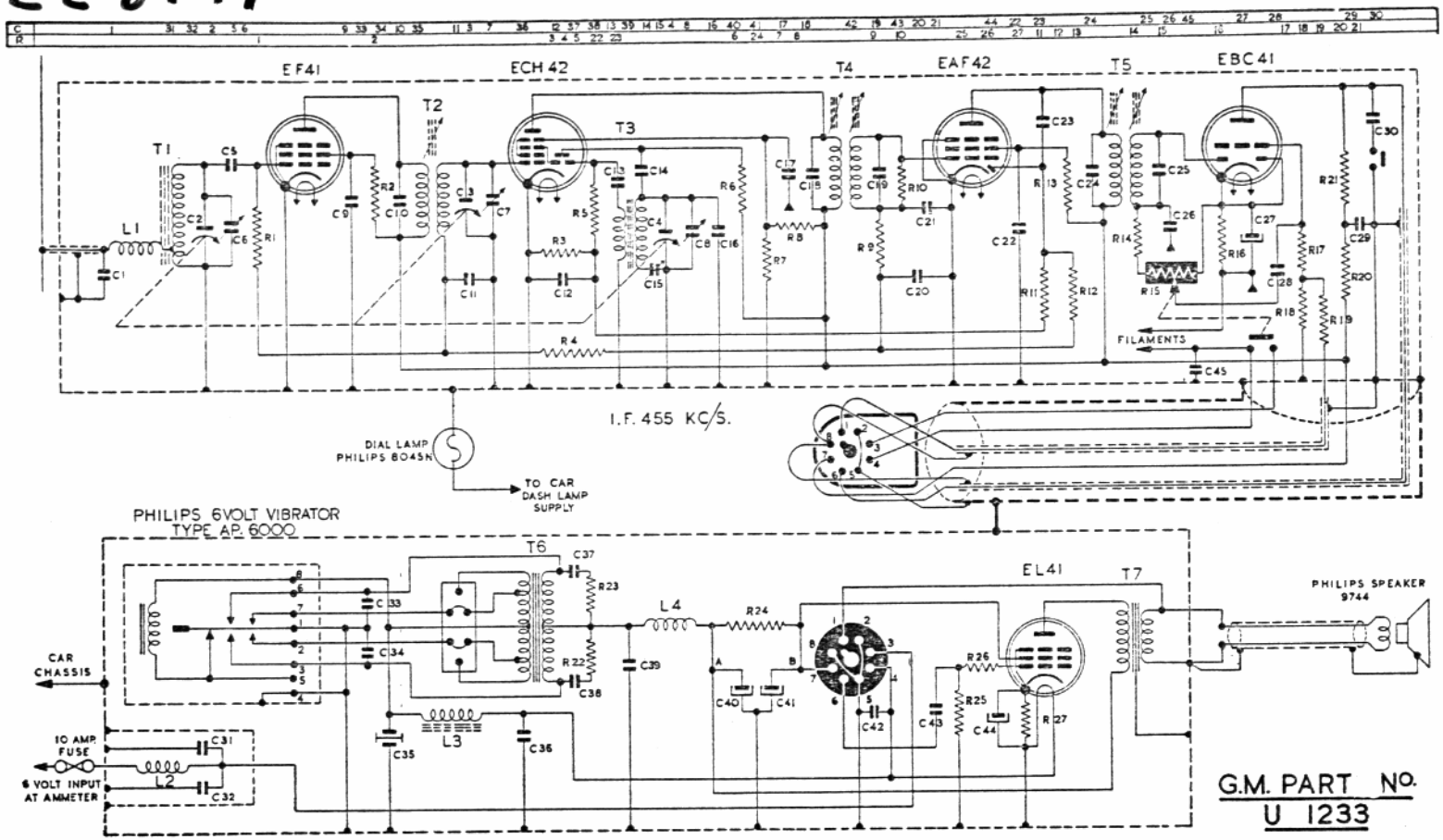
U 1233



G.M. PART NO. U 1233

CONDENSERS

C1	10 mmfd ceramic
C2	Tuning Gang
C3	" "
C4	" "
C5	100 mmfd ceramic
C6	Trimmer on Gang
C7	" " "
C8	" " "
C9	.01 mfd 500v. paper
C10	100 mmfd ceramic
C11	.1 mfd 250v. paper
C12	.01 mfd 500v. paper
C13	50 mmfd ceramic
C14	100 mmfd mica
C15	150-750 mmfd padder
C16	10 mmfd ceramic
C17	.01 mfd 500v. paper
C18	I.F. condenser
C19	I.F. condenser
C20	.01 mfd 500v. paper
C21	" " " "
C22	" " " "
C23	10 mmfd ceramic
C24	I.F. condenser
C25	" "
C26	100 mmfd ceramic
C27	25 mfd 25v. electrolytic
C28	.02 mfd 500v. paper
C29	.1 mfd 500v. paper
C30	.01 mfd 500v. paper
C31	.25 mfd 150v. paper
C32	820 mmfd ceramic
C33	1200 mmfd 1000v. mica
C34	" " " "
C35	200 mfd Bipolar Elco 12v.
C36	1 mfd 150v. paper 100° C.
C37	.01 mfd 1500v. paper 100° C.
C38	" " " " " "
C39	.05 mfd 500v. paper
C40	40 mfd 450v electrolytic
C41	" " " "
C42	1 mfd 150v. paper 100° C.
C43	.02 mfd 500v. paper
C44	25 mfd 25v. electrolytic
C45	.1 mfd 150v. paper

RESISTORS

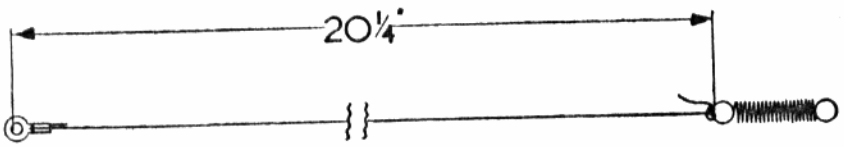
R1	470k ½w. carbon
R2	100k ½w. "
