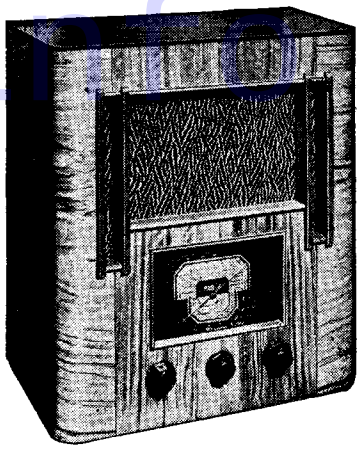
VIDOR 277 FOUR-BAND FIVE



A four-valve plus rectifier A.C. superhet, the Vidor 277 has four wave ranges. Two short wave bands cover from 13.5 to 180 metres.

CIRCUIT.—On all bands the aerial input to the grid of V1, a triode hexode frequency changer, is *via* a set of transformers. The signal grid is isolated from the tuning coils by C1 and the valve is A.V.C. controlled on all ranges. A stabiliser resistance, R2, is inserted between the grid of V1 and C1. The oscillator anode of V1 is coupled to the reaction coils *via* C8, R4 being the oscillator anode load.

The output of V1 passes *via* an I.F. transformer, tuned to 473 kc., to V2, an H.F. pentode. This valve is also A.V.C. controlled.

A further I.F. transformer couples V2 to V3, a double diode valve. The secondary of the transformer is centre tapped, and the tapping connected to the demodulating diode of V3. The L.F. potentials are fed *via* an H.F. stopper resistance, R13, and coupling condenser, C14, to the manual volume control, R14. The other diode of V3, fed by a coupling condenser, C11, provides a D.C. potential used to feed the A.V.C. decoupling network operating V1 and V2.

V4, an output pentode, is the final valve in the radio line up and feeds the speaker *via* the usual matching transformer. A pentode compensator condenser is connected between the anode of V4 and chassis. Connections are brought out from the primary of the speaker transformer to operate a high impedance extension speaker.

Mains equipment consists of a mains transformer, a full wave rectifying valve, V5, electrolytic smoothing condensers and a smoothing choke (the speaker field coil). A mains suppressor condenser is connected between the mains switch and chassis; H.F. condensers are connected between both sides of the smoothing choke and chassis.

Chassis Removal.—It should be noted that the cabinet has a false bottom, removal of which enables the underside of the chassis to be inspected and replacements effected.

To remove the chassis: Remove the three grub-screw fixed control knobs from

VALVE READINGS

No signal. Volume maximum. MW min. cap. 200 volt A.C. mains.

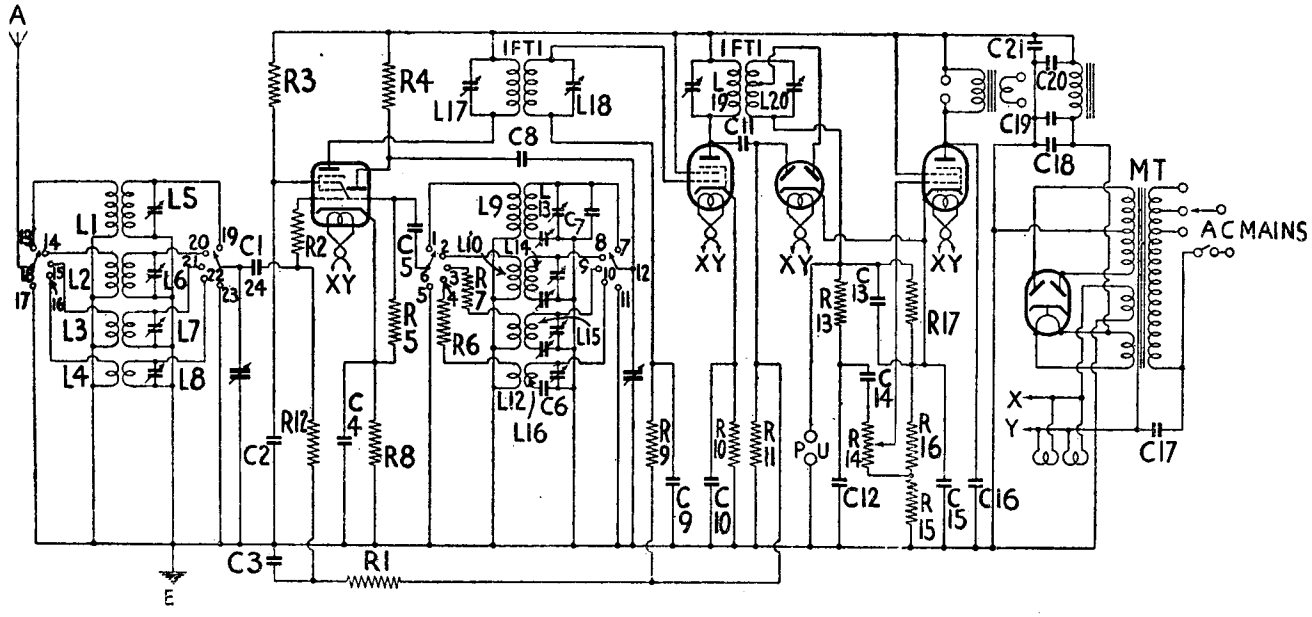
V.	Type.	Electrode.	Volts.	Ma.
1	Mazda ACTH/1 (7)	Anode ..	210	5.5
		Screen ..	100	5
		Osc. anode	80	4.5
2	Mullard VP4B (7)	Anode ..	210	8.5
		Screen	210	3.5
3	Mullard 2D4A (5)	Diodes only	—	—
4	Mullard Pen A4 (7)	Anode ..	200	31
		Screen ..	210	4
5	Brimar R2 (4)	Heater ..	340	—

