NOSTALGIA AIR

Bendix Radio Div.

Model: M-1A	**Chassis:**	**Year:** Pre 1951
Power:	**Circuit:**	**IF:**
Tubes:		
Bands:		

Resources

- Riders 21 (XXI) BENDIX 21-1
- Riders 21 (XXI) BENDIX 21-2
- Riders 21 (XXI) BENDIX 21-3
- Riders 21 (XXI) BENDIX 21-4

BENDIX CAR RADIOS M-1 & M-1A
1949 and Early 1950

General

Bendix Car Radios M-1 and M-1A are six tube superheterodyne receivers with vibrator power supplies and full wave rectifiers. The antenna, radio frequency, and oscillator circuits are inductively tuned, by means of push buttons or the manual tuning control, over a frequency range of 540 to 1610 kilocycles, by means of iron cores.

The On-Off, Volume and Tone Controls are on concentric shafts at the left of the receiver. The Manual Tuning Control is at the right. The Speaker is a separate unit.

TUBE COMPLIMENT

6SK7/GT	R.F. Amplifier	6SQ7/GT	Det., AVC & AF Ampl.
6SA7/GT	Converter	6V6/GT	AF Amplifier
6SK7/GT	I.F. Amplifier	6X5/GT	Rectifier

POWER SUPPLY

The power supply uses a 6X5/GT full wave rectifier tube in conjunction with a four prong full wave primary type vibrator.

ALIGNMENT

Recommended Test Equipment:

Signal Generator - 260 to 1700 KC range. Output from 1 to 100,000 microvolts. Modulation 30% to 400 cycles.

Output meter - 2 watt capability or, P.M. Speaker, for alignment by ear as an alternate.

Dummy Antenna - Constructional circuit included in the rear section of this manual.

General:

Make all alignment adjustments to the receiver with "A" lead connected to a 7.2 volt negative source, and ground the chassis to the positive side of this source. Rotate the volume, tone and sensitivity controls to their maximum clockwise position. Connect the output meter across the speaker voice coil. Use an insulated screw driver for making all adjustments. Use shielded cables for connections between signal generator, dummy antenna, and receiver. For each adjustment, the signal level should be kept as low as possible while still obtaining a reasonable output indication. The signal level should be controlled at the signal generator, and not with the receiver controls. With the sensitivity control turned fully clockwise as instructed above, some of the older type M-1 receivers will have I.F. oscillation during alignment. In these receivers, capacitor C-5 is .1 mfd. Changing the value of this capacitor to .5 mfd will correct this trouble.

1. I.F. Alignment
   (a) Set the signal generator frequency to 262.5 K.C. Connect the signal lead thru a .1 mfd condenser to the receiver antenna connection.
   (b) Turn the receiver manual tuning control for the high frequency end of the dial.
   (c) Adjust the I.F. trimmers "C18B", "C18A", "C15B", and "C15A" for maximum output. Repeat this operation to assure accurate alignment.
   (d) Adjust the I.F. wave trap trimmer, C32, for minimum output.

2. R.F. Alignment

(a) Check to see that the dial pointer stops just off of the left edge of the calibration marker, under the 55, when the manual tuning control has been rotated clockwise to where this pointer stops. If incorrect, the pointer should be bent slightly to correspond to the above instructions.
(b) Set the signal generator to 1610 KC, and connect the signal lead thru the dummy antenna to the receiver antenna socket.
(c) Turn the receiver tuning control until the dial pointer is at the right hand edge of the 16 calibration mark.
(d) Adjust the oscillator trimmer C9 for maximum output.
(e) Set the signal generator to 1400 KC; tune in the signal on the receiver.
(f) Adjust the R.F. trimmer C12 for maximum output.
(g) Adjust the antenna trimmer C1 for maximum output.
(h) Set signal generator to 600 KC and tune in the signal carefully.
(j) Observe the output meter reading.
(k) Turn L6 adjusting screw one turn clockwise. Retune the signal with the tuning control and observe the new output meter reading carefully.
(l) If operation (k) shows an increase in output over (j) continue to turn L6 in single turn clockwise steps, retuning the signal after each turn, and observing the output reading each time. See (n) below.
(m) If operation (k) shows a decrease in output over (j) the direction for turning L6 adjustment must be reversed to counter-clockwise.
(n) Continue the process of adjusting L6 for one turn at a time, retuning the receiver for the greatest output each turn of L6. A peak setting will be reached, at which point the signal can be tuned in for a greater output than at any other setting of L6 adjustment.
(o) Repeat operations (b), (c), (d), (e), (f), and (g).

