instructions

FOR THE

HEATH

OSCILLOSCOPE PROBE

MODEL PKW-101

The Heath Model PKW-101 Oscilloscope Probe is a high impedance (low capacitance), isolating type probe.

This Probe can be used to examine high frequency waveforms without distorting the waveform or loading the circuit, and it can also be used in any other application where a high impedance probe is desired.

A trimmer capacitor adjustment compensates for the internal capacitance in the probe and probe cable and, at the same time, matches the Probe to the particular input capacitance of the oscilloscope. The Probe was designed for optimum performance when used with any oscilloscope having a 1 megohm input resistance shunted by up to a maximum of 40 pF. The special features of this Probe make possible a true waveform representation on the oscilloscope.

SPECIFICATIONS

Input Resistance	10 Ω
Oscilloscope Input Capacitance Range	Up to 40 pF.
Connector	BNC.
Maximum Voltage	600 Vdc or 600 Vac peak-to-peak.
Attenuation	10:1 (with oscilloscope having 1 MΩ input resistance).
Attenuation Accuracy	±3%.
Frequency Range	DC to 30 MHz.

HEATH COMPANY
BENTON HARBOR, MICHIGAN 49022

595-1270

OPERATION

The hook on the outer probe tip is exposed by pulling back on the spring-loaded portion of the tip. This feature allows you to attach the hook to a test point so both hands can be used to make adjustments while observing waveforms.

As shown in Figure 1, the inner probe tip is available by removing the outer probe tip. This tip is a fine point for working in close areas. For hard-to-reach test points, a stiff wire clamped under the outer hook probe may be used as a probe extension.

CAUTION: Do not use the Probe in circuits where 600 volts dc or 600 volts ac peak-to-peak may be present.