R3	15k ½w. "
R4	250k ½w. "
R5	47k ½w. "
R6	30k ½w. "
R7	50k ½w. carbon
R8	25k ½w. "
R9	250k ½w. carbon
R10	100k ½w. "
R11	1 meg. ½w. carbon
R12	680k ½w. carbon
R13	100k ½w. "
R14	68k ½w. "
R15	.5 meg. volume control with D.P. switch
R16	1800 ohms ½w. carbon
R17	1 meg. ½w. carbon
R18	10 ohms ½w. carbon
R19	330 ohms ½w. carbon
R20	100k ½w. carbon
R21	" " "
R22	3900 ohms 1w. carbon
R23	" " "
R24	1000 ohms 5w. wire wound
R25	470k ½w. carbon
R26	10k ½w. "
R27	150 ohms 1w. carbon

COILS

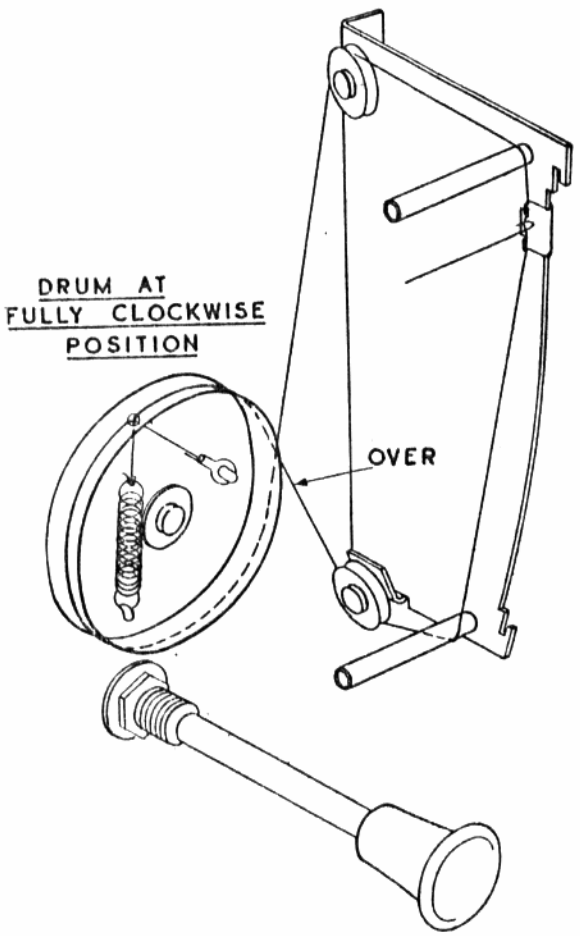
L1	Aerial choke	VK 460-54
L2	L.T. input filter choke	VK 460-52
L3	Ferroxcube L.T. choke	VK 460-49
L4	R.F. H.T. filter choke	VK 460-53

TRANSFORMERS

T1	Aerial coil	VK 469-56
T2	Translator coil	VK 473-15
T3	Oscillator coil	VK 471-38
T4	1st. I.F. transformer	A3 124-25
T5	2nd. I.F. transformer	"
T6	Vibrator power transformer	VK 630-71
T7	Output transformer	VK 670-81



CORD	CODE No	06 606 28
TAG	"	VK 297 30
SPRING	"	VK 112 08
ASSEMBLY	"	VK 447 55



VOLTAGE TABLE

All readings taken with a primary input of 6 volts.
Full load primary current, 5 amps.

