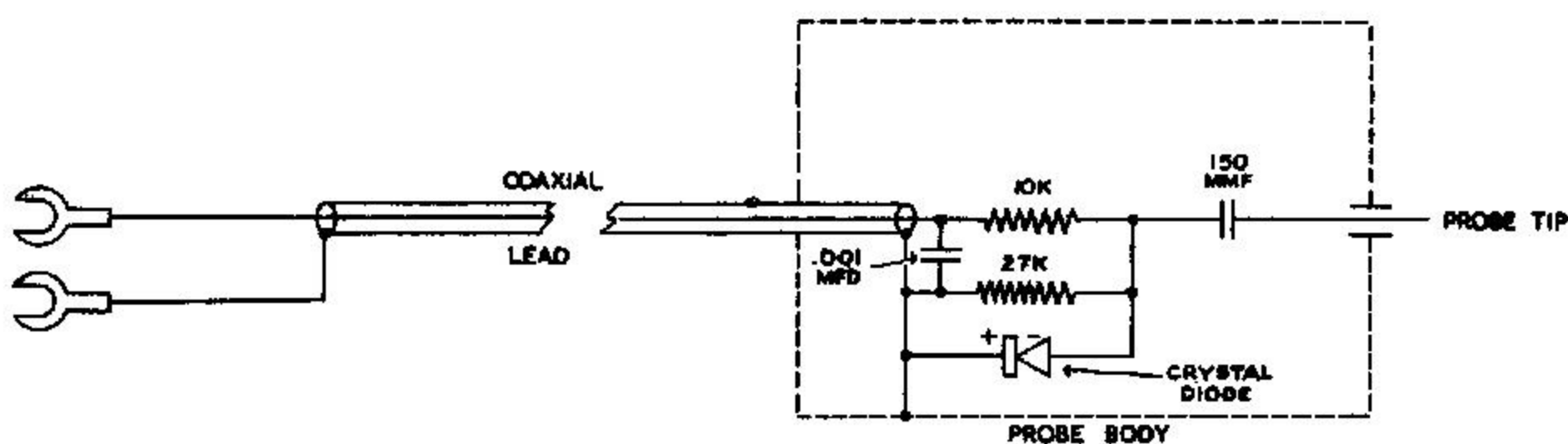
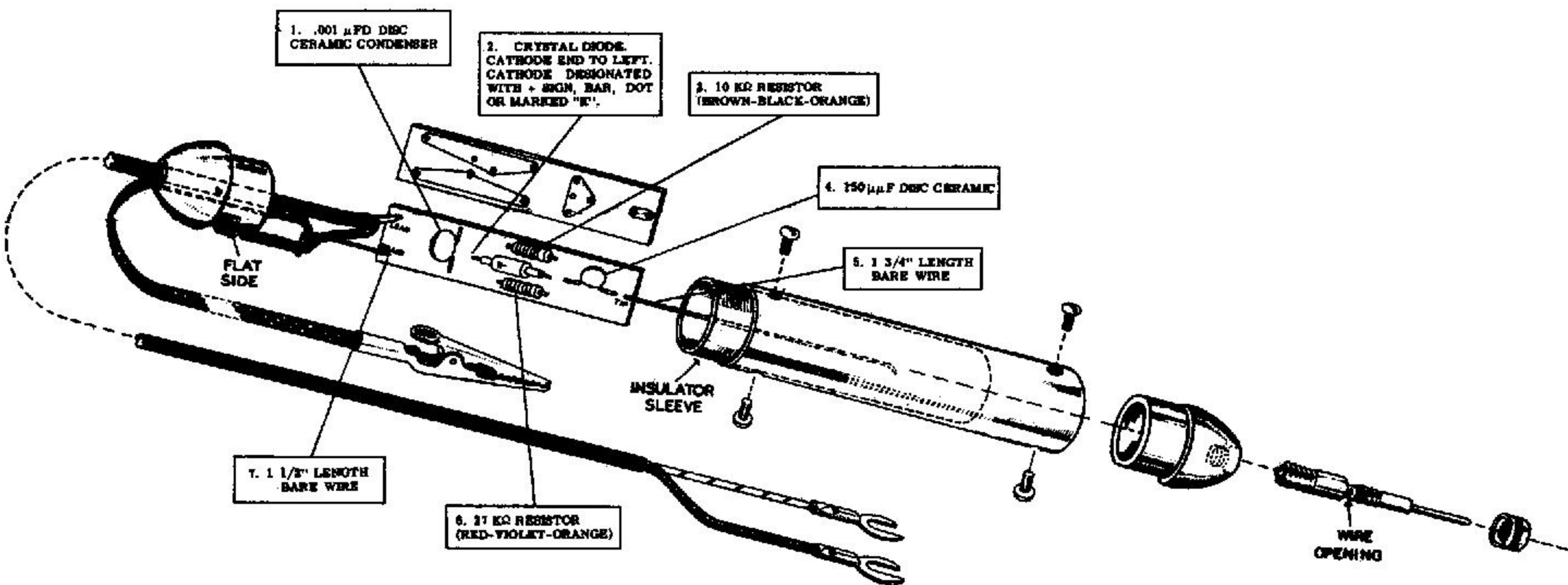