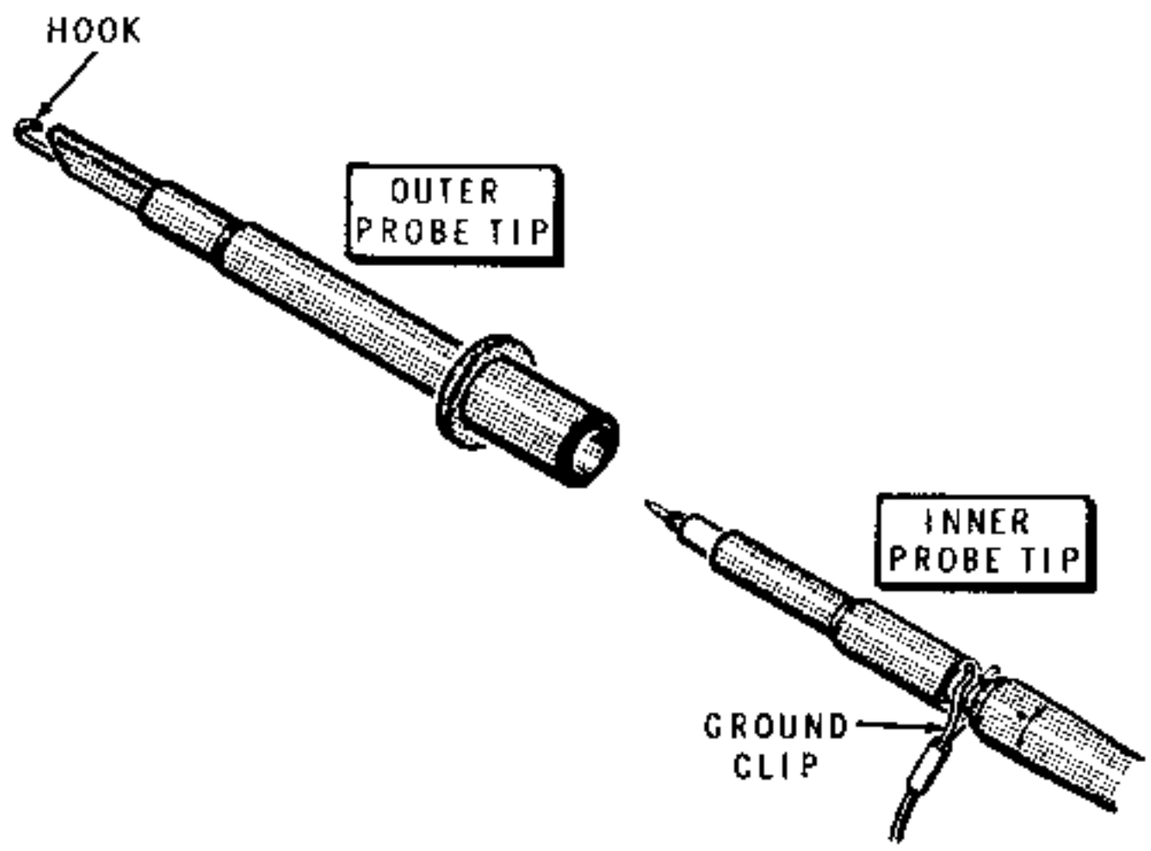


Figure 1

TRIMMER CAPACITOR ADJUSTMENT

To adjust the trimmer capacitor for using the Probe with a particular oscilloscope, refer to Figure 2 and connect the pod to the oscilloscope and the outer probe hook to the output of a square-wave signal generator, such as the Heath Sine-Square Audio Generator. Connect the Ground Clip assembly to the ground terminal of the generator. Set the generator for a 1 kHz square-wave output.

