U1198

PHILIPS MODEL: NZ627V

"Air Ranger" *Auto Radio*

GENERAL MOTORS PART No. U1198

For

Vauxhall Type "E" Velox and Wyvern Model Cars

MODEL NZ627V

6 Valve Superheterodyne Automobile Radio
Supply 12 Volts D.C. Chassis Positive
Broadcast Band—535-1550 Kc/s
Intermediate Frequency—455 Kc/s

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REMOVAL FROM THE CAR

Disconnect the lead from the positive terminal of the battery. This is important as at a later stage it is necessary to work near the starter control with the car in gear.

Remove the scuttle centre insulating panel; this is secured in position by two screws on its lower edge. Loosen the grub screws and remove three knobs from the radio receiver.

NOTE : This receiver is designed for cars fitted either with moulded or pressed metal instrument cover panels. If the car is fitted with a moulded instrument cover panel, remove the detachable instrument panel cover behind which is the radio receiver dial. This panel cover is retained by clips and removal can be easily effected from inside the glove pocket by pressing the panel outwards.

Remove the fixed instrument panel cover by unscrewing the two screws concealed behind the panel, one at the top and the other at the bottom of the panel. Access to these screws is obtained through the detachable panel aperture. Withdraw the cover panel towards the rear of the car at the same time sliding it sideways away from the steering wheel to clear the cover locating peg. If a pressed metal instrument cover panel is fitted to the car, open the glove box and remove two screws fixing the end of the panel.

Remove the scuttle insulating panel below the steering column, and remove two wing nuts located at the back of the panel between the speedometer and the indicating dial (fuel, temp., etc.) which retain the front of the instrument panel cover. Withdraw the cover panel towards the rear of the car, at the same time sliding it sideways to clear the steering wheel.

The receiver will now be exposed.

Disconnect the battery cable of the set at the fuse holder, and remove the fuse.

Remove the speaker plug.

Unscrew the three radio retaining screws from beneath the mounting tray.

Remove the aerial plug.

Place the change speed lever in the "Reverse" position by lifting the lever and pushing it forward.

Remove the receiver from the aperture by sliding forwards and tilting down to clear the change speed lever.

REPLACING THE RECEIVER

Disconnect the lead from the positive terminal of the battery. Place the change speed lever in the "Reverse" position. Place the fuse in the fuse holder, making certain that the insulating tube covers the fuse; connect up the battery cable and insert the radio at an angle with the control spindles towards the steering wheel. Straighten up the set as it enters the aperture.

Plug the aerial cable into the socket at the right hand lower corner of the receiver.

Pass the speaker cable under the pocket coverings and plug it into the set, ensuring there is sufficient length of cable to allow the pocket lid to be fully opened.

Check the aerial alignment as follows:—

(a) Extend the aerial to its fullest extent.

(b) Pull the set forward a few inches to give access to the trimmer hole, located above the aerial socket, and switch on the set, making a temporary connection between the case of the set and metal work of the car.

(c) Tune in a weak signal at the high frequency end of the dial.

(d) Insert an insulated screwdriver in the trimmer hole, engage the trimmer screw and adjust for maximum response.

Slide the set back into position and fit the three fixing screws under the mounting tray.

Replace the instrument cover panel.

Move the set as necessary to line up the shafts centrally in the holes of the panel, and fit the knobs.

Tighten up the mounting screws.

If a moulded instrument cover panel is fitted, refit the detachable panel cover in the main panel.

If a pressed metal instrument cover panel is fitted, refit the scuttle insulating panel below the steering column.

Refit the scuttle centre insulating panel.

REMOVING THE LOUDSPEAKER

The voice coil impedance of the speaker fitted to this receiver is 5 ohms, so that where normal service work on the receiver is required, it is not usually necessary to remove the speaker from the car, as any test speaker with a low impedance voice coil may be used for bench testing. However, should it be necessary to remove the speaker proceed as follows:—

Open the glove box, and remove the instrument cover panel (See procedure under "Removing the Receiver"). Remove the speaker plug.

Remove two screws from the right hand end of the speaker mounting plate on the rear of the glove box lid.

Remove the two speaker mounting screws and clip on the outer edge, which will release the chrome plated front grille and the speaker mounting plate.

Remove the remaining two speaker mounting screws, and clips, and the speaker will be released from the mounting plate.

