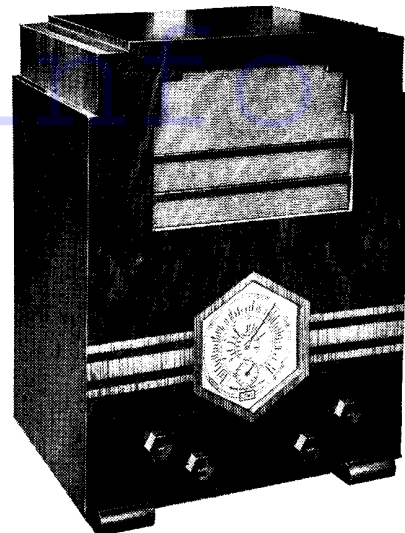


McMICHAEL ALL-WAVE 362 SUPERHET



The McMichael 362 is a four-valve plus rectifier model and the large full-vision scale contains a gear-driven vernier pointer.

Circuit Alignment Notes

Connect a modulated oscillator to the grid cap of V1 and a low-reading output meter across the smoothing capacitor terminals, leaving the internal speaker in circuit.

Shunt the oscillator section of the gang condenser with a .1 mfd. condenser—that is, connect it between the fixed vanes and the chassis.

Inject a signal of 465 kc. and adjust

QUICK TESTS

Quick tests are available on this receiver on the terminal strip on top of the mains transformer.

Volts measured between this and the chassis should be:—

- Brown lead, 390 volts, unsmoothed H.T.
- Red lead, 240 volts, smoothed H.T.
- Green lead, 0 volts.
- White lead, 0 volts.

CIRCUIT.—The aerial is coupled to V1, an H.F. pentode, through a series condenser and an inductively coupled H.F. transformer. A series resistance is brought into circuit on long waves.

A second inductively coupled transformer is used to pass the signal to V2, the frequency changer.

An I.F. transformer tuned to 465 kc. couples V2 to V3, an H.F. pentode, and a second one feeds to the diode section of V4, a combined double diode and output pentode.

One diode of this takes a small part of the output from the anode of V3, through C32, and applies it as A.V.C. bias to the preceding valves in the usual way. The other diode is used as a signal rectifier.

The rectified signal from the demodulator diode is fed through a resistance and capacity stage incorporating the volume control to the control grid of the pentode section of V4.

Fixed tone correction is provided by C15 and variable tone control by C16 and a variable resistance RV2.

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

Special Notes.—A special switch socket on the back of the chassis provides connections for a low impedance (about 2 ohms) external speaker. With the connecting plug pushed in half-way the internal and the external speakers are in circuit. Complete insertion breaks the connection to the speech coil of the internal speaker.

A similar switch is employed for connecting a pick-up in circuit. In this case, however, the plug must be pushed right home as the switch breaks the L.F. coupling network to V3. The pick-up used should be of the piezo electric crystal variety, having a large output.

The dial light is rated at 6.2 volt .3 amp. It is fixed to the top right-hand

corner of the tuning scale by means of a spring clip and is easily removed.

R24 and R25 are on the back of the speaker, R25 being the larger of the two and having a green body.

Removing Chassis.—Part of the underside of the chassis, which includes the switching assembly, is exposed by removing the false bottom of the cabinet.

Complete removal of the chassis, which will be necessary for carrying out alignment, is as follows:—

Take off the four control knobs which are secured by spring clips (taking care not to lose the springs), next take off the false bottom to the cabinet as above, and the four fixing bolts.

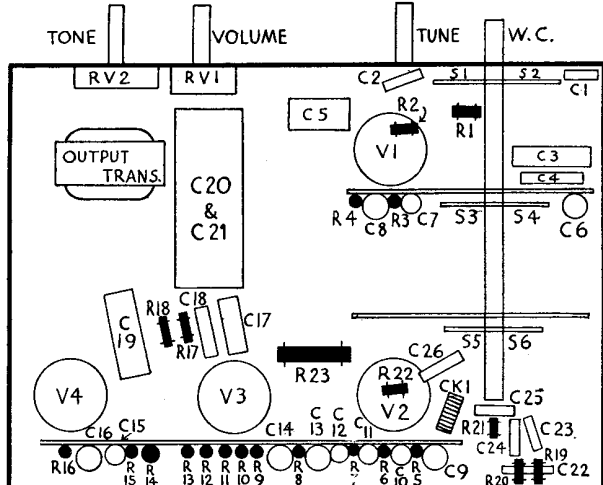
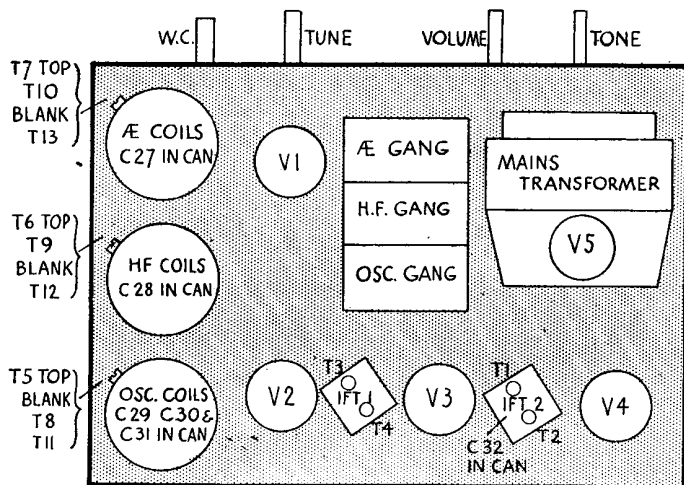
The chassis may then be removed to the extent of the speaker leads. If it is necessary to remove these leads, they should be unsoldered from the mains transformer, and reconnection will be as follows, numbering the tags from left to right: (1) Brown, (2) red, (3) green, (4) white, (5) and (6) are not used. There is a blue lead which goes to earth.