## HEATHKIT DEMODULATOR PROBE #337-C

The #337-C Demodulator Probe greatly extends the usefulness of any oscilloscope. It provides a means of showing modulation envelopes of RF or IF carriers as found in radio and television receivers. Thus the oscilloscope can be used as a signal tracer, a gain analyzer and an alignment indicator. Many other uses will become evident as the user becomes more familiar with the characteristics of the probe and oscilloscope combination.

A well shielded probe with the detecting elements contained in the housing is necessary for satisfactory indications at high RF frequencies. The Heathkit #337-C Demodulator Probe meets these requirements. Input leads are extremely short in order to eliminate extraneous signal pickup which can give false readings. The metal probe housing is grounded to prevent hand capacity effects from causing deflection of the trace. Etched circuit wiring cuts down circuit capacity, improving high frequency performance.

The input capacitor is rated at 500 volts DC and the probe should not be applied to circuits where DC voltages higher than this are found. AC or RF voltages in excess of 30 volts RMS should not be measured as damage to the crystal diode may result. However, the probe can be connected to high voltage points in a unit, such as the plate of a tube, as long as the DC voltage present does not exceed the 500 volt DC limit.



DEMOMULATOR PROBE 337-C

## PROBE CONSTRUCTION

**NOTE: ALL GUARANTEES ARE VOIDED AND WE WILL NOT REPAIR OR SERVICE INSTRUMENTS IN WHICH ACID CORE SOLDER OR PASTE FLUXES HAVE BEEN USED. WHEN IN DOUBT ABOUT SOLDER, IT IS RECOMMENDED THAT A NEW ROLL PLAINLY MARKED "ROSIN CORE RADIO SOLDER" BE PURCHASED.**

The pictorial clearly shows assembly detail of the probe and etched circuit board. Begin construction by mounting the components on the circuit board in the numbered sequence shown on the pictorial. All parts will mount on the unmarked side of the board, with their leads coming out on the etched side. Generally, it is best to mount all components before soldering, bending the leads over slightly to lock the parts in place. After all parts are secured, the board should be turned over and each lead soldered at the point where it comes through with a 25 or 50 watt soldering iron. After soldering, all leads should be clipped off.

For best soldering results, a 25 to 50 watt iron is recommended. The tip should be clean and well tinned in order to obtain a quick, clean solder joint. Hold the tip of the iron at the junction of the component lead and the etched board conductor, and apply good quality rosin core solder at the same point until a good connection is obtained between the two parts. When all parts are clean, the connection can be made very quickly, preventing heat damage to resistors and condensers. In order to protect crystal diodes, a clamp, needle nosed pliers or some other type of heat barrier should be clamped on the diode lead between the diode and connection, on the opposite side of the board from the connection.

Place the length of flat braid and the shielded cable through the black probe end. Remove 1" of black outer insulation. Push the braid back until a bulge develops near the end of the outer insulation. Bend the end over, poke a hole in the shield braid and pull center conductor through as shown. Bend the flat braid and shield braid back together over the flat portion of the probe end and solder together. ~~Make~~ Make sure that the two braids are as flat as possible or it will be difficult to install the probe body.

Fit the insulator strip tight against the probe end and solder the shield lead coming from the circuit board to the two braids near the center conductor. Cut the center conductor to a length sufficient to reach the hole marked "lead." Strip away 1/8" of insulation and solder the center conductor at this point. Cut off all excess wire at this end.