To replace the speaker reverse the above, but do not finally tighten the speaker until it is fitted behind the glove box door, so that door clearances can be adjusted.

ALIGNMENT OF THE RECEIVER

Remove the top and bottom cover plates.

Plug in a low impedance speaker.

Switch on the receiver and allow it 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 filters for maximum output by means of the adjusting screws on the top of the cans (see trimmer position diagram), in the order:—

(1) Diode Coil

(2) EF41 Plate Coil

(3) ECH42 Plate Coil

(4) EF41 Grid Coil.

Repeat the above until maximum output is obtained.

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

The aerial input circuit of the set 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.

With the tuning condenser at maximum capacity adjust the pointer to the reference dot 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 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.

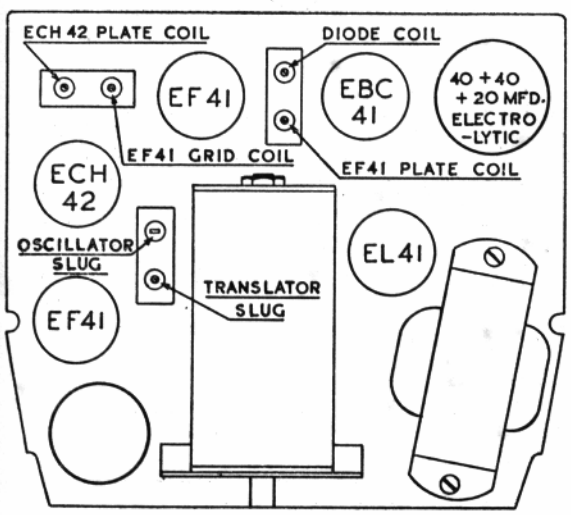
Adjust the oscillator padder until the signal is tuned in and adjust the translator inductance slug for maximum output.

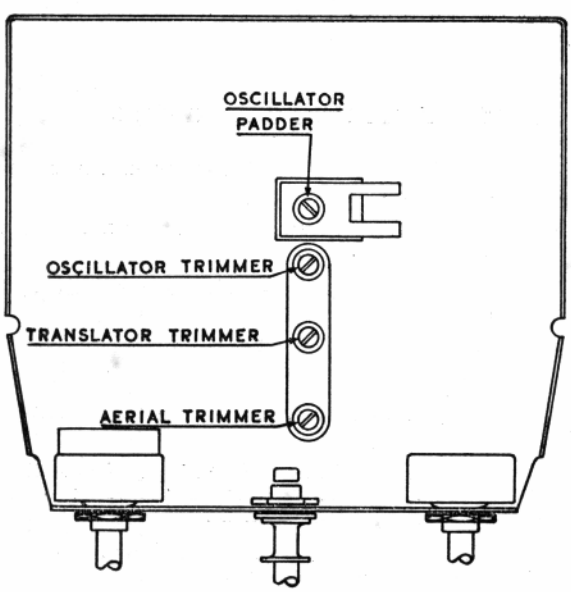
Turn the pointer to the 1400 Kc/s position on the scale and adjust as before.

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 point on the scale then the oscillator inductance slug should be screwed in, slightly overcorrecting and the oscillator padder adjusted to correct 600 Kc/s and the oscillator trimmer adjusted to correct 1400 Kc/s.