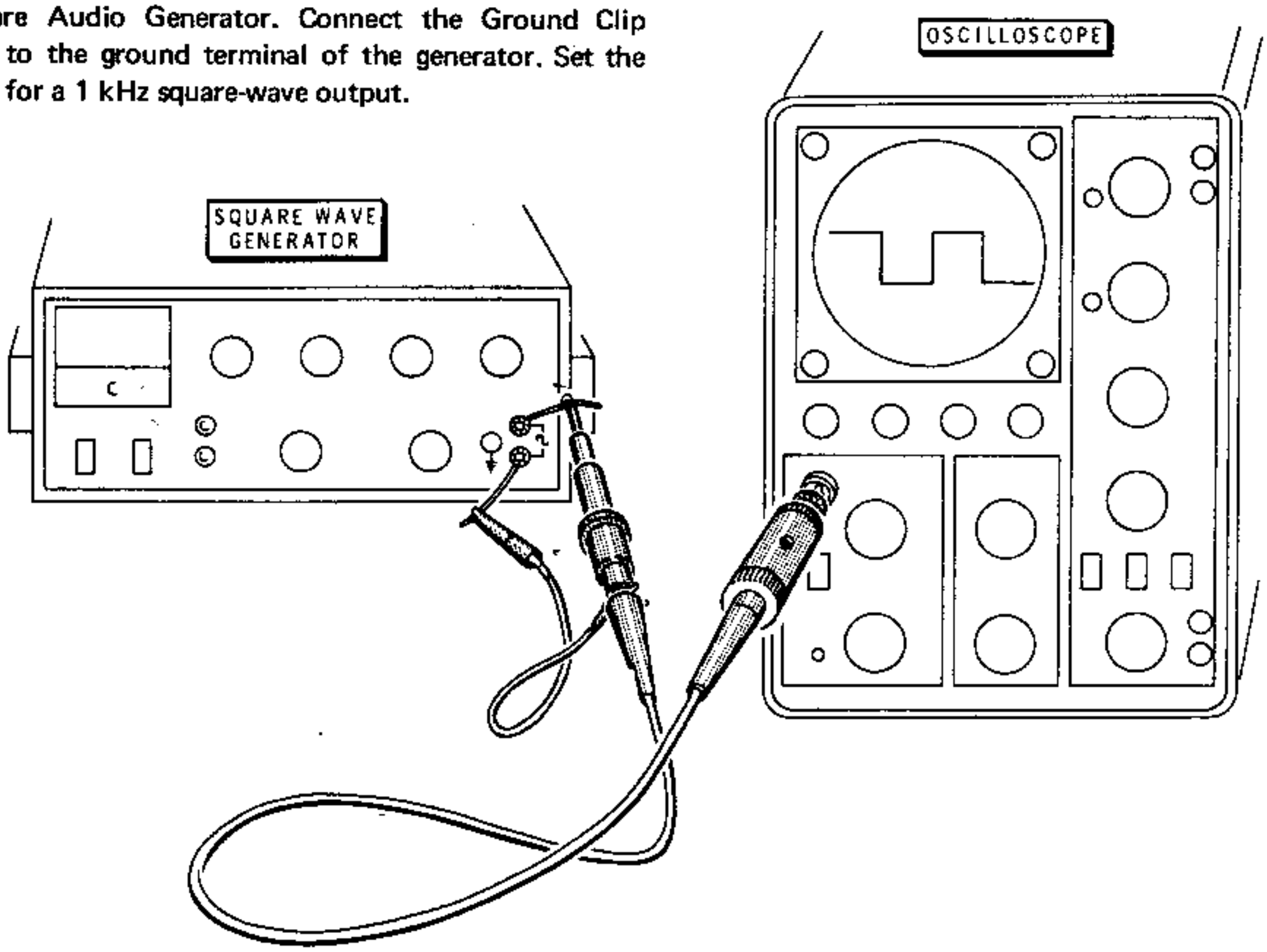
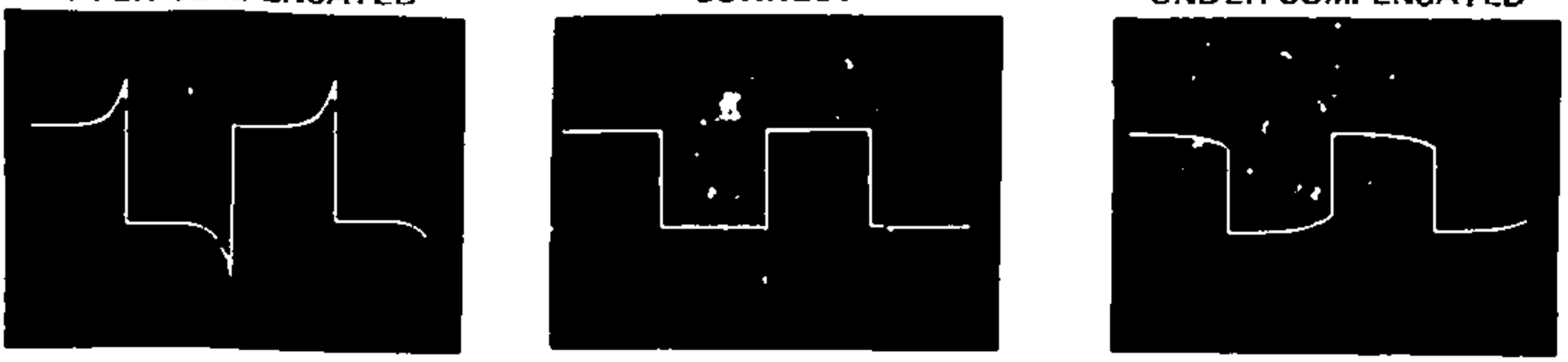


Figure 2



The trimmer capacitor adjusting screw is accessible through a small hole in the circuit shield (on the pod), as shown in Figure 3. Using a nonmetallic alignment tool, turn the trimmer capacitor so the over-compensated, correct, and under-compensated waveforms shown in Figure 3 may be observed in succession on the oscilloscope. Set the trimmer capacitor to obtain the correct waveform.

NOTE: If a nonmetallic alignment tool is not available, use a small, narrow-blade screwdriver with an insulated handle. Turn the trimmer screw while observing the waveform on the oscilloscope. When the waveshape is nearly correct, remove the screwdriver. If the waveshape changes when you remove the screwdriver, turn the trimmer screw slightly. Remove the screwdriver and again observe the waveform. Repeat this process until the correct waveform is obtained after the screwdriver is removed.