Prepare the probe body by inserting the large sleeve. Slip the entire assembly over the circuit board and rear probe end and secure with two self-tapping screws. Install the phone tip in the red probe end and remove the collar. Insert this end into the probe body, making sure that the lead from the circuit board tip appears through the hole at the side of the tip. Secure with the remaining self-tapping screws. Wrap the wire around the tip in the space provided and reinstall the collar. Solder an alligator clip to the end of the flat braid.

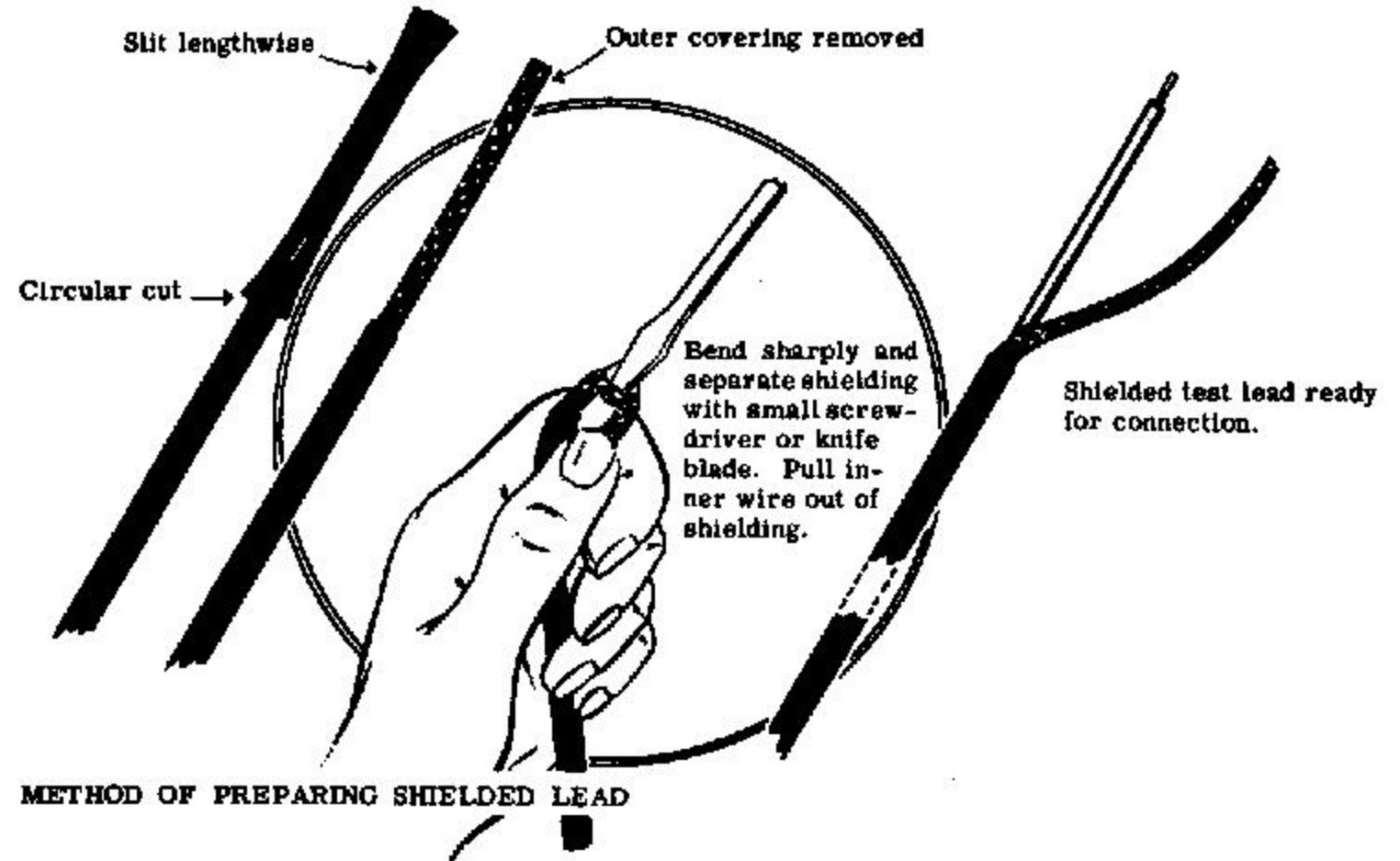
At the opposite end of the cable, strip away 3" of black outer insulation. Prepare as before. Solder one spade lug to the shield braid and the other to the end of the center conductor. This completes the assembly of the Demodulator Probe.

