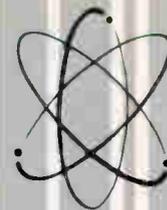




Techni-talk



COMPLETE ELECTRONIC SERVICING INFORMATION

radio • tv • hi-fi

Vol. 13, No. 5

November, 1961

G-E SONIC REMOTE CONTROL SYSTEM I

The RF type remote control system was described in Vol. 12, No. 2 through Vol. 13, No. 1 issues of **TECHNI-TALK**. This system was initially used in the General Electric "U4" and "M5" lines of receivers and was continued in a portion of the "M6" line.

Sonic Remote Control System

A new type remote system was also used in some "M6" receivers. This new system has but two function buttons on a new style remote hand unit. The electrical differences between the two systems are extensive as the former system engaged a modulated RF carrier, while the latter is considered a super-sonic carrier system. This new control system will be discussed in detail and will be referred to as the Sonic Remote Control System. The units which make up this system are pictured in Fig. 1.

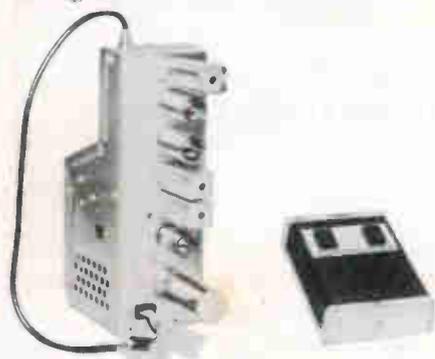


Fig. 1 Units used in General Electric Sonic Remote Control System

The sonic system carrier operates in the range of 40KC with signals produced by a transistorized hand unit. This system is extremely noise resistant to provide immunity to audible noises produced in the area of operation.

While the transmitter unit has only two operational buttons, the operator is still able to perform all the functions of the RF models, that is: turn the TV receiver off or on remotely, change channels and raise or lower the audio volume level to suit his listening pleasure. This latter function is performed by a step

type relay which provides a normal position, high level, mute and low sound level.

The channel change operation provides one position where the TV receiver is turned off. This is normally set at the 13th position of the tuner except on those models where UHF has been included. Models factory shipped with UHF have the off position set at the channel 9 position. This is easily changed by moving the nylon contactor on the OFF selector disk, located at the rear of the tuner as shown in Fig. 2, to an unused channel position and then programming this channel with the front tuning knob as is outlined in the operating instructions.

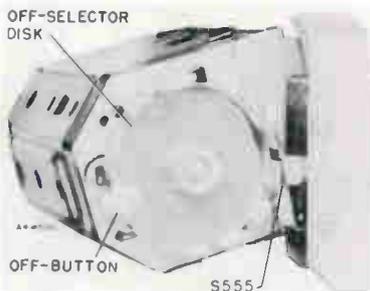


Fig. 2 Off position selector disk

The transmitter hand unit for the Sonic Remote System is a transistorized super-sonic oscillator circuit. This unit is capable of producing two super-sonic signals for activating receiver function relays. No audible sound is produced by this system as there is no modulation added to the carrier.

The new sonic remote transmitter is a simplified transistorized oscillator circuit producing two tones. The higher of these tones is a 41KC signal which operates the channel select and remote off relay. The lower tone is 39KC and is used to key a stepping relay to provide four steps of audio level change.

The simplicity of the circuit is evident when you view the schematic of the transmitter, Fig. 3. The circuitry consists of an oscillator coil L751 which is tuned to the upper frequency of 41KC. When power is applied, switch S752 is closed completing the ground or common side of the line. The double pole switch is used to insure that power is applied to the circuitry after the circuit components are switched to prevent transistor failure. The tank coil is tuned by C753, a 1350uuf capacitor, and is loaded by R754. The oscillator circuit of TR751 is a base biased NPN type transistor.

Pressing S751 shunts C754 into the circuit and lowers the frequency to 39.0KC. The output of the oscillator is fed to a PNP buffer-amplifier circuit TR752 which has its output fed to L752. This coil placed across the transducer has 2 modes of operation which when properly set provide the desired amplification for either frequency. This output circuit has the signal fed between the base and emitter.