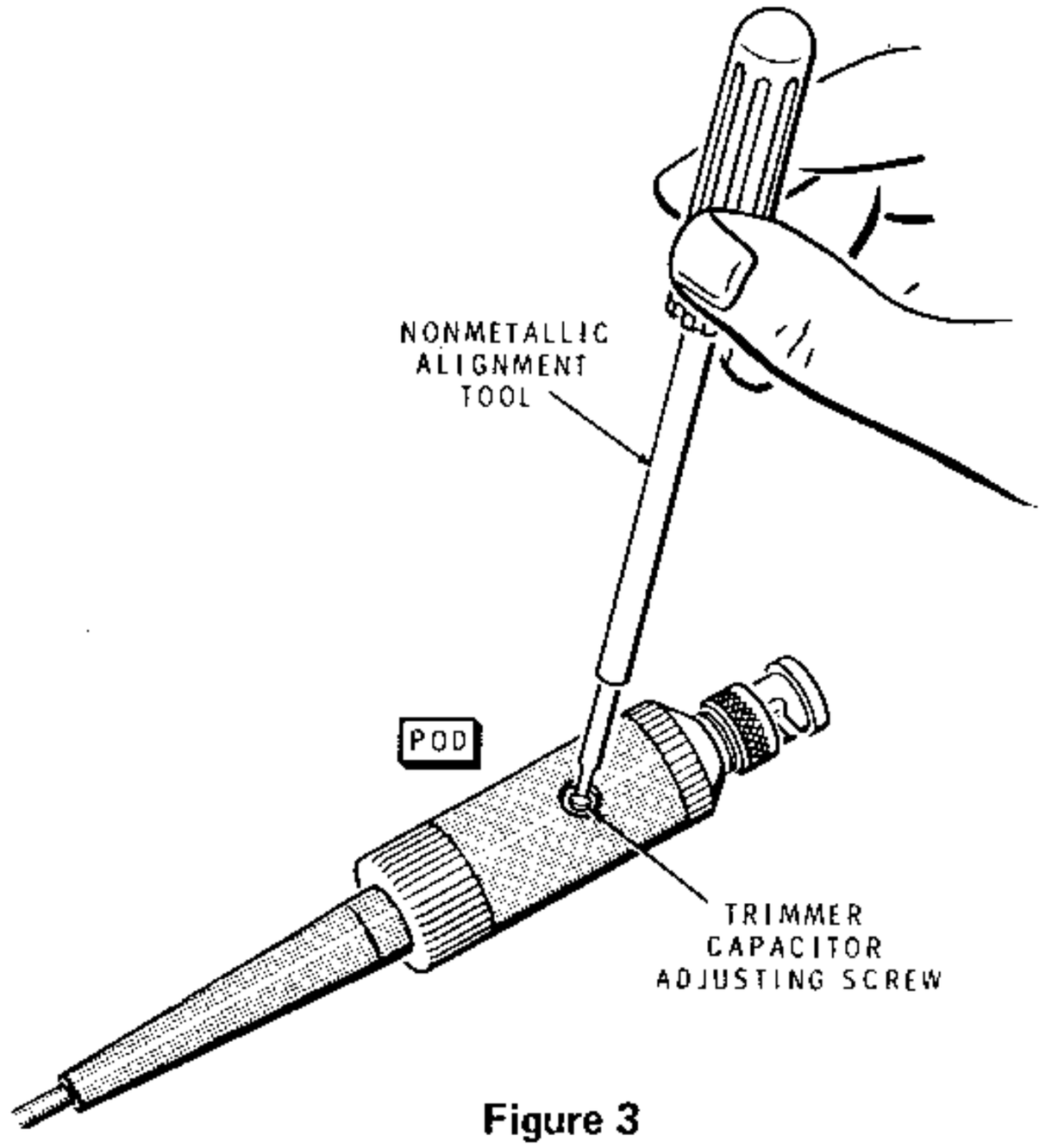
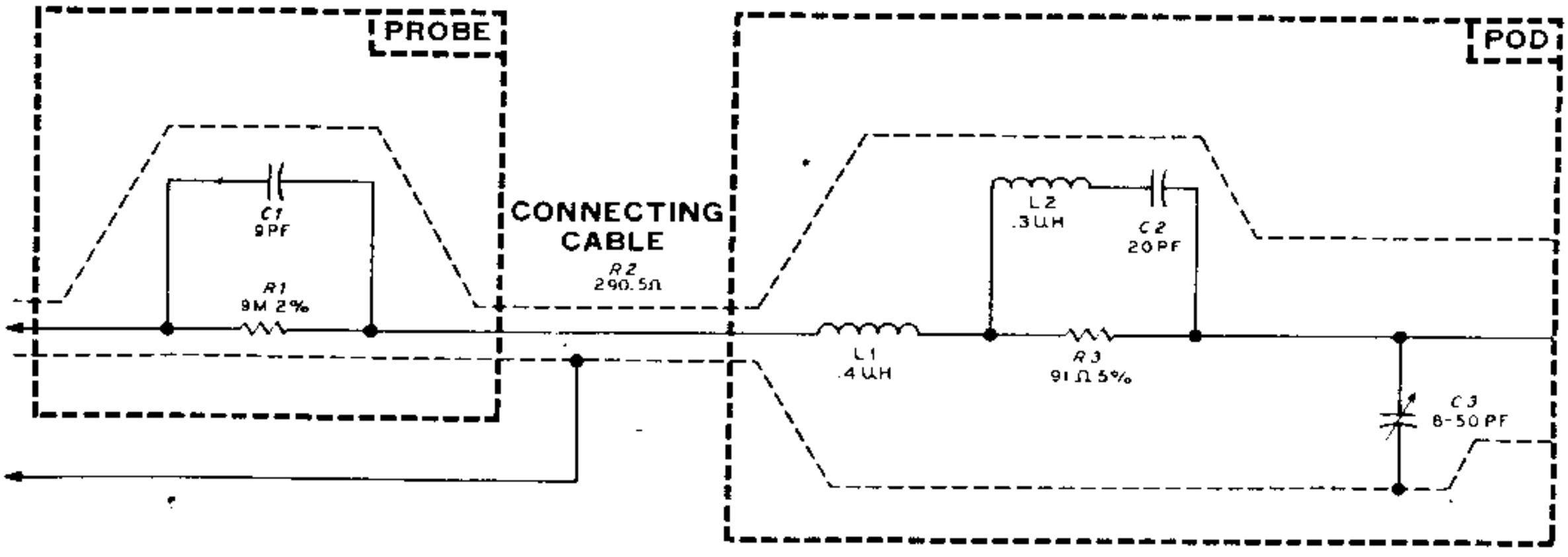