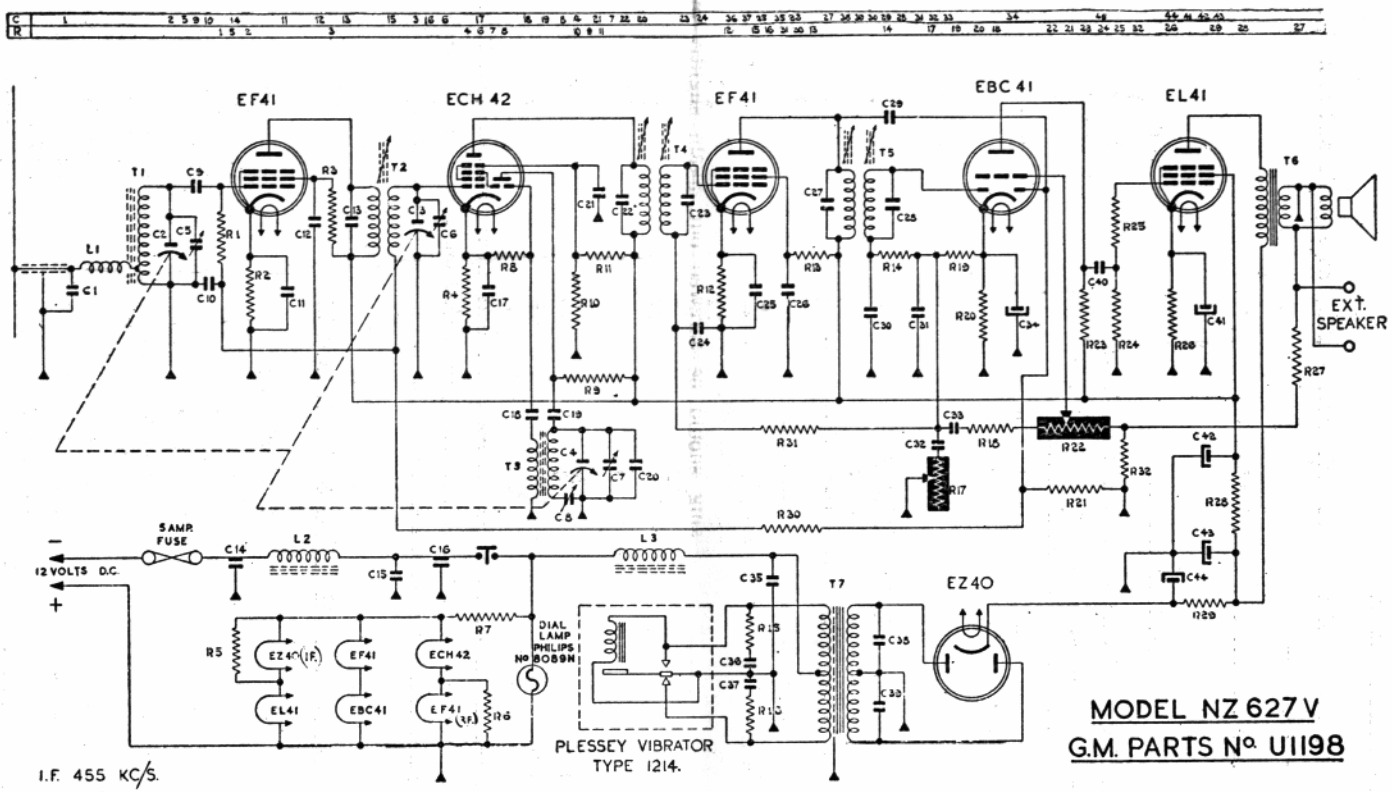
If 1000 Kc/s tunes in at a higher frequency on the scale, then the oscillator inductance adjusting slug should be screwed out, again slightly overcorrecting, and the oscillator padder adjusted to correct 600 Kc/s and the oscillator trimmer to correct 1400 Kc/s.





TOP VIEW BOTTOM VIEW

TRIMMER LOCATION DIAGRAMS



CONDENSERS

C1	10 mmfd ceramic	
C2	Gang tuning condenser	
C3	Gang tuning condenser	
C4	Gang tuning condenser	
C5	3-30 mmfd trimmer	
C6	" " "	
C7	" " "	
C8	150-750 mmfd padder	
C9	100 mmfd ceramic	
C10	0.1 mfd 150v. paper	
C11	0.01 mfd 400v. paper	
C12	" " " "	
C13	100 mmfd ceramic	
C14	500 mmfd mica disc	
C15	1 mfd 150v. paper	
C16	500 mmfd mica disc	
C17	0.01 mfd 400v. paper	
C18	56 mmfd ceramic	
C19	150 mmfd ceramic	
C20	10 " "	
C21	0.01 mfd 400v. paper	
C22	100 mmfd I.F. condenser	
C23	" " "	
C24	0.01 mfd 500v. paper	
C25	0.1 mfd 250v. paper	
C26	0.01 mfd 400v. paper	
C27	100 mmfd I.F. condenser	
C28	" " " "	
C29	10 mmfd ceramic	
C30	100 " "	
C31	" " "	
C32	0.003 mfd 500v. paper	
C33	0.01 mfd 400v. paper	
C34	25 mfd 25v. electrolytic	
C35	1 mfd 150v. paper	
C36	0.05 mfd 350v. paper	
C37	" " 1500v. "	
C38	0.01 " 1500v. "	
C39	" " " "	
C40	0.005 mfd 500v. paper	
C41	25 mfd 25v. electrolytic	
C42	20 " 350v. Triple electro-lytic	
C43	40 " " Triple electro-lytic	
C44	40 " " Triple electro-lytic	