3. Sensitivity Control Adjustment

(a) Using the dummy antenna, the signal generator should be connected to the receiver as in the R.F. alignment procedure. Make sure the receiver volume control is fully clockwise.
(b) Apply a signal, 30 per cent modulated at 400 cycles, of sufficient strength to produce one watt output, when tuned in on the receiver.
(c) Remove modulation and adjust the sensitivity control R2 for 100 milliwatts of noise, maximum, at the worst point in the band. This will usually be found at the low frequency end of the dial.

4. Alignment With Car Antenna

Withe the antenna fully extended, tune in a weak station near 1400 kilocycles and adjust the antenna trimmer C1 for maximum volume.

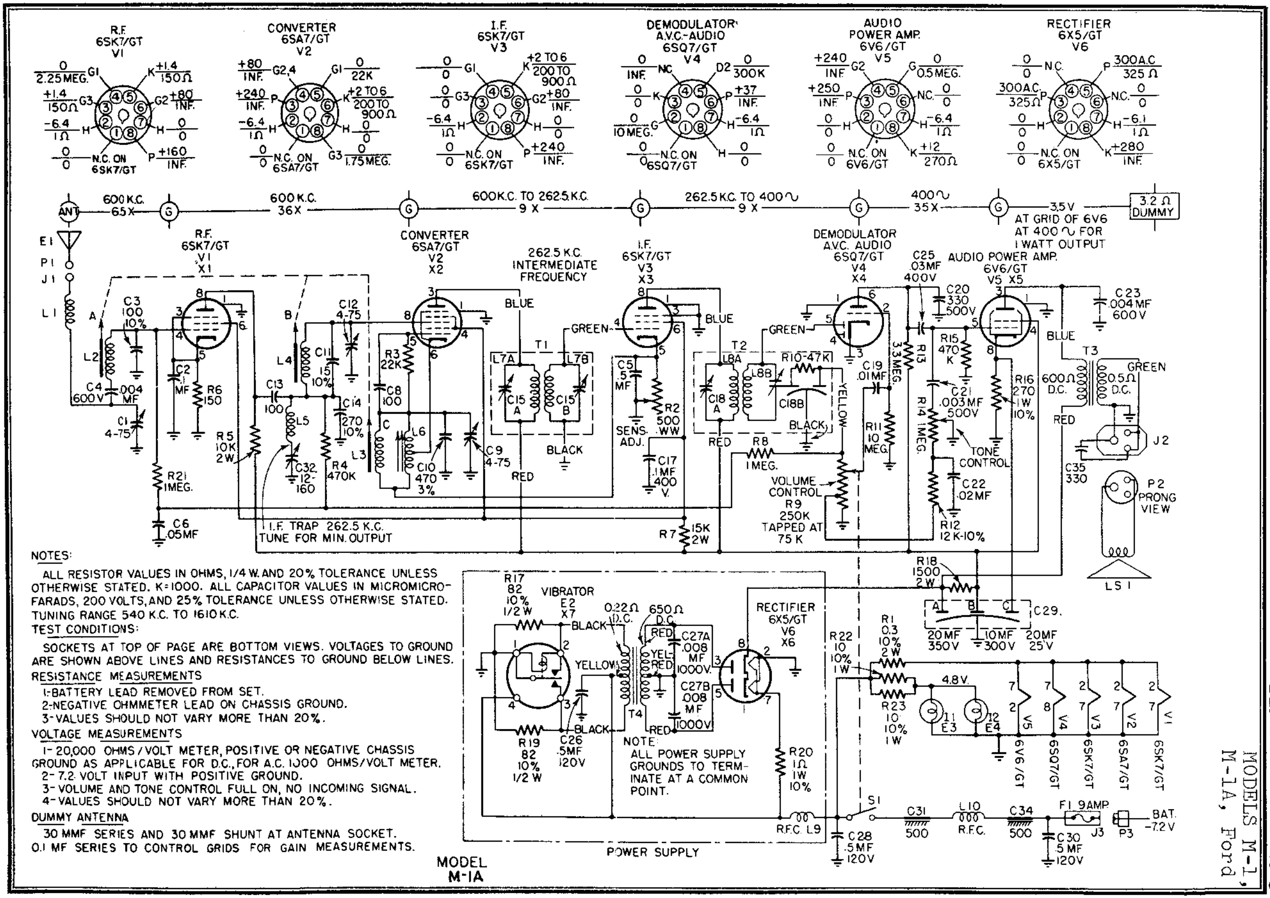
MODEL M-1 SCHEMATIC CIRCUIT

Use the Schematic Circuit for the Model M-1A, which is included in this manual, except that the following differences should be noted:

1) The tube socket showing voltage and resistance measurements for the 6SQ7GT tube should read zero voltage and 300K ohms on Pin #4, for the M-1 model.
2) Sensitivity control, R-2 is 900 ohms in the M-1 model.
3) In the 6SQ7GT tube circuit, pin 4 of this socket connects to pin 5 in the M-1 model.

