

SERVICE MANUAL

Motorola

AUTOMOBILE RECEIVER

Model 9-29

GALVIN MANUFACTURING CORPORATION • CHICAGO

ALIGNMENT PROCEDURE

MODEL 929

Place the radio on the service bench with the front cover removed, but with the speaker and battery connected to it.

Turn the volume control to maximum position and leave it there throughout the alignment, reducing the signal generator output if necessary.

NOTE: Do not adjust the trimmer in the oscillator coil can that is covered with Scotch Tape. The original adjustment, made in the factory, should not be tampered with. (Fig. 2 below, shows all trimmer locations.)

I.F. ALIGNMENT

1. Connect the signal generator to the control grid of the Osc.-Mod. tube (6A7) through a .1 MF condenser, having first removed the grid cap from the top of the tube. Connect a 500,000 ohm leak resistor from the grid of the tube to the grid cap just removed from the tube. (See Fig. 1.) Turn the condenser gang completely out of mesh. Connect an output meter across speaker voice coil.

2. Set the signal generator at 262 K.C. and carefully adjust the single trimmer in the Diode coil can to the point showing the highest reading on the output meter.

3. Adjust the two trimmers in the I.F. coil can to the point showing the highest output reading.

4. Repeat the I.F. and Diode adjustment several times for maximum accuracy.

SETTING THE RANGE

1. Connect the signal generator to the control grid of the R.F. tube (78) using the same .1 MF condenser and the same 500,000 ohm leak resistance.

2. Set the signal generator at 1560 K.C. and with the condenser gang completely out of mesh adjust the trimmer on the oscillator section of the condenser gang to the point showing the highest output reading.

3. Set the signal generator at 535 K.C. Turn the condenser gang completely in mesh and adjust the 600 K.C. trimmer in the Oscillator coil can for the highest output reading.

NOTE: The adjustments above set the range so the receiver will track with the calibrations in the control head.

R.F. AND ANTENNA ALIGNMENT

1. Connect the signal generator to the antenna lead through a 40 MMF condenser and to chassis ground. Set the signal generator at 600 K.C. and turn the condenser gang until the signal is heard. Adjust the trimmer on the antenna coil can for the maximum output reading.

2. Set the signal generator at 1400 K.C. Turn the condenser gang until the signal is heard. Adjust the trimmer on the antenna section of the condenser gang for maximum output reading.

3. Adjust the trimmer on the R.F. section of the condenser gang for maximum output reading.

4. Recheck steps 1, 2, and 3, for accuracy.

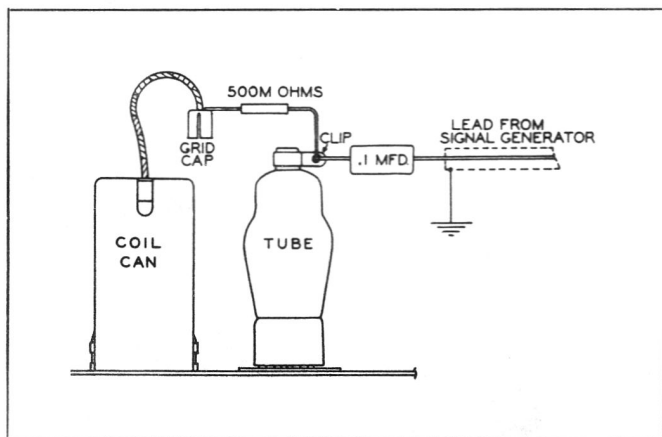
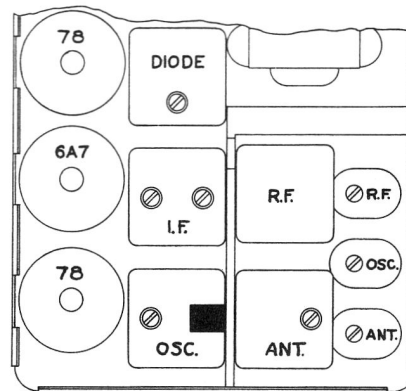


Figure 1.



9-29 TRIMMERS

Figure 2.