### USE OF THE PROBE

Standard RF signal tracing techniques can be observed using the oscilloscope and Demodulator Probe. RF and IF signals can be traced from the second detector of the unit in question back to the mixer and antenna circuits. The probe can be applied to the grid and plate of each stage without the necessity of using isolation capacitors, etc. It must be remembered that the sensitivity of the probe is limited by the characteristics of the oscilloscope and it will be difficult to obtain adequate indications in low level circuits. However, strong signals will usually be evident from the grid of the first IF stage to the second detector. Indications in the first stages may require the use of a signal generator to provide adequate signal level. Television sweep alignment procedures are made easier by use of the probe, for it is possible to check waveforms at different points in the IF circuits as well as the overall bandpass characteristics in tuners and boosters.

## SPECIFICATIONS

All prices are subject to change without notice. The Heath Company reserves the right to discontinue instruments and to change specifications at any time without incurring any obligation to incorporate new features in instruments previously sold.



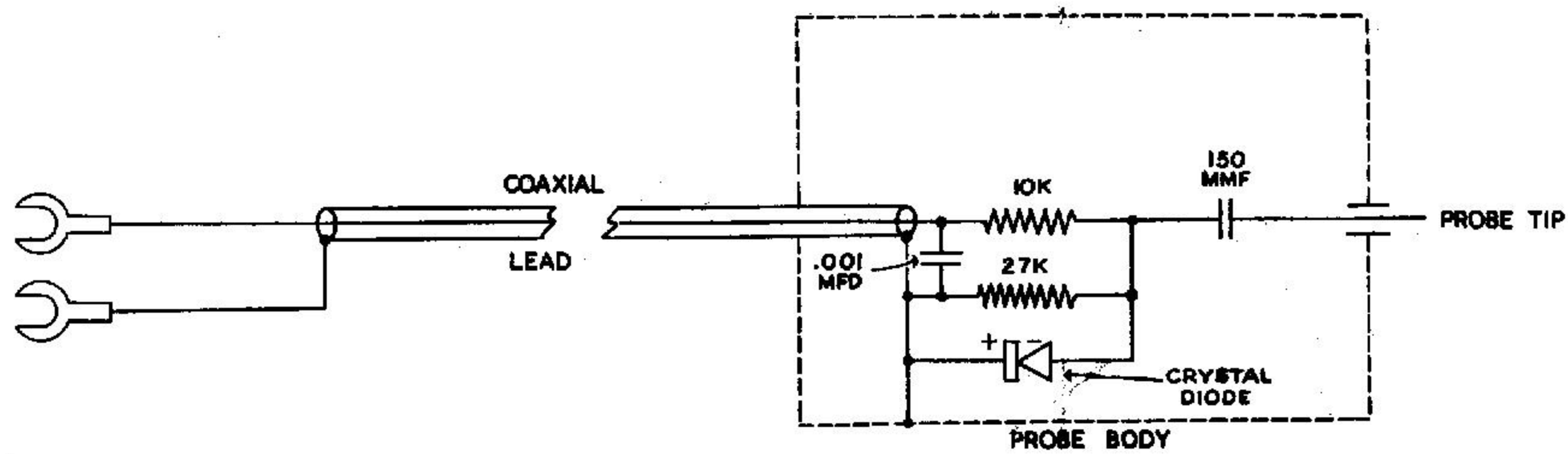
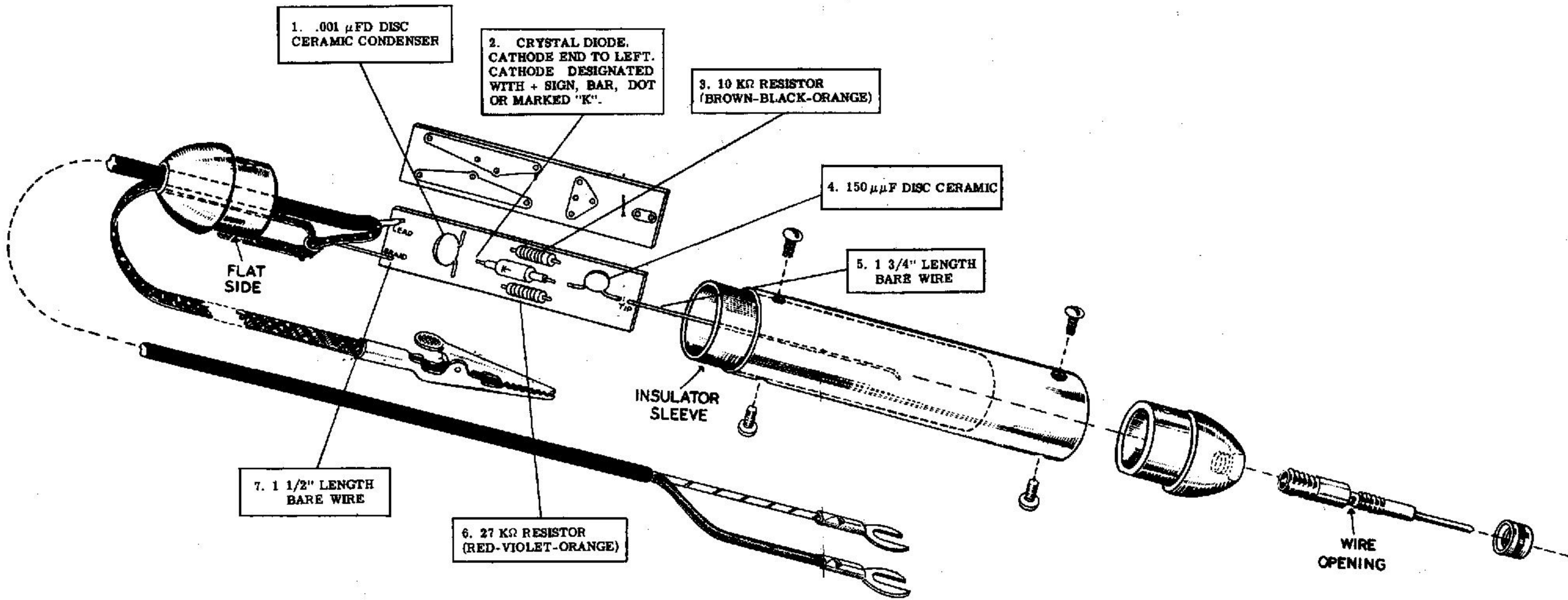
## WARRANTY