RESISTORS

R1	470k ½w. carbon
R2	390 ohms ½w. carbon
R3	100k ½w. carbon
R4	220 ohms ½w. carbon
R5	75 ohms ½w. carbon
R6	180 ohms ½w. carbon
R7	1 ohm 6w. w.w.
R8	47k ½w. carbon
R9	25k ½w. carbon
R10	47k " "
R11	25k " "
R12	680 ohms ½w. carbon
R13	100k ½w. carbon
R14	47k " "
R15	50 ohms ½w. carbon
R16	" " " "
R17	500k tone control
R18	25k ½w. carbon
R19	300k ½w. carbon
R20	1500 ohms ½w. carbon
R21	1 meg. ½w. carbon
R22	500k volume control
R23	100k ½w. carbon
R24	750k " "
R25	10k " "
R26	150 ohms ½w. carbon
R27	390 ohms ½w. carbon
R28	1500 ohms 4w. w.w.
R29	370 ohms 4w. w.w.
R30	1 meg. ½w. carbon
R31	100k ½w carbon
R32	10 ohms ½w. carbon

COILS

L1	Aerial choke	VK-460-51
L2	Ferroxcube choke	VK-460-49
L3	" "	VK-460-49
T1	Aerial coil	VK-469-56
T2	Translator coil	VK-473-15
T3	Oscillator coil	VK-471-38
T4	I.F. Filter	A3-124-25
T5	" "	A3-124-25
T6	Output transformer	VK-670-74
T7	Power transformer	VK-630-66

GYLES 21573

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 slugs and trimmers except the aerial trimmer.

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

The standard output is 50 milliwatts into a 5 ohm load.

Frequency	SIGNAL APPLIED TO	Sensitivity
455 Kc/s	ECH42 Control Grid via 0.01 mfd condenser	15 uV
600 Kc/s	Standard dummy in series with 75 mmfd condenser to aerial socket	3 uV
1000 Kc/s	" " " "	3 uV
1400 Kc/s	" " " "	3 uV

VOLTAGE TABLE

All readings taken with a primary input of 12 volts D.C.

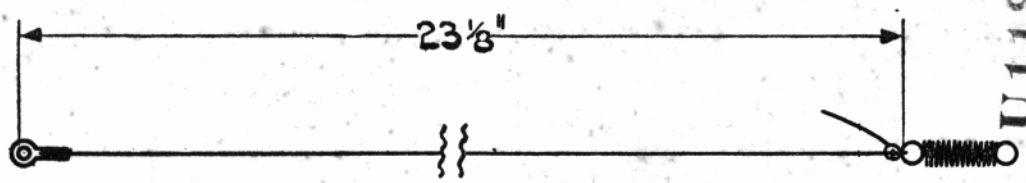
Full load primary current 3.7 amps.

	Filaments	Plate		Screen	Cathode
EF41 (R.F.)	5.5	200		72	2.2
		Conv.	Osc.		
ECH42	5.5	200	95	90	2.8
EF41 (I.F.)	5.5	200		90	3.4
EBC41	5.5	125		—	1.4
EL41	5.5	235		200	5.8
EZ40	5.5	315/315		—	260

