metres (8 mc.), tune in on receiver and adjust T12 and T13 for maximum, simultaneously rocking the gang.

Repeat until no further improvement results.

Short Waveband 2 (11-35 metres).—Set oscillator to 11.3 metres (26.6 mc.), fully unscrew T15, tune in signal on receiver, adjust T14 for maximum, simultaneously rocking the gang.

Inductance adjustment should only be done if the oscillator coils have been seriously disturbed. Proceed on the following lines.

Set oscillator to 30 metres (10 mc.) and tune in signal on receiver. Insert the Ferrocart end of a tuning wand into can containing L12. If reading rises, then decrease inductance of L16 by unsoldering the junction between C13 and its connecting wire and sliding the condenser tag down towards the coil base until the insertion of either end of the tuning wand produces a fall in output.

If reading falls, then increase inductance of L16 by sliding C13 upwards. Then repeat the operation outlined for 11.3 metres.

Replacement Condensers

Exact service replacement condensers are produced for the H.M.V. Model 469 by A. H. Hunt, Ltd., Garratt Lane, Wandsworth, London, S.W.18.

These are: for C39, unit 3058, price 9s. 6d.; for either C40 or 41, unit 3056, 7s. 6d.; for either C34 or 36, 3667, 2s. 6d.; for C33, 2780, 3s.; and for the block containing Cs 17, 48 and 50, unit 3914, 9s. 6d.

PHILIPS 747A ALL-WAVE

(*Continued from page 11.*)

wax, making sure that the trimmer capacities are not altered thereby.

Long Waves.—Tune oscillator to 760 metres (395 kc.) and tune in on receiver. Adjust T8 for maximum and seal.

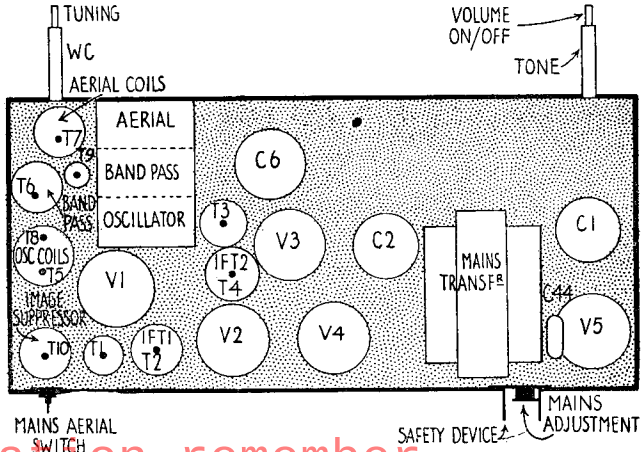
Short Waves.—There are no separate trimmers for this band.

Image Suppressor.—Switch receiver to M.W., tune set to 403 metres, tune service oscillator to 1,000 kc (300 metres), feed a strong signal, and adjust T9 for minimum deflection. Reseal with wax.

I.F. Filter.—Switch set to L.W., turn gang to maximum, inject a strong 128 kc. signal, and adjust T10 for minimum output. Reseal.

Replacement Condensers

Exact replacement condensers for the 747A are available from A. H. Hunt, Ltd., Garratt Lane, Wandsworth, London, S.W.17. For either of the three smoothing and decoupling condensers, C1, C2 and C6, there is unit 2989, price 7s. 6d., and for C3, the bias shunt condenser, there is unit 2915, list 1s. 9d.



The top "deck" diagram of the 747A chassis. This drawing gives the positions of the trimmers.