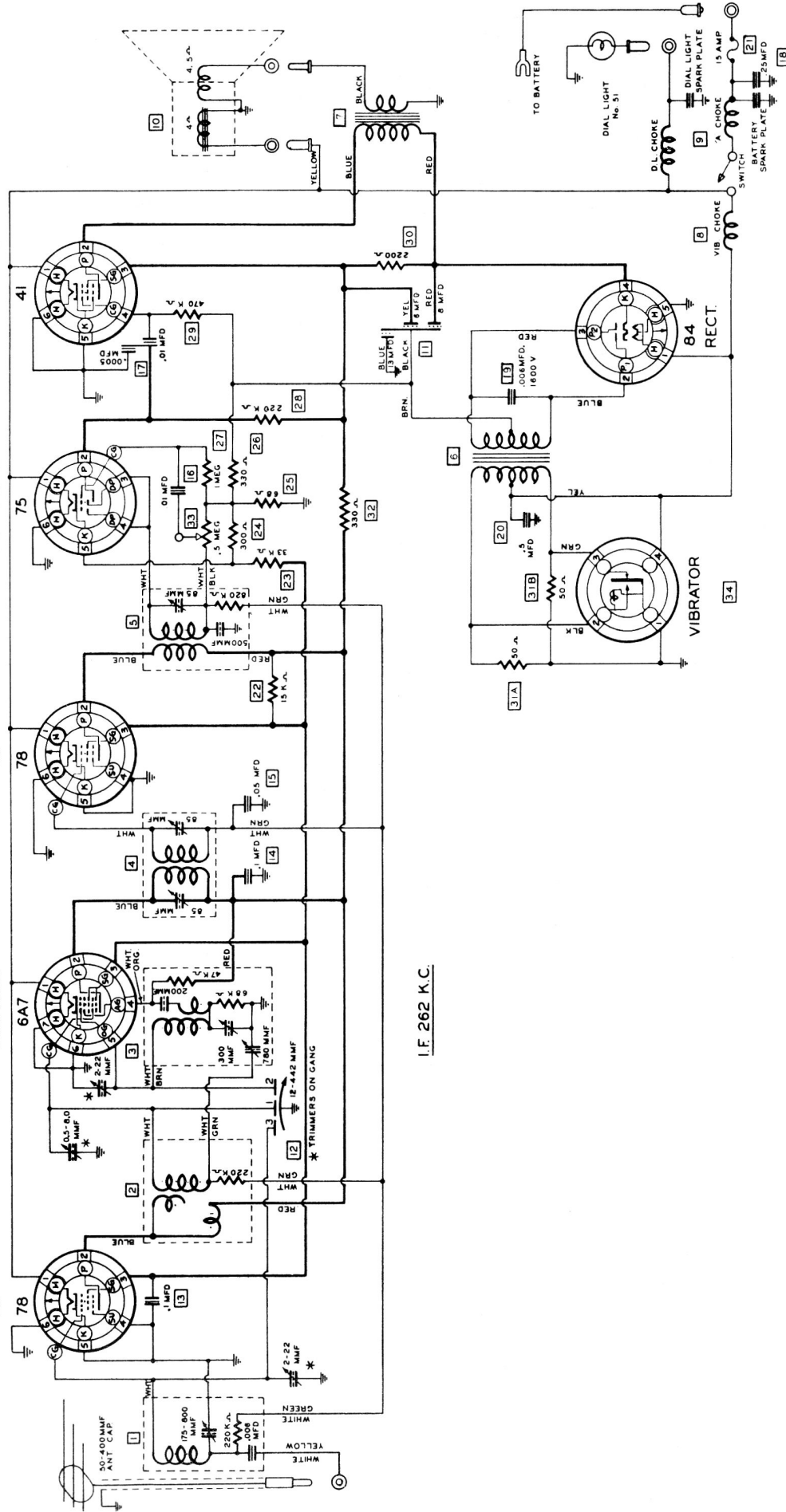
PWR-OUTPUT

DET-AVC-AF

I.F.

OSC. MOD.

R.F.



MODEL 929 PARTS PRICE LIST
(Note: Numbers in first column refer to squared numbers on circuit diagram.)