CONDENSERS

C.	Purpose.	Mfds.
1	V1 grid isolator	.0001
2	V1 screen decoupling ..	.1
3	V1 A.V.C. decoupling ..	.1
4	V1 cathode bias shunt ..	.1
5	Osc. grid	.0002
6	B1 osc. fixed padder ..	.005
7	L.W. osc. fixed trimmer ..	.00004
8	Osc. anode coupling. .	.0002
9	V2 A.V.C. decoupling ..	.1
10	V2 cathode bias shunt ..	.1
11	A.V.C. diode coupling ..	.0001
12	H.F. by-pass	.0005
13	H.F. by-pass	.0001
14	L.F. coupling.	.05
15	V3 and V4 cathode bias shunt	25
16	Pentode compensator ..	.005
17	Mains suppressor	.01
18	Rectifier H.F. by-pass ..	.01
19	H.T. smoothing	8
20	H.T. smoothing	16
21	H.T. line H.F. by-pass ..	.1

RESISTANCES

R.	Purpose.	Ohms.
1	V1 A.V.C. decoupling ..	500,000
2	V1 grid stabiliser	50
3	V1 screen decoupling ..	20,000
4	Osc. anode load	30,000
5	Osc. grid leak	50,000
6	B1 regeneration modifier ..	50
7	B2 regeneration modifier ..	500
8	V1 cathode bias	200
9	V2 A.V.C. decoupling ..	500,000
10	V2 cathode bias	200
11	A.V.C. diode load	1 meg.
12	V1 A.V.C. feed	500,000
13	H.F. stopper	10,000
14	Volume control	500,000
15	V3 and V4 cathode bias (part)	100
16	V3 and V4 cathode bias (part)	150
17	Demodulating diode load ..	500,000



Transformer coils feed the triode-hexode frequency changer and a separate double-diode is used for demodulation and A.V.C.

the front and the six wood screws securing the back of the cabinet. Unclip both dial lights. Then remove the four chassis securing bolts and washers from the base. Two of the bolt heads are covered by felt.

The speaker and block electrolytic condensers may be removed, or, alternatively, the leads to the speaker panel unsoldered. From top to bottom of the speaker panel the leads are as follows : Red from electrolytic condenser and black from speaker cable to top two tags, third tag is blank, blue lead from speaker cable to the remaining tag. The black lead from electrolytic condenser and green lead from speaker cable are connected to an earthing tag on the speaker frame.

Special Notes.—The adjustment device on the mains transformer takes the form of three sockets marked with voltage values and an insulation-headed screw adapted to make contact with the appropriate socket.

A pair of sockets at the rear of the chassis enable a pick-up to be connected. This should have a high output to obtain full volume, as it operates only one stage of L.F. amplification, namely the pentode V4.

A similar pair of sockets enable an extension speaker to be operated. This should be of the permanent magnet type with a high impedance matching transformer.

There are two dial lights in screw-in holders clamped to brackets secured to the cabinet behind the wavelength dial assembly. They are rated at 6 volts .3 amp., and are tinted to obviate glare.

The electrolytic smoothing condenser block containing C19 and C20 is located on the side of the cabinet near the speaker.