R751, the 680 ohm resistor in the emitter of TR751, acts as a

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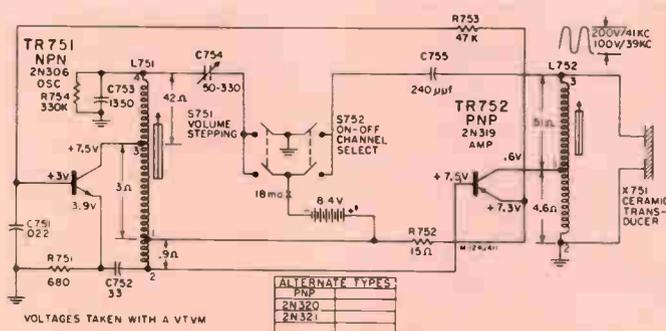


Fig. 3 Schematic diagram of ceramic transducer transmitter used in Sonic Remote Control System



NEW GENERAL ELECTRIC 21FLP4

A NEW TYPE "UNIVERSAL" REPLACEMENT TUBE

General Electric recently announced the 21FLP4, newly developed 21" 90° "Universal" replacement tube.

This one tube type will replace 13 popular industry types:

21ALP4A	21BNP4	21CMP4
21ALP4B	21BTP4	21CVP4
21ATP4	21CBP4	21CWP4
21ATP4A	21CBP4A	
21BAP4	21CBP4B	

In 1960 the 13 types accounted for up to 25% of the replacement picture tube market. Now, you can stock one out of every four replacement picture tube installations, saving you time and enabling you to provide faster customer service.

The G-E 21FLP4 features a unique designed straight line high resolution gun with electrostatic focusing, which does not require an ion trap. This makes the installation easier and faster. The 21FLP4 uses a high temperature phosphor developed by General Electric which provides improved brightness and contrast.

The carton identification has the tube type in large bold print and is followed by a listing of all the types it replaces.

All G-E replacement picture tubes contain all new material and parts except for the envelope, which prior to reuse, has been inspected to the same standards as a new envelope. See your authorized G-E tube distributor for information regarding G-E Black-Daylite picture tubes.


ELECTRONICS
ONE G-E 21FLP4*
PICTURE TUBE
REPLACES
13 TYPES



FILLS 25% OF YOUR REPLACEMENT NEEDS

The General Electric 21FLP4, just released. Here's the only picture tube you need for one out of every four replacements. It replaces 13 tube types. Thirteen replacement tubes you don't have to order—pick up—pay for—or carry in stock to meet your customers' requirements. It's almost like getting a 13-tube inventory in one picture tube! Quick availability for more of your replacement needs.

The General Electric 21FLP4 is a low-voltage electrostatic focus tube which does not require an ion trap magnet. Saves time and work on service calls and in the shop. The General Electric high-resolution electron gun and deep-cushion phosphor screen help provide the long-lasting, brighter picture your customers want.

The General Electric 21FLP4 replaces these 13 tube types:

21ALP4	21BAP4	21CBP4B
21ALP4B	21BNP4	21CMP4
21ATP4	21BTP4	21CVP4
21ATP4A	21CBP4	21CWP4
	21CBP4A	

Get full details on this 21-inch 90-degree "universal" replacement picture tube from your General Electric tube distributor, General Electric Company, Distributor Sales, Electronic Components Division, Room 8238B, Owensboro, Kentucky.

Progress Is Our Most Important Product

GENERAL ELECTRIC

* Re-used Envelope

BENCH NOTES

G-E REMOTE RECEIVERS

I want to commend the boys responsible for the remote controls on the new G.E. TV sets. They are neat pieces of engineering.

On several R.F. remotes I have recently had the same trouble. The sensitive relays would not pull closed when a function button was depressed. The reed relay was working in each case and the actuating voltage was present. In each instance, I found a small piece of steel cutting wedged between the armature and pole piece of the relay. When this was removed the relay was restored to normal operation.

Gerald Chambers
3415 - 25th
Lubbock, Texas

RECTIFIER QUICK CHECK

I have found that when a television set comes into the shop with the complaint of gradual shrinkage of horizontal and vertical sweep during the warm-up, it is usually caused by the power rectifier tube. A simple way to determine this would be to remove and replace the rectifier tube. However, the sets that employ selenium rectifiers become more involved if the particular size of rectifier is not in stock.

It has been my experience that a quick way to check whether a selenium rectifier is bad or not is to place an electric fan blowing toward the rectifier and to observe the picture.

Increase in height and width of picture proves the rectifier is bad. Lack of increase in height and width proves the cause is elsewhere. In most cases the input filter capacitor is at fault.

Christopher E. Leone
Ridge Television Co.
7820 Third Ave.
Brooklyn, N.Y.