It must be remembered that the speaker field and resistances forming the smoothing equipment are now out of circuit and must be reconnected before any practical tests are carried out, otherwise considerable damage will be done.

VALVE READINGS

No signal. Volume maximum. 200 volt A.C. mains.

V.	Type.	Electrode.	Volts.	Ma.
1	All Mazda. AC VP1 met. (7)	Anode ..	230	12.1
		Screen ..	190	3
2	AC TH1met. (7)	Anode ..	230	1.25
		Screen ..	60	3.3
3	ACVP1 met. (7)	Osc. anode ..	70	4.9
		Anode ..	230	11.1
4	AC2 Pen DD (7)	Screen ..	190	3
		Anode ..	220	31
5	UU3 (4)	Screen ..	240	6.25
		Filament ..	390	—



These two layout diagrams clearly show the construction of the McMichael chassis. It will be seen the trimmers are accessible from the top of the chassis.

T1, T2, T3 and T4 for maximum reading on the output meter. Keep the meter reading between .5 and 1 volt, so as not to bring the A.V.C. into operation.

The above adjustments can be carried out without taking the chassis out of the cabinet, but for the following it must be removed, although there is no need to disconnect the speaker leads, provided the anchoring tab fixing one side of R25 to the speaker baffle is first freed; the chassis should then be turned round until the dial is against the left-hand side of the cabinet.

Long Waves.—Tune the receiver to exactly 1,000 metres (300 kc.) and inject a signal of this wavelength to the aerial and earth terminals via a dummy aerial. Trim T5, T6 and T7 for maximum.

Medium Waves.—Tune the receiver

until the pointer is just touching the lower edge of the letters "Rad Lyons," inject a signal of 214 metres (1400 kc) and trim T8, T9 and T10 for maximum output.

Short Waves.—Set the pointer to exactly 19 metres on the dial, inject a signal of this wavelength (15.79 megacycles) to the aerial and earth terminals, and trim T11, T12 and T13 for maximum.

Two peaks will be found while adjusting T11. The one nearer the minimum capacity is correct.

The adjustment of the three trimmers should be continued until best results are obtained.

Replacement condensers available from A. H. Hunt, Ltd., are: block containing C20, 21, list 2002 (7s.); C19, list 2918 (1s. 9d.).

CONDENSERS

C.	Purpose.	Mfd.
1	Series aerial .. ..	.0002
2	V1 grid .. ..	.001
3	V1 A.V.C. decoupling .. .	.1
4	V1 A.V.C. decoupling .. .	.005
5	V1 cathode bias shunt .. .	.01
6	V2 A.V.C. decoupling .. .	.1
7	V1 cathode bias shunt .. .	.1
8	V1 screen decoupling .. .	.1
9	V2 screen decoupling .. .	.1
10	V2 cathode bias shunt .. .	.1
11	V3 A.V.C. decoupling .. .	.1
12	V3 cathode bias shunt .. .	.1
13	H.T. shunt .. ..	.1
14	V3 anode decoupling .. .	.1
15	Pentode compensating .. .	.002
16	Fixed tone control .. .	.03
17	L.F. coupling .. ..	.005
18	H.F. filter .. ..	.0001
19	V4 cathode bias shunt .. .	.25
20	H.T. smoothing	8
21	H.T. padding	8
22	Osc. coil padding (s.w.) .. .	.00354
23	V2 osc. grid (s.w.) .. .	.0001
24	V2 osc. grid (m.w.) .. .	.0001
25	V2 osc. grid .. ..	.001
26	Osc. anode coupling .. .	.0001
27	L.W. aerial coil shunt .. .	.00005
28	L.W. H.F. coil shunt .. .	.00005
29	L.S. oscillator shunt .. .	.000075
30	M.W. oscillator padding .. .	.000618
31	L.W. osc. padding .. ..	.000216
32	A.V.C. diode coupling .. .	.0001