Valve	Function	Filament	Plate	Screen	Cathode
EF41	Radio frequency amplifier pentode	5.5v	212	70	0
ECH42	Frequency converter and oscillator triode hexode	5.5v	conv. osc. 212 95	90	0
EAF42	A.V.C. detector, intermediate frequency amplifier, diode pentode	5.5v	212	72	0
EBC41	Signal detector, audio voltage amplifier, double diode triode	5.5v	92	—	1.1
EL41	Power output pentode	5.5v	232	214	4.6

Voltage at points A 245, B 215 (see circuit diagram).
The above voltages are measured between the points indicated and chassis with a meter having a resistance of 20,000 ohms per volt on D.C. ranges. The figures quoted are the average of a number of sets and variations up to ± 5% are permissible.
Tuning condenser at maximum capacity and no signal input.

AIR RANGER CAR RADIO

GENERAL MOTORS PART No. U1233
FOR CHEVROLET MODEL 2-1069 CARS

5 Valve Superheterodyne Automobile Radio

Supply 6 Volts D.C.—Chassis Negative

Broadcast Coverage 535-1550 Kc/s

Intermediate Frequency 455 Kc/s

This receiver comprises three units: (1) Power Supply unit, with the audio power output stage, (2) Tuner unit, (3) Loudspeaker assembly.

The power supply is mounted on the fire wall, above the steering column.

The tuner unit is mounted behind the dash panel in the special place provided in the car and is connected to the power supply unit by means of a special multicore cable and connector.

The loudspeaker assembly is mounted behind the die-cast chrome-plated grille on the dash panel and is connected to the power supply unit by means of a two-core shielded cable and moulded screw connector.

REMOVING THE RECEIVER FROM THE CAR

The Power Supply Unit

Disconnect the battery cable of the unit at the fuse holder and remove the fuse. Remove the screw holding the earthing braid of the multiconnector cable to case of the power supply unit and remove the multiplug connector from the socket on the power supply unit.

Disconnect the twin shielded speaker wire from the power supply unit, by loosening off the appropriate screws, in the bakelite connector.

Open the engine bonnet of the car and remove the $^{5}/_{16}$" S.A.E. nut, lockwasher and flat washer from the power supply stud on the fire wall.

The power supply unit stud may now be withdrawn from the hole in the fire wall, by pulling the unit away from the fire wall inside the car.

The Tuning Unit

After the male plug connector has been removed from the socket on the power supply unit, the receiver unit may be removed from the car.

Remove the pilot lamp assembly from behind the dial scale by gripping the socket and pulling straight back.

Remove the aerial plug from its socket on the top of the receiver unit.

Loosen off the two grub screws and remove the tuning and volume control knobs.

Remove the two barrel nuts from the bushes on the tuning and volume controls.

The top of the tuning unit is secured by a single $^{10}/_{32}$ nut, holding the angle bracket on to the end of the screw holding the chrome ornamental strip along the dash panel. Remove the nut with a suitable socket wrench.

Slide the tuning unit back until the control spindles clear the holes in the dash panel. Tilt the unit back and with the control spindles uppermost twist the unit sideways and slide out between the control cables and down from behind the dash panel.

By removing the two cover lids, all parts are readily accessible for servicing.

The Loudspeaker Assembly

After the twin shielded speaker wire has been disconnected from the power supply at the bakelite connector, the speaker assembly may be removed from behind the dash panel.

The loudspeaker assembly is secured to the dash panel by two $^{10}/_{32}$ barrel nuts at the top and two $^{10}/_{32}$ nuts at the bottom, which are attached to the ends of the screws holding the vent control support in place.

Push the loudspeaker assembly against the dash panel, to take the tension off the barrel nuts, then remove them with a spanner or socket wrench.

Remove the two $^{10}/_{32}$ nuts at the bottom which will release the assembly.

Clear the control cables and wires, and slide the assembly out from behind the dash panel.

REPLACING THE RECEIVER IN THE CAR

The Power Supply Unit

See that the metal around the mounting hole in the fire wall is thoroughly clean on the engine side, so that good electrical contact can be made.

Push the power supply unit into its mounting place and push the long threaded part of the $^{5}/_{16}$" S.A.E. stud through the $^{3}/_{8}$" dia. hole in the fire wall.

