RAYMER

OPERATING INSTRUCTIONS

MODEL 828-10 FM RECEIVER

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS RECEIVER TO RAIN OR MOISTURE.

DESCRIPTION:

The Raymer Model 828-10 is an all solid state monaural FM background music receiver. The receiver consists of a tuner for the 88-108 MHz FM band and a 10 watt RMS audio amplifier.

The unit has a MUSIC OUTPUT JACK and a PRE-AMP OUTPUT jack for connection to an external amplifier as well as a high level AUX/PHONO input jack.

The speaker outputs of the receiver are for 4 or 8 ohms; or 25 volt or 70 volt lines. The Model 828-10 has a variable tone control and incorporates a design which eliminates the use of a circuit breaker.

UNPACKING

The unit is to be removed carefully from the carton and inspected for any possible damage in transit. If there is any evidence of any damage which might have occurred in shipment, immediately notify your supplier, or the transportation company which delivered it. Claims for damage sustained in transit must be made upon the carrier. Save all packing material for inspection by the claim agent who will furnish you with the proper forms and will also give you the necessary instructions for filing a claim.

In addition to the unit the carton should contain a warranty registration card. To insure proper servicing and to protect your rights under the warranty, be sure to fill in the warranty registration card and mail to the factory within 10 days.

INSTALLATION:

Because of its attractive appearance this unit may be placed on a table or a shelf. Although the unit has ample vents for normal ventilation, sufficient space should be allowed around to permit free air flow. DO NOT PLACE it on top of vacuum tube equipment. DO NOT STORE OR OPERATE it in areas where the ambient temperature exceeds 140 degrees Fahrenheit. If installed in a cabinet, ample ventilation must be allowed around the unit.

Plug the AC line cord in any outlet furnishing 105 to 120 volts, 60 cycles AC.

An AC receptacle is located on the back of the chassis to supply power to other components such as phonograph motor, etc. The auxiliary equipment connected to the AC receptacle is controlled by the POWER on-off switch so that turning off the unit turns off all equipment.

CONNECTIONS

All connections are made on the rear panel.

ANTENNA INPUT

For normal FM reception, the short antenna lead supplied with the unit is sufficient for most locations. In the event that the tuner is located in a remote area, an external Dipole antenna will increase the number of distant stations that can be received. This external antenna is to be connected across the terminals marked FM ANT.

AUX/PHONO INPUT

The PHONO input jack enables the unit to amplify program material from a source other than the self-contained radio tuner. This input is high impedance with a maximum sensitivity of one-half volt and will accommodate the output of a ceramic phono cartridge or the output from any preamplifier such as tape, phono, etc. If the source into the PHONO input is from leased telephone lines, a Raymer TM-2 telephone adaptor is required to match the telephone lines to the input.

MUSIC OUTPUT

The MUSIC OUTPUT may be phono or tuner as selected by the switch on the front panel. This output is not affected by the volume control or tone control and may be used to feed this signal to another amplifier or tape recorder.

EXTERNAL AMPLIFIER OUTPUT

The EXT. AMP. jack may be used to connect to an external amplifier to obtain higher power. This output is controlled by both the volume and tone controls. Both the internal and external amplifiers will be controlled simultaneously from the 828-10 when the external unit is connected to this jack.

OUTPUT CONNECTIONS

The speaker(s) or line matching transformers are connected to the screw terminal board located on the rear panel. For short distances any ordinary insulated wire, such as parallel lamp cord, may be used.

The 4 OHM or 8 OHM output is used when connecting directly to the speaker voice coils. When a speaker with an impedance of 8 ohms is connected to the amplifier, use the terminals on the amplifier marked GND and 8Ω. For a 4 ohm speaker or two 8 ohm speakers in parallel, use GND and 4Ω.

The 25 VOLT or 70 VOLT output is used when connecting to speakers which have line matching transformers. Connecting to the 25 volt or 70 volt tap on the unit permits the use of a number of speakers each with its own corresponding line matching transformer, thereby eliminating the necessity of calculating impedances. The tap on the line matching transformer is selected to give the power desired for each speaker. The total of all the power settings should be no greater than the amplifier output rating. If the speaker uses a 25 or 70 volt line transformer, connect the speaker transformer to the terminals marked GND and 25V (or 70V) according to the line desired.