Figure 3



SCHEMATIC DIAGRAM

CIRCUIT DESCRIPTION

Refer to the Schematic Diagram on Page 3 while reading the following circuit description. The Schematic Diagram is divided into three sections: probe, cable, and pod.

The Probe has a high resistance, R1, in its circuitry to isolate the oscilloscope from the test circuit and to minimize any loading of the test circuit. Since R1 is 9 MΩ, an attenuation ratio of 10:1 exists between the actual signal voltage and the voltage applied to the oscilloscope by the Probe. R1 forms a part of a dc voltage dividing circuit in conjunction with the 1 megohm input resistance of the oscilloscope.

At frequencies over 1 kHz, C1 and C3 form a high frequency voltage divider to maintain the 10:1 attenuation ratio. C3 is adjustable and, with C1, also provides capacitance compensation to accommodate the particular input capacitance of the oscilloscope being used.

The 3-1/2-foot connecting cable (R2) and the circuit components in the pod (L1, L2, C2, and R3) constitute a ringing-suppression circuit which damps out ringing at all frequencies in the range of the Probe. This provides flat response for any type of input waveform to the Probe.

REPLACEMENT PARTS LIST

Write to the Heath Company for replacement price information for any of the following parts.

KEY No.	PART No.	DESCRIPTION
1	100-1032	Probe tip assembly
2	100-1034	Probe assembly
3	100-1035	Ground clip assembly