Diag. No.	Part No.	Description	List Price	Diag. No.	Part No.	Description	List Price
MAJOR PARTS							
34	48A3333	Vibrator	\$3.00	24	6B6008	Carbon Resistor (300-1/2-20)	\$0.15
33	18A4046	Vol. Cont. & Switch (.5 Meg.)	1.00	26	6B6009	Carbon Resistor (330-1/2-20)	.15
2	1X4051	R.F. Coil & Shield Assembly	1.50	32	6B6010	Carbon Resistor (330-1/2-20)	.15
	1X4070	"A" Choke Assembly	.60	29	6B6011	Carbon Resistor (470,000-1/3-20)	.15
9	1X4080	Variable Condenser (3 Gang)	.30	23	6B6012	Carbon Resistor (33,000-1/2-20)	.15
12	19B4110	Variable Condenser (.5 Gang)	3.65	22	6B6013	Carbon Resistor (15,000-1/2-20)	.20
8	24A4280	Vibrator Choke	.35	28	6B6015	Carbon Resistor (220,000-1/2-20)	.15
11	24X4335	Dial Light Choke (8T-3/8 I.D.)	1.15	27	6B6017	Carbon Resistor (1 Meg-1/3-20)	.15
	23A5186	Electrolytic Condenser	1.10				
	9B6650	Tube Socket (Saddle Type 41)	.15				
	9B6651	Tube Socket (Saddle Type 75)	.15				
	9B6652	Tube Socket (Saddle Type 78)	.15				
	9B6653	Tube Socket (Saddle Type 84)	.15				
	9B6654	Tube Socket (Saddle Type 6A7)	.15				
	9B6657	Vibrator Socket (Saddle Type)	.15				
	15K12552	Rear Housing (Finished)	1.90				
	1X12553	Front Housing & Speaker Assembly	7.25				
10	15C12554	Front Housing Only (Finished)	2.50				
	50B12560	Speaker (5" Dynamic)	3.00				
	25A12569	Speaker Replacement	1.75				
7	25B12570	Output Transformer	1.00				
6	1X12602	Power Transformer	3.00				
5	1X12603	Diode Coil & Shield Assembly	1.50				
4	1X12603	I.F. Coil & Shield Assembly	1.50				
3	1X12604	Osc. Coil & Shield Assembly	1.75				
1	1X12605	Antenna Coil & Shield Assembly	2.00				
ACCESSORIES							
	9A2370	Dial Light Socket & Shell	.10				
	14X2423	Fuse Insulator	.20				
	6X4141	Distributor Suppressor	.30				
	65X4151	Bulb (6-8 V.-1 1/2 W. Rnd. Bay. Base)	.15				
	1X4164	Battery Lead Assembly	.30				
21	65X4165	Fuse (15 Amp.)	.05				
	1X4170	Antenna Lead Assembly	.75				
	1X4171	Flexible Shaft & Housing Assem.	2.00				
	1X4181	Dial Light Assembly	.35				
	8A4491	Generator Condenser	.40				
	1X12561	Receiver Accessories Assembly (Complete)	3.90				
	1X12562	Mfg. & Filter Parts Assembly (Complete)	1.00				
	9A13070	Antenna Junction Box (Female)	1.10				
CONDENSERS							
16	8A1400	Tubular Condenser (.01-100 V.)	.15				
15	8A3305	Tubular Condenser (.05-100 V.)	.15				
13	8A3310	Tubular Condenser (.1-200 V.)	.15				
17	8A3329	Tubular Condenser (.01-.0006-400 V.)	.20				
20	8A4020	Tub. Cond. & Strap (.5-100 V.)	.35				
18	8A4089	Tubular Condenser (.25-100 V.)	.20				
14	8A4092	Tub. Cond. & Strap (1-400 V.)	.25				
	8A4329	Tubular Condenser (.006-100 V.)	.15				
	21B6500	Molded Mica Cond. (500 WFF-20%)	.15				
	21B6501	Molded Mica Cond. (200 WFF-20%)	.15				
19	8A12565	Tub. Cond. & Strap (.006-1600 V.)	.35				
RESISTORS							
	6B6000	Carbon Resistor (820,000-1/3-20)	.15				
	6B6001	Carbon Resistor (68,000-1/2-20)	.15				
	6B6002	Carbon Resistor (47,000-1/2-20)	.15				
	6B6003	Carbon Resistor (220,000-1/3-20)	.15				
	6B6005	Carbon Resistor (50-1/2-20)	.15				
31	6B6006	Carbon Resistor (2,200-1-20)	.20				

SENSITIVITY AND STAGE GAIN MEASUREMENTS

These stage gain measurements will, if properly used, enable you to localize trouble quickly. They are intended for use with a signal generator that is accurately calibrated in microvolts.

Starting with the second detector - first audio stage, and working back step by step to I.F., Osc.-Mod., R.F. and finally to the antenna terminal, the circuit in which the trouble exists will quickly be determined by evidence of low gain, when signal generator attenuation readings are compared to the normal values as shown in the table.

All stage-gain measurements must be made with the volume control set for full volume. The shielded lead from the signal generator is connected to the top grid terminal of the tube through a .1 MF condenser, with a 500M Ohm resistor connected as a leak resistance between the grid of the tube and the grid cap which has been removed. (See Fig. 1 on Page 1.)

When measuring over-all sensitivity at the antenna terminal, use a 40 MMF condenser in place of the .1 MF. It must be remembered that the figures in the table are average and allowance must be made for variations between two sets of the same general type, due to difference of tube characteristics, etc.

Average Microvolt Input *	Generator Set at	Generator Feeder Connected to	Dummy Antenna Capacity	Leak Resistance	Output Meter Reading **
.25 Volts	400 Cycles	75 Grid	.1 MF	.5 Meg	2.2 Volts
25,000	262 K.C.	78 Grid (I.F.)	.1 MF	.5 Meg	2.2 Volts
700	262 K.C.	6A7 Grid	.1 MF	.5 Meg	2.2 Volts
800	600 K.C.	6A7 Grid	.1 MF	.5 Meg	2.2 Volts
45	600 K.C.	78 Grid (R.F.)	.1 MF	.5 Meg	2.2 Volts
3	600 K.C.	Ant. Lead	40 MMF	None	2.2 Volts

* For one watt output.

** Meter connected across voice coil.

V.C. Resistance - 5 ohms at 400 cycles.

2.2 Volts equals 1 watt output.

VOLTAGE CHART - MODEL 9-29

TUBE	POSITION	PLATE	SCREEN	CATHODE	OSC. PLATE
78 *	RF	185	85	-	-
6A7 *	Osc.-Mod.	185	85	-	100
78 *	IF	185	85	-	-
75	Det.-Avc.	150	-	-2	-
41 **	Output	235	200	-	-
84	Rect.	AC	-	250	-

* Bias -3 V from B stick

** Bias -17 V from B stick

Current - 6.5 Amps. at 6.3 Volts

Maximum power output - 3.5 Watts

All readings from chassis ground with 1000 ohms per volt meter.