Long lines have an appreciable resistance with resultant power loss. The use of parallel matching transformers on either 25 volt or 70 volt lines is recommended for long distances. In all cases, it is advisable to run as heavy a wire as possible consistent with the requirements. To avoid inducing hum in the system, do not parallel speaker cables with any AC line power cables.

70 volt distribution systems often require the speaker lines to be run in conduit. To determine whether they should be run in conduit check with local city codes for 70 volt system requirements.

OPERATION:

The front panel has three knobs and three slide switches. The functions of the knobs are as indicated. The Volume Control knob is used to adjust the level of the sound of the radio or auxiliary. The Tone Control knob may be turned to the position that is most pleasing to the listener as it affects both the high and low frequency response. The Tuning knob is to select the desired FM station. The Select switch is used to select radio or auxiliary. The Power switch at the lower left is to turn the unit on or off. The slide switch at the lower right is used for AFC defeat.

AFC refers to Automatic Frequency Control and is an electronic means of keeping the receiver properly tuned to an FM broadcast station even when the tuning dial is not precisely set. However when tuning to a weak station which is adjacent to a stronger one the AFC function may tend to lock the receiver on the stronger station. In such a case the AFC switch should be placed in the OFF position. For very precise tuning or selection of a weak station the AFC switch should be placed in the OFF position while tuning. When the station is properly tuned the switch may then be returned to the AFC position to lock the receiver to the desired frequency.

The LOG scale marking on the dial glass is for easy recording of the position of the pointer for any specific station.

WARRANTY

This unit has been very carefully inspected and is warranted to be free from defects in material and workmanship under normal use and service for a period of one year from date of sale to the original purchaser. This Warranty does not extend to any unit which has been subject to abuse, misuse, neglect, accident, improper installation, or alterations. The obligation of Trutone Electronics under this Warranty is limited to the repair of any defect in material or workmanship and/or the replacemnt of any defective part, provided the unit is returned to Trutone Electronics Inc. transportation paid within the year.