The Heath Company limits its warranty of parts supplied with any kit (except tubes, meters and rectifiers, where the original manufacturer's guarantee only applies) to a period of three (3) months from the date of purchase. Replacement will be made only when said part is returned postpaid, with prior permission and in the judgment of the Heath Company was defective at the time of sale. This warranty does not extend to any Heathkits which have been subjected to misuse, neglect, accident and improper installation or applications. Material supplied with a kit shall not be considered as defective, even though not in exact accordance with specifications, if it substantially fulfills performance requirements. This warranty is not transferable and applies only to the original purchaser. This warranty is in lieu of all other warranties and the Heath Company neither assumes nor authorizes any other person to assume for them any other liability in connection with the sale of Heathkits.

The assembler is urged to follow the instructions exactly as provided. The Heath Company assumes no responsibility or liability for any damages or injuries sustained in the assembly of the device or in the operation of the completed instrument.

HEATH COMPANY  
Benton Harbor, Michigan

<u>PART No.</u>	<u>PARTS Per Kit</u>	<u>DESCRIPTION</u>
1-20	1	10 K $\Omega$ resistor
1-23	1	27 K $\Omega$ resistor
21-11	1	150 $\mu\mu\text{f}$ condenser
21-14	1	.001 $\mu\text{fd}$ condenser
56-2	1	Crystal diode
70-4	1	Acetate insulator sleeve
85-3	1	Etched circuit board
250-1	4	Self-tapping screw
259-7	2	Spade lug
260-1	1	Alligator clip
340-2	1	length Bare wire
343-2	1	length Shielded test lead
345-1	1	length Flat braid
390-13	1	Label
459-M2	1	Red probe tip end (tapped)
459-M3	1	Black probe tip end (not tapped)
476-M8	1	Aluminum probe body
477-3	1	Solderless phone tip
595-97	1	Instruction sheet



DEMODULATOR PROBE 337-C