Fit the flat washer, spring washer and nut and tighten up. Connect the twin shielded loudspeaker wire to the bakelite connector on the speaker wire, making sure that the polarity of the connection is maintained, i.e., black to black, white to white and shielding to shielding. Plug the multiplug connector into the socket provided under the power supply unit. Place the 4 mm screw through the hole in the heavy shielded braid and replace in the hole on the power supply unit, and tighten up. This is very important as a poor electrical bond between this outer shield and the power supply unit will cause severe ignition interference.

Fit the fuse into the fuse holder and connect to the supply lead.

The Tuning Unit

With the knobs and barrel nuts removed and the dial mechanism uppermost, tilt the unit to one side and push up behind the dash panel. When it is clear of the panel edge, clear the control cables and wires and turn the set over and feed the control shafts of the unit through the appropriate holes in the front panel. Place the hole in the top angle bracket over the tail of the screw holding the ornamental chrome strip of the instrument panel and fit the $^{10}/_{32}$ nut and securely tighten.

Slide the barrel nuts over the shaft through the panel holes and tighten on the control bushes.

Fit the two knobs on the control shafts. Plug the multiplug connector into the socket under the power supply unit. See under the fitting of power supply unit.

The Loudspeaker Assembly

Push the loudspeaker assembly up behind the instrument panel, making sure that it is clear of all the control wires and cables. The two slotted holes at the top of the panel fit over the tail of the two screws holding the ornamental chrome strip over the speaker grille. The two $^{10}/_{32}$ barrel nuts are placed through the slotted holes in the speaker assembly and screwed tightly on to the tails of the chrome strip holding screws, so that the sponge rubber packing keeps the baffle assembly against the hex flange of the barrel nuts.

At the lower edge of the speaker assembly are two slots, which will line up with the tails of two screws holding the vent control support in place. Push the baffle assembly down to these two screws and fit the flat washers and $^{10}/_{32}$ nuts and securely tighten.

Connect the twin shielded loudspeaker wire to the bakelite connector from the power supply unit. Observe the polarity of connection.

ALIGNMENT OF THE RECEIVER

Remove the top and bottom covers.

Connect a low impedance speaker to the twin shielded speaker wire from the power supply unit, and plug the multicore cable into socket on the power supply unit.

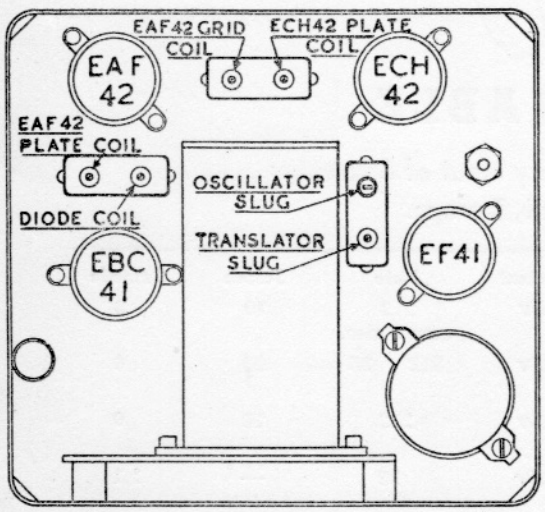
Switch on and allow to warm up for a few minutes. Turn the volume control to the maximum position and the tuning condenser to maximum capacity.

Apply a signal of 455 Kc/s modulated 30% through a capacity of 0.01 mfd to the control grid of the ECH42 valve.

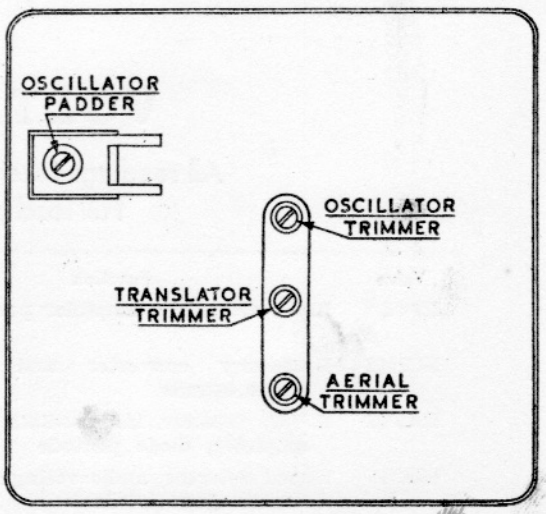
Adjust the intermediate frequency filter for maximum output by means of the adjusting screws on the top of the cans (see trimmer position diagram) in the order:

(1) EBC41 diode coil. (2) EAF42 plate coil.