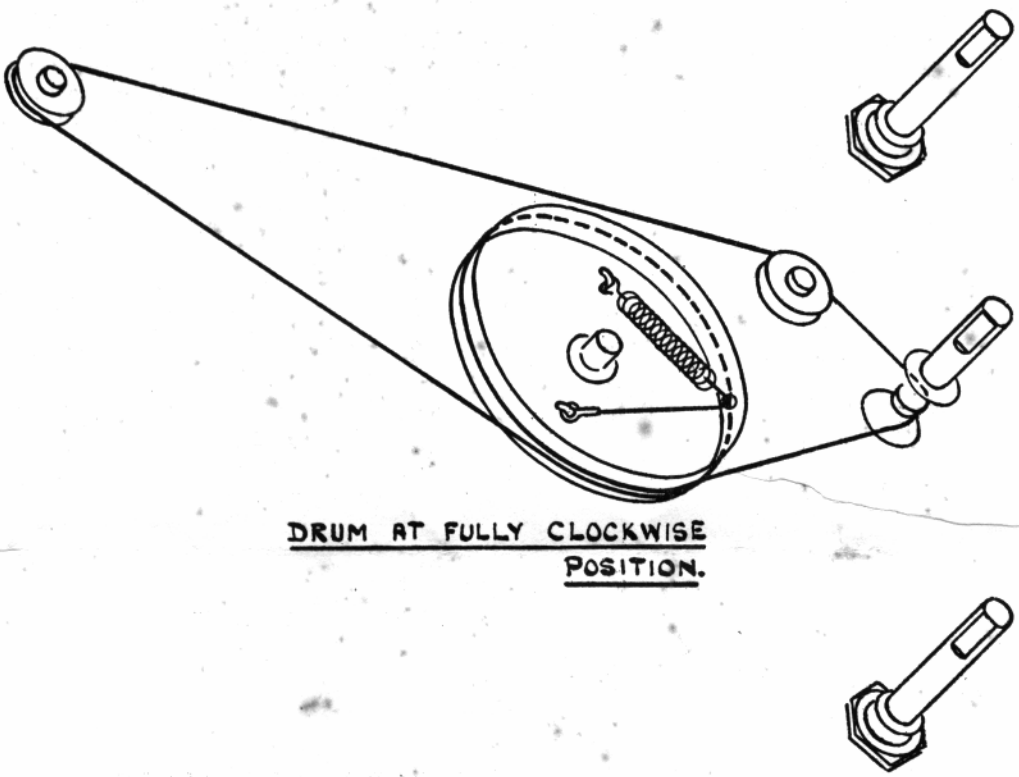
The above voltages are measured between the points indicated and chassis with a meter having a resistance of 20,000 ohms per volt on D.C. ranges and 1000 ohms per volt on A.C. ranges. The figures quoted are average of a number of sets, and variations up to $\pm$ 5% are permissible. Tuning condenser at maximum capacity and no signal input.

COIL AND TRANSFORMER RESISTANCES

VK-469-56	Aerial Coil	Total winding	1.8 ohms
		Tap	.425 ohms
VK-473-15	Translator Coil	Primary	66.5 ohms
		Secondary	3.1 ohms
VK-471-38	Oscillator Coil	Feedback	5 ohms
		Tuned	12.25 ohms
A3-124-25	Microband Filter	Each winding	12.5 ohms
VK-670-74	Output Transformer	Primary	320 ohms
		Secondary	0.57 ohms
VK-630-66	Vibrator Transformer	Primary	470 ohms
		"	390 ohms
		Secondary	.58 ohms
		"	.55 ohms



CORD	CODE No.	OG
CORD TAG	" "	VK 297-30
ASSEMBLY	" "	VK 447-34
SPRING	" "	VK 112-08



DRUM AT FULLY CLOCKWISE POSITION.

REPLACING THE TUNING DRIVE CORD

Place the set on the bench, with the controls uppermost and to the right.

Unscrew the dial mounting clip and screw, and remove the dial scale.

Unscrew the three remaining screws holding the dial backplate.

Turn the gang condenser to the maximum capacity position and check that the cord hole in the drum is opposite the tuning spindle. Check that the fixing screws are tight on the gang condenser shaft.

Double the cord assembly VK-447-34, and thread through the hole in the rim of the drum, so that the tag and spring are inside.

Take the spring end of the cord, and pass round the drum in a clockwise direction to the 7 o'clock position on the drum, feed over the left hand pulley, and then over the right hand pulley.

Hold the cord in the right hand pulley and make two and a half loops in the cord, and pass over the brass capstan on the tuning spindle, so that the cord is in a clockwise direction round the capstan and progresses towards the case of the set. Pass the remaining slack of cord round the gang drum in a clockwise direction. Loop the free end of the spring over the upper lug in the gang drum.

Extend the spring with a pair of pliers, at the same time taking up the slack at the other end of the cord, until the cord tag can be placed over the lower lug in the gang drum.

Make sure that the spring is almost fully extended as the cord invariably stretches a little after fitting.

Turn the drive shaft a few times so that the tension is equalised over the cord.

Replace the dial backplate and dial scale.

With the gang condenser at maximum capacity, fit the pointer slider, and attach to the drive cord, adjusting the position of the pointer to the reference dot at the low frequency end of the scale.