RESISTANCES

R.	Purpose.	Ohms.
1	Series aerial (long waves) .. .	3,000
2	V1 A.V.C. decoupling .. .	1 meg.
3	V1 cathode bias	100
4	V1 screen decoupling .. .	10,000
5	V2 screen decoupling .. .	50,000
6	V2 cathode bias	200
7	V3 cathode bias	100
8	V3 screen decoupling .. .	10,000
9	V1 A.V.C. decoupling .. .	1 meg.
10	V2 A.V.C. decoupling .. .	1 meg.
11	V3 A.V.C. decoupling .. .	1/2 meg.
12	A.V.C. diode load (part) .. .	1/2 meg.
13	A.V.C. diode load (part) .. .	1/2 neg.
14	V4 cathode bias (part) .. .	350
15	V4 anode stabiliser .. .	50
16	V4 cathode bias (part) .. .	150
17	Demodulator diode load .. .	2 meg.
18	V4 grid stopper	100,000
19	Osc. regeneration modifier (s.w.) .. .	100
20	Osc. regeneration modifier (m.w.) .. .	2,500
21	Osc. regeneration modifier (l.w.) .. .	4,500
22	V2 osc. grid leak	50,000
23	V2 osc. anode load	40,000
24	H.T. bleeder	40,000
25	Series H.T.	500
RV1	Volume control	500,000
RV2	Tone control	100,000
	Spaker field	1,500

McMichael 362 on Test

MODEL 362.—Standard model for 200-250 volt, 40-100 cycle A.C. mains. 15 1/2 gns.

DESCRIPTION.—Three-waveband, four-valve plus rectifier, table superhet.

FEATURES.—Inlaid walnut cabinet, circular dial calibrated in wavelengths and names, with gear-driven vernier dial.

Waveband selector indicator operated by a switch, tone control continuous. Circuit employs an R.F. stage, but otherwise is conventional.

Sockets provided for pick-up and extension speaker.

LOADING.—85 watts.

Sensitivity and Selectivity

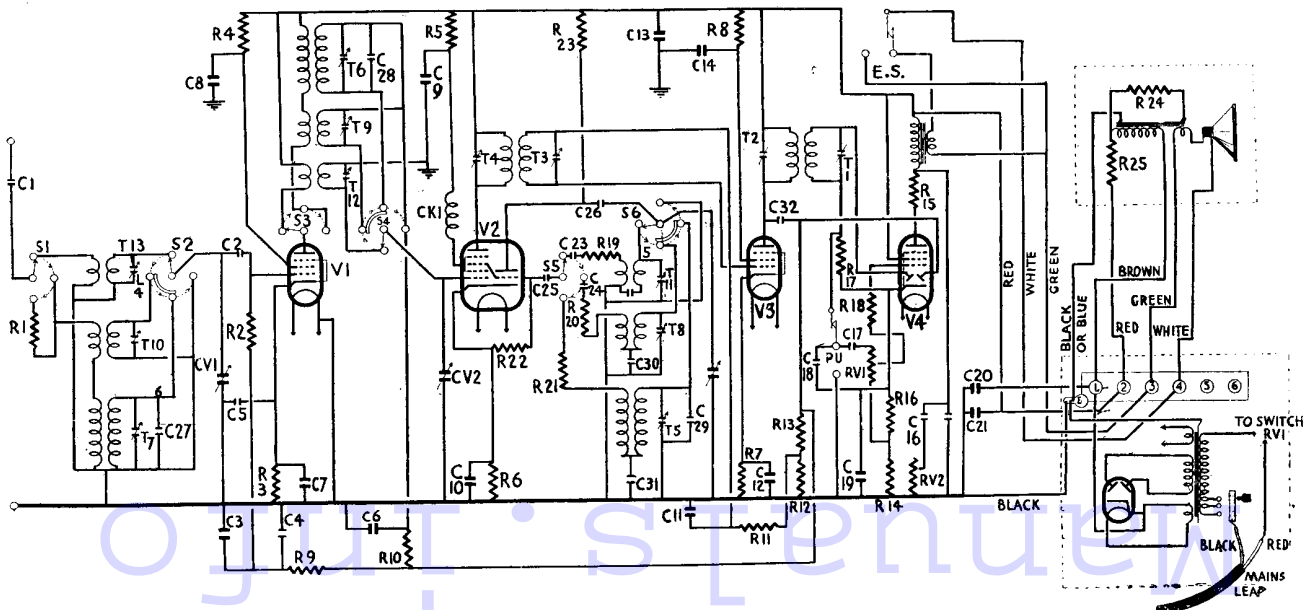
SHORT WAVES (18-51 metres).—This set handles excellently, with no oscillator drift or difficulty in tuning, and the A.V.C. action is adequate. The gain is excellent and the set can be relied upon to give a good number of short wave stations.

MEDIUM WAVES (195-550 metres).—Selectivity and sensitivity are both good, the local stations spreading only to adjacent channels. Background fairly free from whistles. Sensitivity is fairly even over the waveband and sufficient to give good programme strength from the usual stations.

LONG WAVES (875-2,000 metres).—Sensitivity is very good and selectivity adequate for all ordinary purposes.

Acoustic Output

Volume is sufficient for an ordinary room and the reproduction is free from marked resonances. Colouration is only slight. The general balance is good.



A signal amplifying stage preceding the frequency changer is a point of interest in the 362. The circuit is quite straightforward and follows orthodox lines.