SET PROTECTION

Protect burned out V H F tuner coils against high voltage and lightning surges by inserting two fuses in T V antennae lead-in of 1/8 ampere or less rating.

Anthony Tomashunis
826 Winters Avenue
West Hazleton, Pa.

★ ★ ★

Those desiring to have letters published in this column should write the Editor Techni-Talk, Electronic Components Division, General Electric Company, Owensboro, Kentucky. For each such letter selected for publication you will receive \$10.00 worth of General Electric tubes. In the event of duplicate or similar items, selection will be made by the Editor and his decision will be final. The Company shall have the unlimited right without obligation to publish or otherwise use any idea or suggestion sent to this column.

Caution: The ideas and suggestions expressed in this column are those of the individual writers. These ideas and suggestions have not been tried by the General Electric Company and therefore are not endorsed, sponsored or recommended.



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Video Detector, A.G.C. and Video Amplifier	1 5

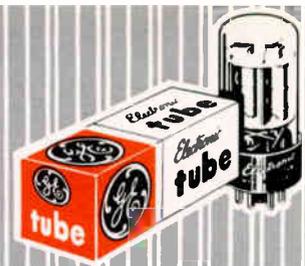
What's Wrong with This Picture?

What's Wrong With This Picture?	11 2
What's Wrong With This Picture?	11 3
What's Wrong With This Picture?	11 4

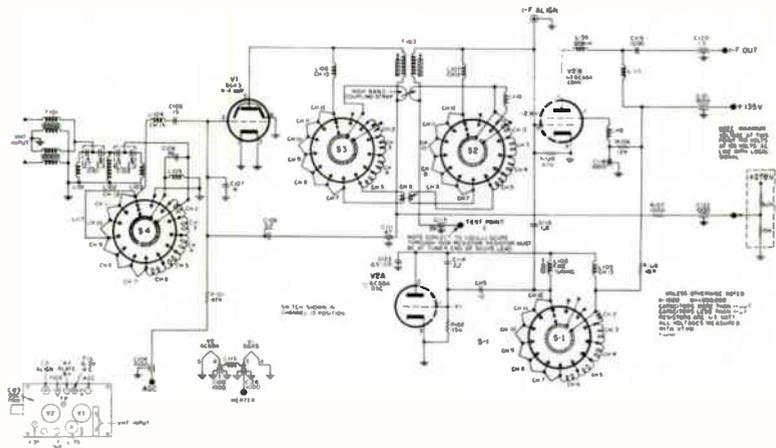
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Tele-Clues

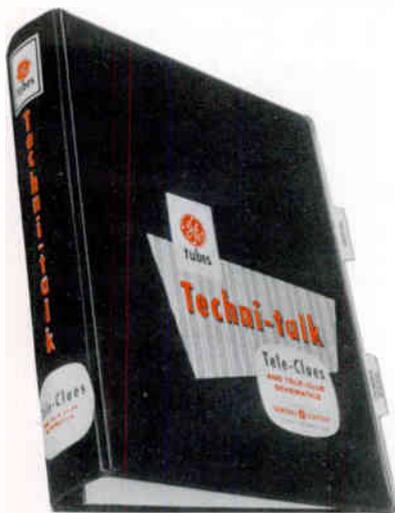
"MW" SCHEMATIC



Schematic diagram for "MW" line of General Electric receivers. These receivers use 19 and 23 inch electrostatic aluminized picture tubes.