WINDINGS (D.C. Resistances)

Winding.	Ohms.	Range.	Measured between.
L1 ..	103	LW	Aerial and chassis.
L2 ..	1	MW	Aerial and chassis.
L3 ..	.5	B2	Aerial and chassis.
L4 ..	.5	B1	Aerial and chassis.
L5 ..	10.4	LW	C1 and chassis.
L6 ..	2.2	MW	C1 and chassis.
L7 ..	.4	B2	C1 and chassis.
L8 ..	.1	B1	C1 and chassis.
L9 ..	1.5	LW	C5 and chassis.
L10 ..	61.1	MW	C5 and chassis.
L11 ..	38	B2	Coil side R7 and chassis.
L12 ..	35	B1	Coil side R6 and chassis.
L13 ..	4.6	LW	Coil side C8 and P1.
L14 ..	3.7	MW	Coil side C8 and P2.
L15 ..	.4	B2	Coil side C8 and P3.
L16 ..	.1	B1	Coil side C8 and C6.
L17 ..	4.6	—	Across IF pins.
L18 ..	4.5	—	Top grid V2 and IF pin.
L19 ..	4.7	—	IF pins.
L20 ..	2.8	—	IF pins.
O.T.prim	500	—	Extension LS sockets.
MTprim	21	—	Mains leads.
Total HT sec.	415	—	Anodes V5.
Field ..	2,000	—	Outside tags speaker panel.

Circuit Alignment Notes

I.F. Circuits.—Connect an output meter across the primary of the speaker transformer. Switch set to M.W. band, gang to maximum capacity, and volume control to maximum.

Connect a service oscillator between the top grid cap of V1 and chassis and shunt connections with a 250,000-ohms resistance. Short circuit the oscillator section of the gang.

Tune service oscillator to 473 kc. (634.2 metres) and trim first IFT2 and then IFT1 for maximum response, reducing the input from the oscillator as the circuits come into line to keep the A.V.C. inoperative.

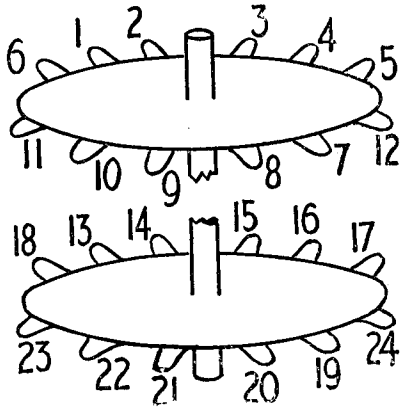
Signal Circuits.—With gang at maximum the tuning pointer should coincide with the end of the wavelength scale.

Remove the short from the oscillator section of the gang and replace top grid connector of V1, removing the shunt resistance. Connect the service oscillator to the A. and E. sockets of the receiver *via* a dummy aerial or fixed condenser, only feeding sufficient input to obtain reliable peaks in the output meter.

Long Waves, B4.—Tune set and oscillator to 750 metres (400 kc.) and adjust T1 and then T2 for maximum response.

Tune set and oscillator to 2,000 metres (150 kc.), and adjust P1 for maximum, simultaneously rocking the gang.

(*Continued on page* 18)



Above are the two switch banks seen as indicated in the under-chassis diagram below. The trimmers are conveniently grouped and located.

Vidor 277 on Test

MODEL CN277.—Standard model for A.C. mains operation, 200-260 volts, 50-100 cycles. Price, 9 gns.

DESCRIPTION. — Four-valve, plus rectifier, table superhet, covering four waveranges.

FEATURES. — Full-vision airplane type scale calibrated in metres and station names. Medium and long wave calibration scales above and the two short wave ranges below the horizontal centre line. Controls for combined volume and master switch, tuning and wave selection. Sockets at rear of chassis for pick-up and high impedance extension speaker.

LOADING.—62 watts.

Sensitivity and Selectivity

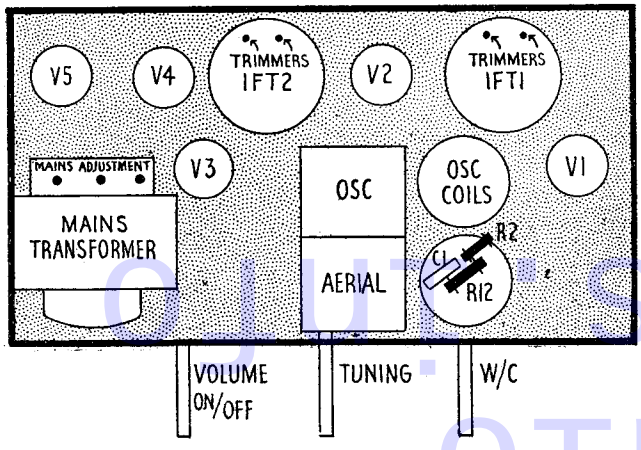
SHORT WAVES (13.5-51 and 60-180 metres).—Very good gain and selectivity, easy handling, well maintained selectivity, no noticeable drift.