With the exception of the above differences, the Schematic Circuits for Models M-1 and M-1A are identical to each other.

MODELS M-1, M-1A, Ford



NOTES:

ALL RESISTOR VALUES IN OHMS, 1/4 W. AND 20% TOLERANCE UNLESS OTHERWISE STATED. K=1000. ALL CAPACITOR VALUES IN MICROMICROFARADS, 200 VOLTS, AND 25% TOLERANCE UNLESS OTHERWISE STATED. TUNING RANGE 540 K.C. TO 1610 K.C.

TEST CONDITIONS:

SOCKETS AT TOP OF PAGE ARE BOTTOM VIEWS. VOLTAGES TO GROUND ARE SHOWN ABOVE LINES AND RESISTANCES TO GROUND BELOW LINES.

RESISTANCE MEASUREMENTS

1-BATTERY LEAD REMOVED FROM SET.
2-NEGATIVE OHMMETER LEAD ON CHASSIS GROUND.
3-VALUES SHOULD NOT VARY MORE THAN 20%.

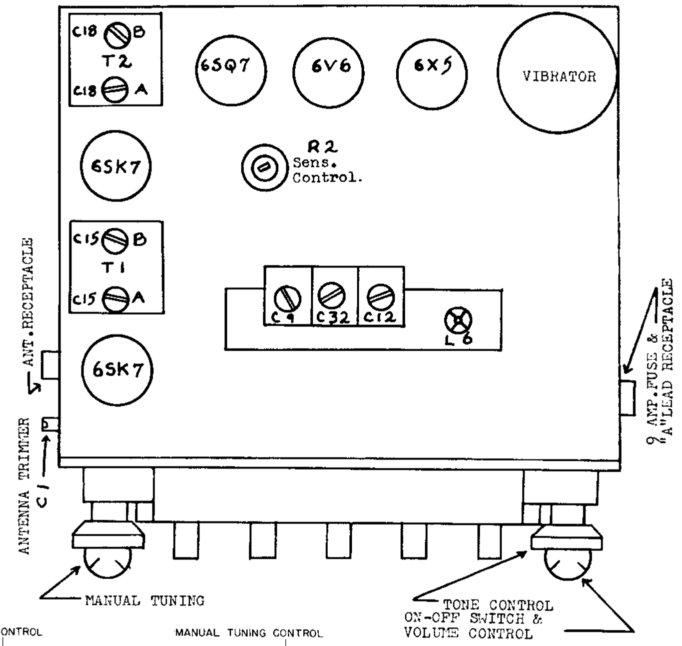
VOLTAGE MEASUREMENTS

1-20,000 OHMS/VOLT METER, POSITIVE OR NEGATIVE CHASSIS GROUND AS APPLICABLE FOR D.C., FOR A.C. 1000 OHMS/VOLT METER.
2-7.2 VOLT INPUT WITH POSITIVE GROUND.
3-VOLUME AND TONE CONTROL FULL ON, NO INCOMING SIGNAL.
4-VALUES SHOULD NOT VARY MORE THAN 20%.

DUMMY ANTENNA

30 MMF SERIES AND 30 MMF SHUNT AT ANTENNA SOCKET.
0.1 MF SERIES TO CONTROL GRIDS FOR GAIN MEASUREMENTS.

LOCATION PLAN
ALIGNMENT TRIMMERS & TUBES



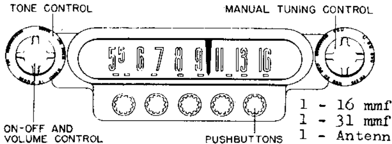


Figure 1—Operating Controls

Material Required

1 - 16 mmf Ceramic Capacitor plus or minus 1 mmf.
1 - 31 mmf Ceramic Capacitor plus or minus 1 mmf.
1 - Antenna Connector, Male, C223183.
3 ft. Shielded Wire.
A shield can, or other material for a shielded housing.

DETAILS FOR CONSTRUCTING DUMMY ANTENNA

The purpose of the dummy antenna is to properly match the output of the signal generator to the receiver input. It should be remembered, however, that the dummy antenna described below antennuates, or reduces, the signal by two. Thus, if the signal generator is feeding 10 microvolts of signal to the dummy antenna, the receiver will be receiving only 5 microvolts of signal from the dummy antenna.