(3) ECH42 plate coil. (4) EAF42 grid coil.
Repeat the above until maximum output is obtained.

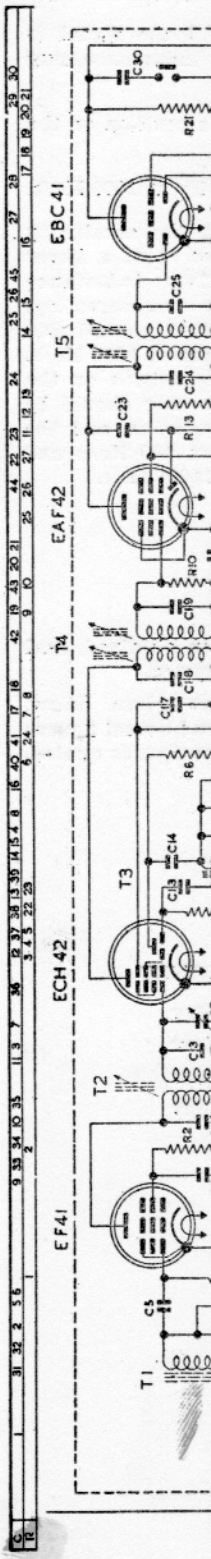


TOP VIEW



BOTTOM VIEW

TRIMMER LOCATION DIAGRAMS



Disconnect the 0.01 mfd coupling condenser from the control grid of the ECH42.

The aerial input of the receiver is rather critical in its adjustment and it is recommended that the signal generator should be coupled to the aerial socket through a coupling condenser in series with a standard dummy load. This coupling condenser should be of such a value that the parallel capacity of any coupling cable plus the capacity of the series condenser should be approximately 75 mmfd. The parallel capacity of high quality aerial connecting cable should not exceed 10 to 12 mmfd per ft., and the maximum length of the cable should not exceed 3 ft. With the tuning condenser at maximum capacity adjust the pointer to the reference line at the low frequency end of the scale. Turn the pointer to the 1400 Kc/s point on the scale and apply a signal of 1400 Kc/s to the aerial.

Adjust the oscillator trimmer on the tuning condenser until the signal is tuned in, and adjust the translator and aerial trimmers for maximum output.

Turn the pointer to the 600 Kc/s reference point on the scale and apply a signal of 600 Kc/s to the aerial.

Adjust the oscillator padder until the signal is tuned in and adjust the translator inductance slug for maximum output.

Turn the pointer to the 1400 Kc/s position on the dial scale and adjust as before.

Check the calibration and sensitivity at 1000 Kc/s.

If the calibration is not correct the sensitivity will be low and if 1000 Kc/s tunes in at a lower position on the dial scale the oscillator inductance slug should be screwed in, slightly overcorrecting, and the oscillator padder adjusted to correct 600 Kc/s and the trimmer adjusted to correct 1400 Kc/s. If 1000 Kc/s tunes in at a higher position on the dial scale the oscillator inductance slug should be screwed out, again slightly overcorrecting, and the oscillator padder adjusted to correct 600 Kc/s and the oscillator trimmer to correct 1400 Kc/s.

Note.—Once the translator inductance and the translator and aerial trimmers have been adjusted at their respective frequencies they should not be moved during calibration adjustments.

When all adjustments are completed and satisfactory sensitivity figures have been obtained, seal all trimmers except the aerial trimmer.

Maximum sensitivity figures are given below. These are given mainly as a guide and actual figures should if anything be better than the figures quoted.

Maximum Sensitivity Figures

FREQUENCY	SIGNAL APPLIED TO	SENSITIVITY
455 Kc/s	ECH42 control grid via 0.01 mfd condenser	15mv
600 Kc/s	Standard dummy in series with 75 mmfd to aerial socket	3mv
1000 Kc/s	Standard dummy in series with 75 mmfd to aerial socket	3mv
1400 Kc/s	Standard dummy in series with 75 mmfd to aerial socket	3mv

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Coil and Transformer Resistances

VK-469-56	Aerial coil	Total winding Tap	1.8 ohms 0.426 ohms
VK-473-15	Translator coil	Primary Secondary	66.5 ohms 3.1 ohms
VK-471-38	Oscillator coil	Feedback Tuned	5 ohms 12.25 ohms
A3-124-25	Microband filter	Each winding	12.5 ohms
VK-670-81	Output transformer	Primary Secondary	335 ohms 0.4 ohms
VK-637-71	Vibrator transformer	Primary Primary Secondary Secondary	0.07 ohms 0.07 ohms 155 ohms 185 ohms