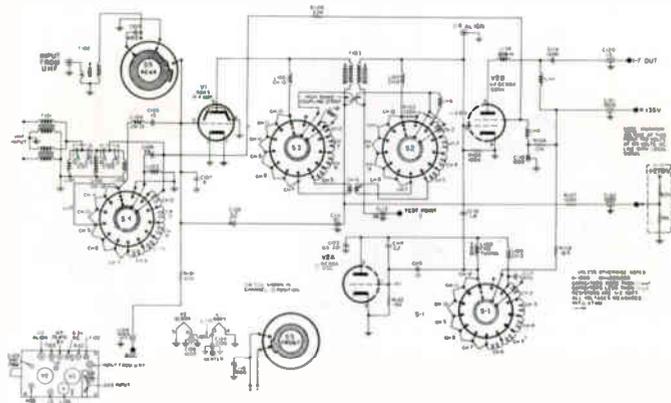


SCHEMATIC DIAGRAM ET86X111 and ET86X113 VHF TUNER

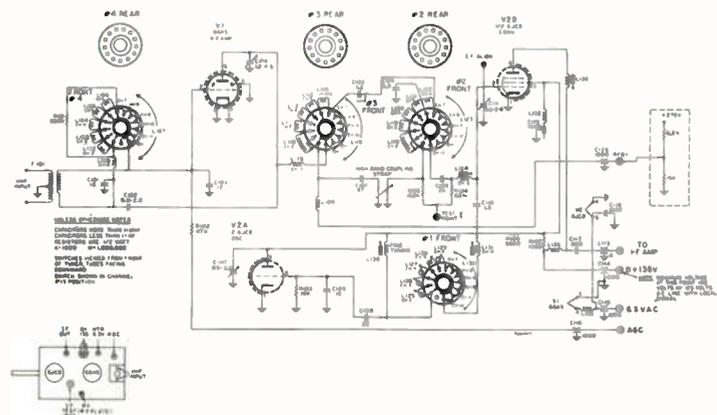


NEW TELE-CLUE BINDER ETR-1095-A

A 3-ring binder complete with all Tele-Clues and Tele-Clue Schematics plus tabbed dividers is now available from your General Electric tube distributor. This binder will also hold over 100 issues of Techni-Talk. Ask your distributor for ETR-1095-A or use order coupon on page 9.