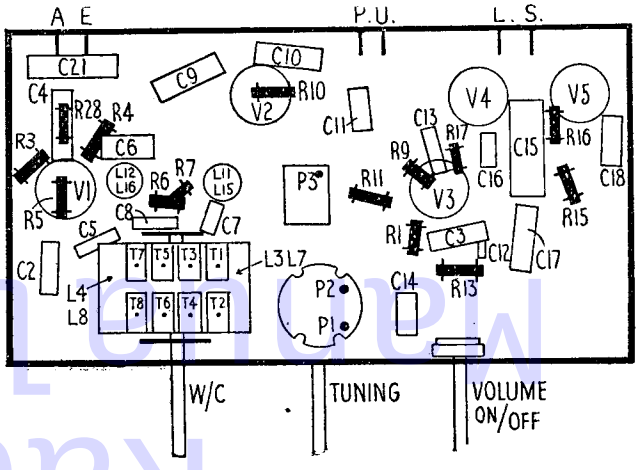
MEDIUM WAVES (175-580 metres).—Excellent gain and selectivity, local stations spreading on adjacent channels only. Good background.

LONG WAVES (750-2,100 metres).—Good gain and selectivity, all main stations easily received. A little interference from Deutschlandsender.

Acoustic Output

Ample volume for an ordinary room. Clear, crisp tone and good attack. Only slight colouration of speech and reasonable low-note radiation.





McMichael 373 Transportable

(*Continued from page 21.*)

rear of the chassis enable an extension loudspeaker to be operated. The external speaker should be of the low impedance type (2 ohms). A special two-pin plug enables both speakers to be controlled.

Sockets adjacent to the above sockets are for a pick-up. When the special plug is pushed home the radio section of the receiver is rendered inoperative.

A QMB switch at the rear of the chassis effects noise suppression if desired, and operates when the switch is "up."

The single pilot light is located in a screw-in holder secured to the front of the cabinet and visible through an aperture. The bulb is rated at 2 volts .1 amp., and is an MES base type.

The waveband indication and pointer illumination lights, of which there are three, are also rated at 2 volts .1 amp.

R11, R22, C15 and C16 are inside the can housing IFT2. The tone control resistance, R21, is mounted on the side of the cabinet with associated condenser C23. C2 is on the wavechange switch on the front of the chassis.

In our particular chassis, a .00001 mfd. fixed condenser was connected across the long wave section (L1) of the frame aerial.

Alignment Notes

I.F. Circuits.—Connect an output meter across the primary of the speaker transformer. Switch set to MW band, turn gang to maximum and tone to "high" position. Connect a service oscillator between the top grid cap of V2 and chassis.

Tune service oscillator to 128.5 kc., and adjust the trimmers of IFT2 and then IFT1 for maximum response, reducing the input from the service oscillator as the circuits come into line.

Signal Circuits.—With gang at maximum, check that the leading edge of the medium wave tuning light is in line with the last calibration mark found 3-16 in. from the top (high wavelength) end of the medium wave scale. Adjust it if necessary by means of the set screws on the condenser coupling.

Connect the leads of a service oscillator to a few turns of wire and inductively inject a signal into the frame aerial, keeping the input as low as possible consistent with reliable peaks in the output meter.

Medium Waves.—Tune set and oscillator to 214 metres (1,400 kc.). On the set scale this is the short line opposite Radio Lyons. Adjust T1 and then T2 for maximum response.

The medium wave padding is fixed, but if calibration is very much out at 500 metres (600 kc.), compensate with T1 and then retrim T2 on a 214 metres signal for maximum sensitivity.

Long Waves.—Tune set and oscillator to 1,000 metres (300 kc.) and adjust T3 and then T4 for maximum response.

The long wave padding is fixed.

Short Waves.—There are no trimming adjustments.

VIDOR 277 A.C. FIVE

(*Continued from page 17.*)

Repeat both operations until no further improvement results.

Medium Waves, B3.—Tune set and oscillator to 200 metres (1,500 kc.), and adjust T3 and T4 for maximum.

Tune set and oscillator to 550 metres (545 kc.), and adjust P2 for maximum, simultaneously rocking the gang.

Repeat both operations until no further improvement results.