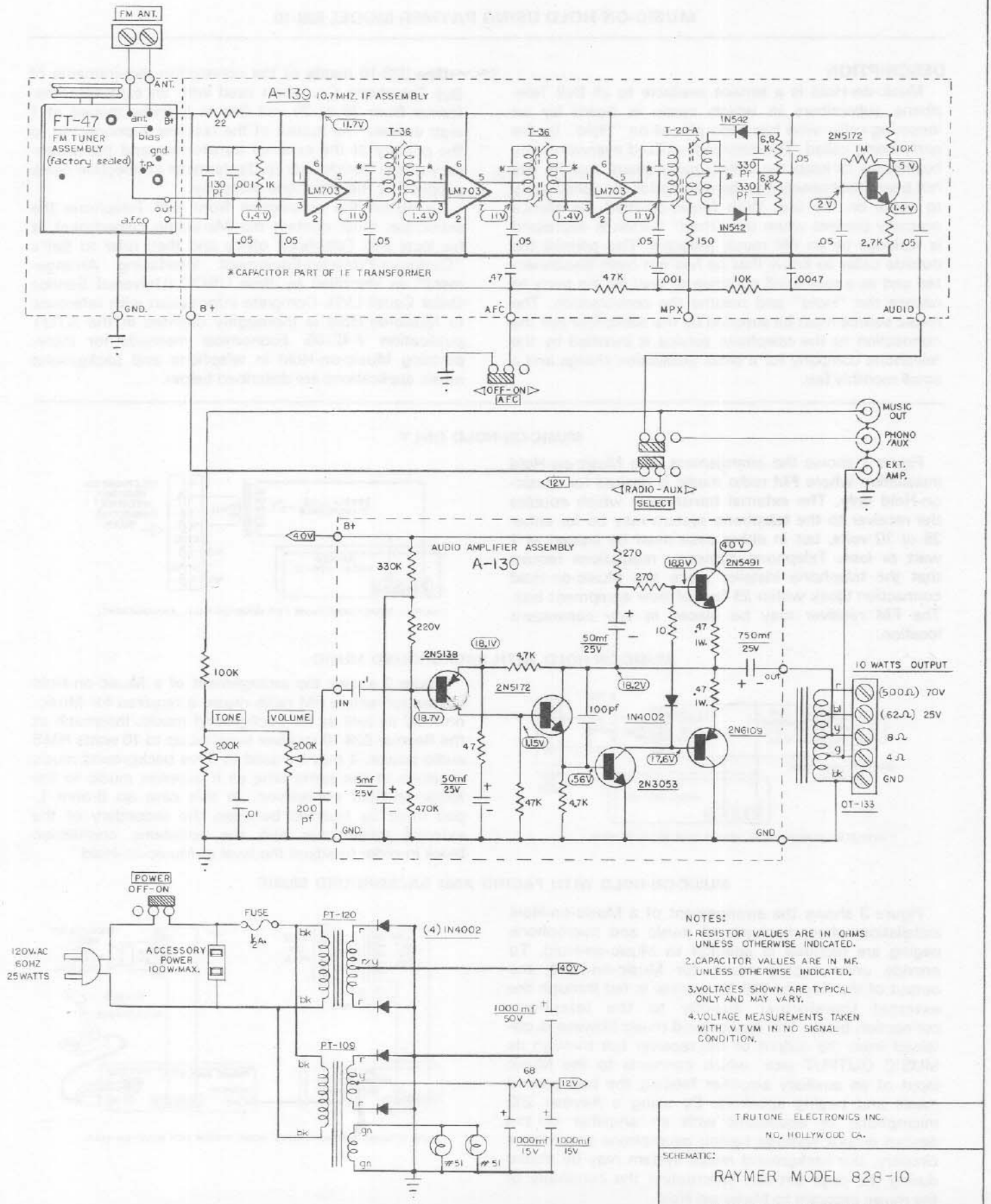
It is recommended that any unit on which service is required be processed through your distributor or installation company wherever possible.

In order for the above Warranty to be in effect the Warranty Registration Card enclosed with the unit must be filled out completely and mailed within ten days of purchase.

This Warranty is expressly in lieu of all other Warranties, expressed or implied, and of all other obligations or liabilities on our part. We neither assume nor authorize any other person to assume for us any other liability in connection with the products manufactured by Trutone Electronics, Inc.

Made in U.S.A. by

TRUTONE ELECTRONICS, INC. 7315 Fulton Avenue • North Hollywood, California 91605 • (213) 875-0423



NOTES:

1. RESISTOR VALUES ARE IN OHMS UNLESS OTHERWISE INDICATED.
2. CAPACITOR VALUES ARE IN MF. UNLESS OTHERWISE INDICATED.
3. VOLTAGES SHOWN ARE TYPICAL ONLY AND MAY VARY.
4. VOLTAGE MEASUREMENTS TAKEN WITH V.T.V.M. IN NO SIGNAL CONDITION.

TRUTONE ELECTRONICS INC.
NO. HOLLYWOOD CA.

SCHEMATIC:

RAYMER MODEL 828-10

10 WATT FM RECEIVER

ENGINEER: KOOGE

DATE: 11/30/76

MUSIC-ON-HOLD USING RAYMER MODEL 828-10

DESCRIPTION

Music-on-Hold is a service available to all Bell Telephone subscribers in which music is heard by an incoming caller who has been placed on "Hold" by the party being called. This service is utilized everywhere by businesses to keep the calling party aware that he has not been disconnected while waiting for the called party to come on the line. With Music-on-Hold the silence normally present when the "Hold" button is depressed is replaced by an FM music program. This permits the outside caller to know that he has not been disconnected and as a result will continue to wait for his party to release the "Hold" and resume the conversation. The music source must be supplied by the subscriber but the connection to the telephone service is installed by the telephone company for a small installation charge and a small monthly fee.