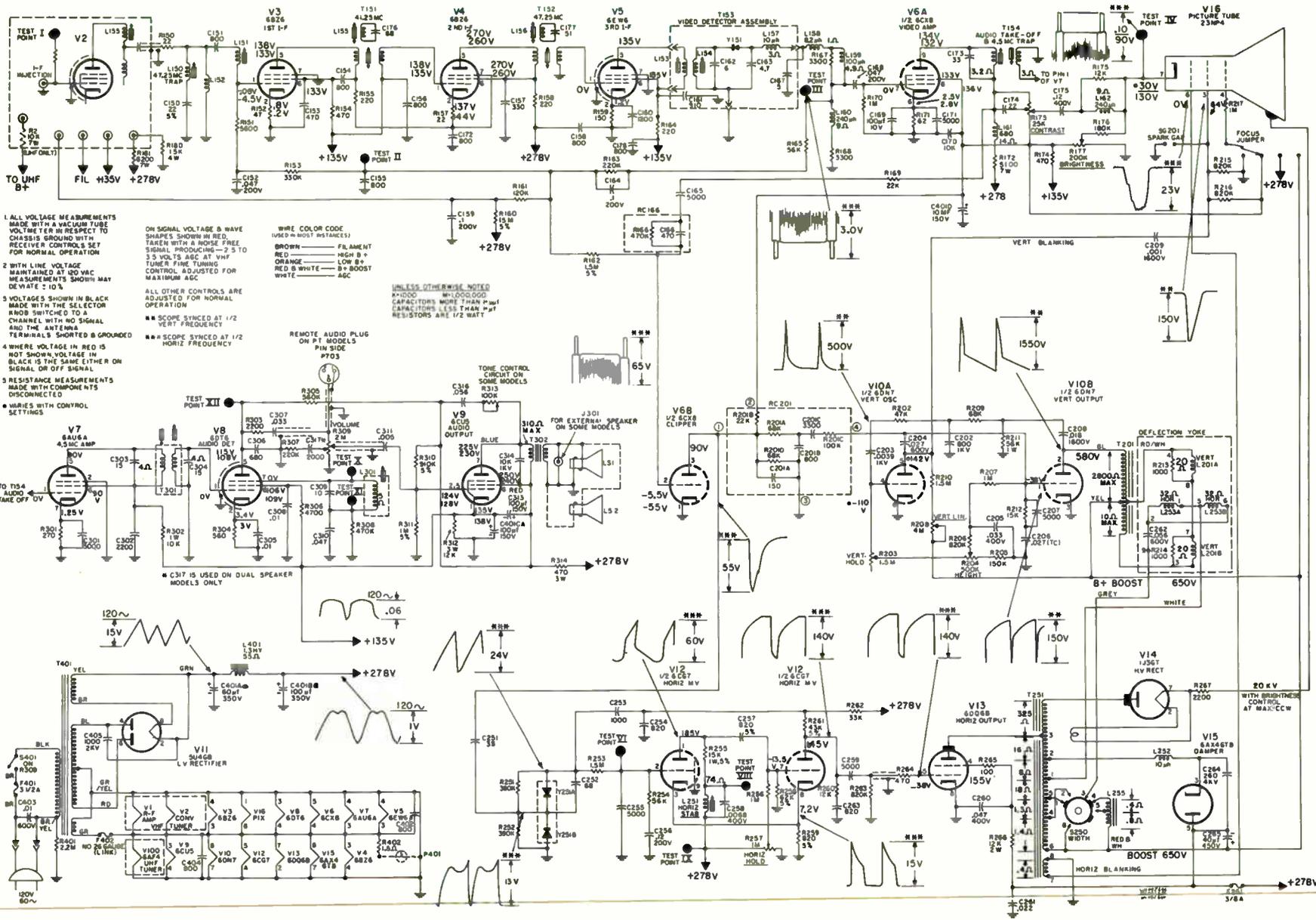


SCHEMATIC DIAGRAM ET86X115 and ET86X117 VHF/UHF TUNER



SCHEMATIC DIAGRAM ET86X112 and ET86X114 VHF TUNER

23 INCH "MW" SCHEMATIC WITH VOLTAGES AND WAVESHAPES



- 1. ALL VOLTAGE MEASUREMENTS MADE WITH A VACUUM TUBE VOLTAHEIR IN RESPECT TO CHASSIS GROUND WITH RECEIVER CONTROLS SET FOR NORMAL OPERATION
- 2. WITH LINE VOLTAGE MAINTAINED AT 120 VAC MEASUREMENTS SHOWN MAY DEVIATE ± 10%
- 3. VOLTAGES SHOWN IN BLACK MADE WITH THE SELECTOR KNOB SWITCHED TO A CHANNEL WITH NO SIGNAL AND THE ANTENNA TERMINALS SHORTED & GROUNDED
- 4. WHERE VOLTAGE IN RED IS NOT SHOWN, VOLTAGE IN BLACK IS THE SAME EITHER ON SIGNAL OR OFF SIGNAL
- 5. RESISTANCE MEASUREMENTS MADE WITH COMPONENTS DISCONNECTED
- 6. VARIES WITH CONTROL SETTINGS

ON SIGNAL VOLTAGE & WAVE SHAPES SHOWN IN RED, TAKEN WITH A NOISE FREE SIGNAL PRODUCING -2.5 TO 3.5 VOLTS SEC AT 1/2 TUNER FINE TUNING CONTROL, ADJUSTED FOR MAXIMUM ACC.

ALL OTHER CONTROLS ARE ADJUSTED FOR NORMAL OPERATION

*** SCORE SYNCED AT 1/2 VERT. FREQUENCY

*** SCORE SYNCED AT 1/2 HORIZ. FREQUENCY

WIRE COLOR CODE (USED IN MOST INSTANCES)

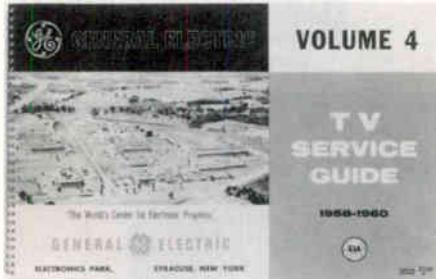
BROWN — FILAMENT
 RED — HIGH B+
 ORANGE — LOW B+
 RED & WHITE — B+ BOOST
 WHITE — ACC

UNLESS OTHERWISE NOTED
 R=1000 Ω M=1,000,000 Ω
 CAPACITORS MORE THAN 1 μF
 CAPACITORS LESS THAN 1 μF
 RESISTORS ARE 1/2 WATT

TELEVISION

New TV Service Guide, Vol. 4

The new TV Service Guide Volume 4 is now available from General Electric tube distributors. This volume covers from 1958 to 1960 and includes M4, M5, M6, U3, U4 and U5 series receivers.



Similar to Volumes 1, 2, and 3, Volume 4 includes such features as a photo index for quick set identification; schematic diagrams of chassis, VHF and UHF tuners; a complete replacement parts list; electrical components and main chassis diagrams describing tube and trimmer locations and VHF and UHF tuner photos with component locations clearly indicated.

All four volumes are available from G-E tube distributors. If your distributor is unable to supply you, use order coupon on this page.

RADIO

New Radio Service Guide



The 1946 to 1961 Radio Service Guide combines all the information of earlier volumes, and updates the coverage to 1961. In addition, photos of every model listed have been added. Here's what this convenient, one-step reference source will mean to you in your service shop:

- Quick, easy identification of unknown models from photos
- Complete schematic diagrams for all post-war models
- Alignment procedures outlined
- Complete parts lists with parts description, and G-E catalog number

Ask your G-E Distributor for ETR-2975 or use handy order coupon on this page.