Short Waves, B2 (50 to 170 metres).—Tune set and oscillator to 50 metres (6 mc.) and adjust T5 and then T6 for maximum.

Tune set and oscillator to 170 metres (1,765 kc.), and adjust P3 for maximum, simultaneously rocking the gang.

Repeat both operations until no further improvement results.

Short Waves, B1 (13.5 to 51 metres).—Replace dummy aerial with a 30 to 40 mmfd. fixed condenser.

Tune set and oscillator to 13.5 metres (22.2 mc.), and adjust T7 and then T8 for maximum response.

The short-wave padding is fixed, but check calibration throughout the range covered.

Replacement Condensers

Two exact service replacement condensers for the 277 are available from A. H. Hunt, Ltd. For the block containing C19 and C20 there is unit list number 1931A, at 8s 6d., and for C15, unit 2918, price 1s. 9d.

Ultra "Robot" 400

(*Continued from page 29.*)

Tune service oscillator to 456 kc. and adjust the iron cores of I.F.T.2 and then I.F.T.1 for maximum response, reducing the input from the service oscillator as the circuits come into line to render the A.V.C. inoperative. A non-metallic trimming tool should be used.

Signal Circuits.—Adjust the tuning pointer so that it coincides with the black dial line when the gang is fully closed.

Connect the service oscillator to the A and E sockets *via* a dummy aerial, only feeding sufficient input from the service oscillator to obtain reliable peaks in the output meter.

Medium Waves.—Tune set and oscillator to 200 metres (1,500 kc.) and adjust T1, T2, and then T3 for maximum.

Tune set and oscillator to 500 metres (600 kc.) and adjust P1 for maximum simultaneously rocking the gang.

Repeat both operations.

Long Waves.—Tune set and oscillator to 1,000 metres (300 kc.) and adjust T4, T5 and T6 respectively for maximum response.

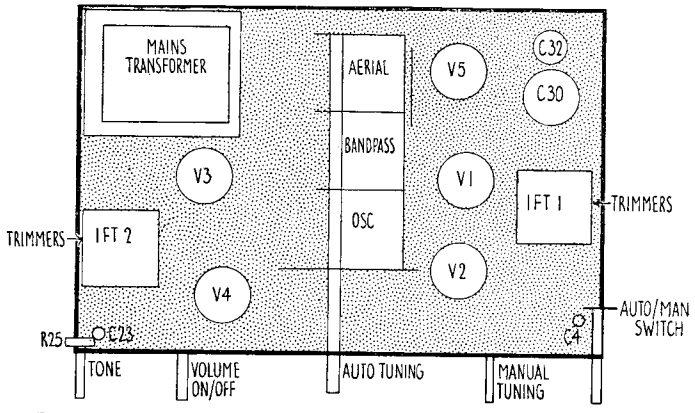
Tune set and oscillator to 1,700 metres (176.5 kc.) and adjust P2 for maximum simultaneously rocking the gang.

Repeat both operations.

Short Waves.—Tune set and oscillator to 17 metres (17,647 kc.) and adjust T7 and the T8 for maximum

The short wave padding is fixed, but check calibration throughout the range covered.

Right, is the layout diagram for the top of the chassis.



Button Adjustment

The buttons are calibrated on the actual stations themselves and not by means of generator signals.

Unscrew the centre boss, with the spanner provided, and take off the bakelite press-button cover, thereby obtaining access to the buttons. The buttons are numbered and each covers a section of the wavelength scale as follows :—

Press buttons 1 and 5, 450 to 550 or 1,700 to 2,000 metres.

Press buttons 2 and 6, 330 to 490 or 1,300 to 1,800 metres.

Press buttons 3 and 7, 230 to 390 or 950 to 1,400 metres.

Press buttons 4 and 8, 200 to 260 or 850 to 1,050 metres.

To set a button for the desired station, find the correct button to use from the table (according to wavelength) and insert the station name from the printed sheet into the name cover.

Push the button down with the spanner provided and rotate the entire plate until the button latches. Then, still keeping the button pressed down in the slot, unscrew the collar nut half a turn and rotate the entire plate until the desired station is tuned in spot on. Then screw up again making sure that the station is still accurately tuned in.

Repeat operations on different stations until all the buttons are used.

Replacement Condensers

Exact replacement condensers by A. H. Hunt, Ltd., are : for C30, 3,060, 6s. 9d.; C32, 3,068, 5s.; C7, 4,107, 3s.; C31, 2,546, 2s. 3d., and for C27, 2,899, 3s. 6d.