The 828-10 meets all the connection requirements of Bell Telephone Co. when used with an external transformer from 25 or 70 volt line to 8 ohms tapped at 1 watt or less. The output of the receiver is connected to the primary of the external transformer and the secondary of the transformer to the terminal connection block supplied by the telephone company.

To obtain the connection from Bell Telephone the subscriber must contact the Marketing Department at his local Bell Telephone office and then refer to Bell's "Customer-Provided-Equipment Interfacing Arrangement" as identified by their USOC (Universal Service Order Code) LVH. Complete information with reference to Music-on-Hold is thoroughly outlined in the AT&T publication # 42105. Economical methods for incorporating Music-on-Hold in telephone and background music applications are described below.

MUSIC-ON-HOLD ONLY

Figure 1 shows the arrangement of a Music-on-Hold installation where FM radio music is desired for Music-on-Hold only. The external transformer which couples the receiver to the telephone system may be for either 25 or 70 volts, but in either case must be tapped at 1 watt or less. Telephone company regulations require that the telephone installer place the Music-on-Hold connection block within 25 feet of their equipment box. The FM receiver may be placed in any convenient location.

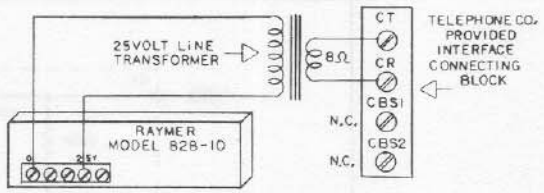


FIGURE 1: BASIC CONNECTIONS FOR MUSIC-ON-HOLD ARRANGEMENT.

MUSIC-ON-HOLD WITH BACKGROUND MUSIC

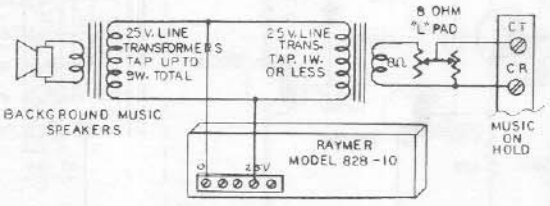


FIGURE 2: BACKGROUND MUSIC SYSTEM WITH MUSIC-ON-HOLD.

Figure 2 shows the arrangement of a Music-on-Hold installation where FM radio music is required for Music-on-Hold as well as for background music. Inasmuch as the Raymer 828-10 receiver supplies up to 10 watts RMS audio power, it may be used to drive background music speakers at the same time as it supplies music to the Music-on-Hold connection. In this case an 8-ohm L-pad must be inserted between the secondary of the external transformer and the telephone connection block in order to adjust the level of Music-on-Hold.

MUSIC-ON-HOLD WITH PAGING AND BACKGROUND MUSIC

Figure 3 shows the arrangement of a Music-on-Hold installation where background music and microphone paging are required in addition to Music-on-Hold. To provide uninterrupted music for Music-on-Hold, the output of the Raymer 828-10 receiver is fed through the external transformer directly to the telephone connection block. The background music likewise is obtained from the output of the receiver but through its MUSIC OUTPUT jack, which connects to the Music input of an auxiliary amplifier feeding the background music and paging speakers. By using a Raymer 202 microphone or equivalent with an amplifier of the desired output wattage having microphone precedence circuitry, the background music system may be muted during the page without interrupting the continuity of the music program to Music-on-Hold.

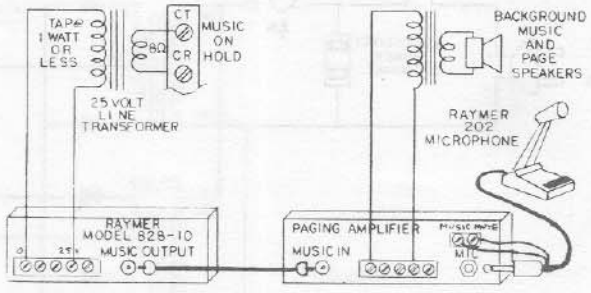


FIGURE 3: PAGING AND BACKGROUND MUSIC SYSTEM WITH MUSIC-ON-HOLD.

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