G-E Sonic Remote Control System I

Continued from Page 1

limiting protection resistor while R752 provides emitter stabilization for TR752.

A standard 8.4V transistor radio battery provides power for the transmitter. A total drain of 22 ma is the normal load with about 15 ma being used by the output section. One indication of no oscillation is low battery drain, when measured by a low scale milliammeter.

The transducer employed is a ceramic type similar to that used in ceramic cartridges. Each unit is tuned to 40.0 KC for best output. Close examination of this unit will show that the transducer employed by the transmitter is identical to that used in the receiver except for physical size of the case and the fact that the unit used in the transmitter is wired and soldered into the circuit while the receiver unit has a phono socket for plug-in connection.

A voltage impressed between the two silvered surfaces causes the wafer to bend and when this voltage is part of an AC waveform the unit vibrates at the desired frequency. When used as a pick up, the reverse is true; that is, the mechanical vibrations cause a voltage to be produced across the two silvered surfaces.

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Chicago 41, Illinois

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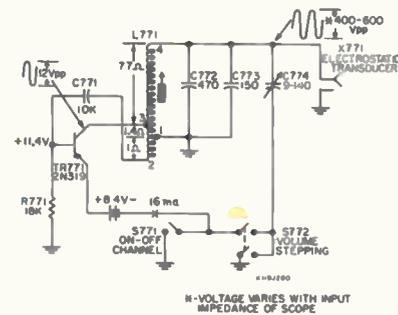


Fig. 4 Schematic diagram of electrostatic transducer transmitter used in Sonic Remote Control System

A second type transmitter is also used in some "M 6" receivers. Basically the operation of this unit, shown schematically in Fig. 4, is the same as Fig. 3. The principal differences include the use of a single transistor and an electrostatic transducer. Since the voltage output of the electrostatic transducer is higher the amplification provided by the second transistor is not required.

One extra note on service to be emphasized is that often low range is a direct indication of a weak battery. Alignment for the transmitter will be covered in a later issue.

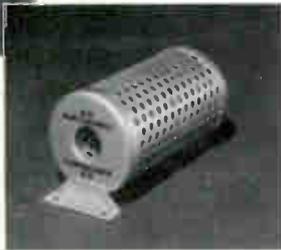
The Sonic Remote Receiver will be described in the next issue.

TWO NEW G-E SERVICE AIDS

Soldering Iron Holder ETR-2790



ETR-2790 on bench edge



ETR-2790 on bench top

The new General Electric Soldering Iron Holder is designed to rest on a flat surface or to be mounted on the edge of a service bench. This holder will accommodate soldering irons up to $\frac{3}{4}$ inch in diameter.

If you use a soldering iron you need a holder that will protect your

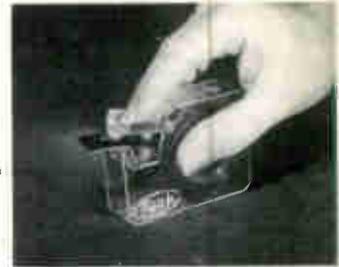
hands, wires, diagrams and tools from burns. Since this soldering iron holder completely covers the tip, it provides adequate protection for the user. The General Electric Soldering Iron Holder can be mounted vertically on the service bench. This places the iron *off the working area* but still readily available. It can also be used in a horizontal position.

The Soldering Iron Holder is made of heavy gauge perforated metal with a cadmium aluminum finish which resists heat discoloration. Holes in both the inside and outside cylinders provide maximum air circulation.

Ask your G-E tube distributor for ETR-2790 or use the handy order coupon on page 9.

Vinyl Electric Tape and Dispenser ETR-2791

Here is a real time saver when using vinyl electric tape. Since this type of tape does not tear easily, it is usually necessary to use a knife or cutting pliers. When using the General Electric tape dispenser the cutter is built-in and extra tools are not required.



Built-in cutter speeds work



ETR-2791 is convenient

Each dispenser contains 300 inches of $\frac{5}{8}$ inch vinyl tape with a dielectric rating of 7000 volts. This high quality tape will give both electrical and mechanical protection when used for splicing or insulating wires or holding wire assemblies in place.

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Techni-talk



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Nov., 1961

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