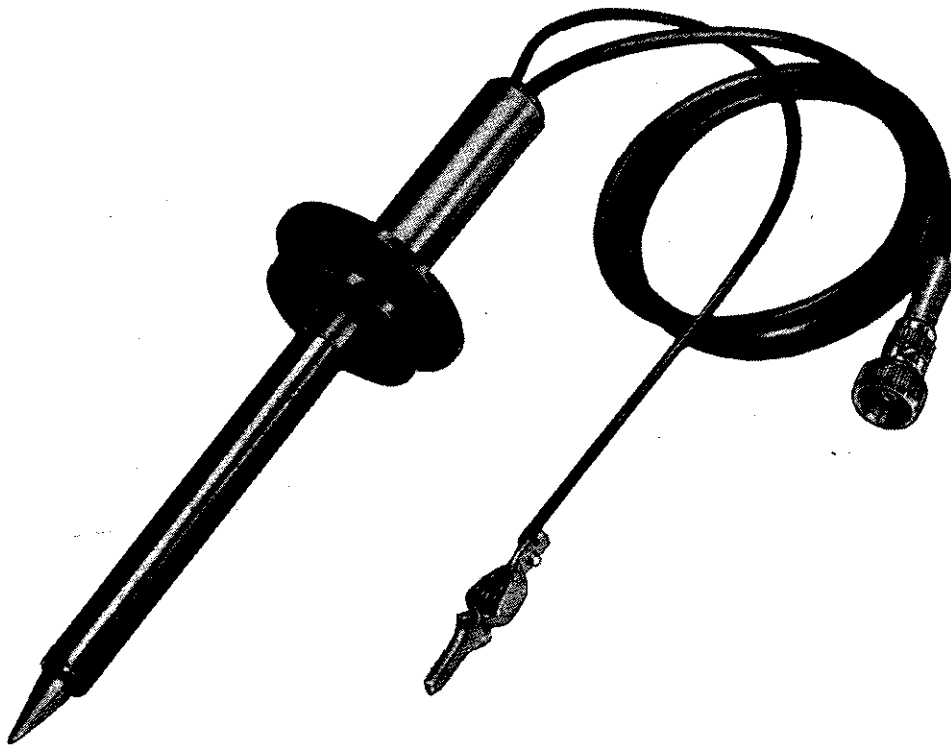


knight-kit

ASSEMBLY
MANUAL



HIGH-VOLTAGE PROBE

100-1 RATIO

REFER TO THIS NUMBER WHEN
83Y126 000 409044 411
REQUIRING SERVICE OR PARTS

INTRODUCTION

The High-Voltage Probe extends the range of your VTVM to 50,000 volts on the 500 volt range. Using this probe increases the versatility of the instrument and enables it to measure the high DC voltages in all TV sets, most industrial equipment, transmitters, and other more specialized equipment.

The probe housing is a multi-purpose type. It can be used with both the RF Probe and the High-Voltage Probe Heads. It is shielded, and the connecting cable is flexible and shielded. The probe head has guard discs for protection.

When you unpack your kit, check all of the parts against the Parts List. Study the diagrams to understand the assembly of the parts.

USE ONLY ROSIN CORE SOLDER. KITS WIRED WITH ACID CORE SOLDER OR ACID FLUX WILL CORRODE AND WILL NOT WORK LONG. SUCH KITS ARE NOT ELIGIBLE FOR REPAIR OR SERVICE.

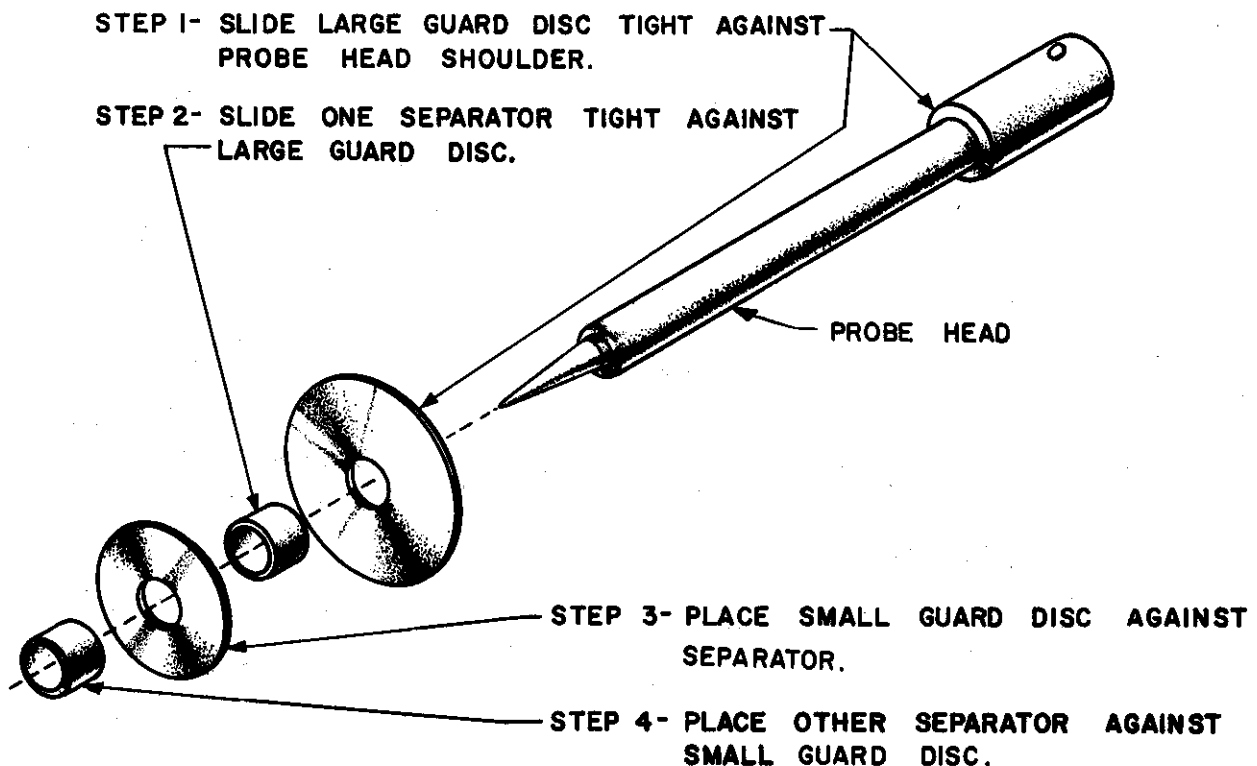


FIGURE 1. MOUNTING THE GUARD DISCS AND SEPARATORS

SEE FIGURE 1.

- ☑ As shown in Figure 1, place the large guard disc tightly against the shoulder of the probe head. Next, slide a separator tightly against the large disc, then the small guard disc, and finally the other separator. Be sure all are forced tightly together.

SEE FIGURE 2.

- ☑ Bend the three pins of the 3-pin socket toward the center of the socket. Solder them together to form a firm base for one end of the spring.

- ☑ Insert R-1, 1090 meg Ω resistor, into the probe head.
- ☑ Place the spring against the resistor.
- ☑ Remove the retaining screw. Place the socket against the spring and force it into the probe head until the retaining-screw holes in both the probe head and the socket line up. Insert and tighten the screw.

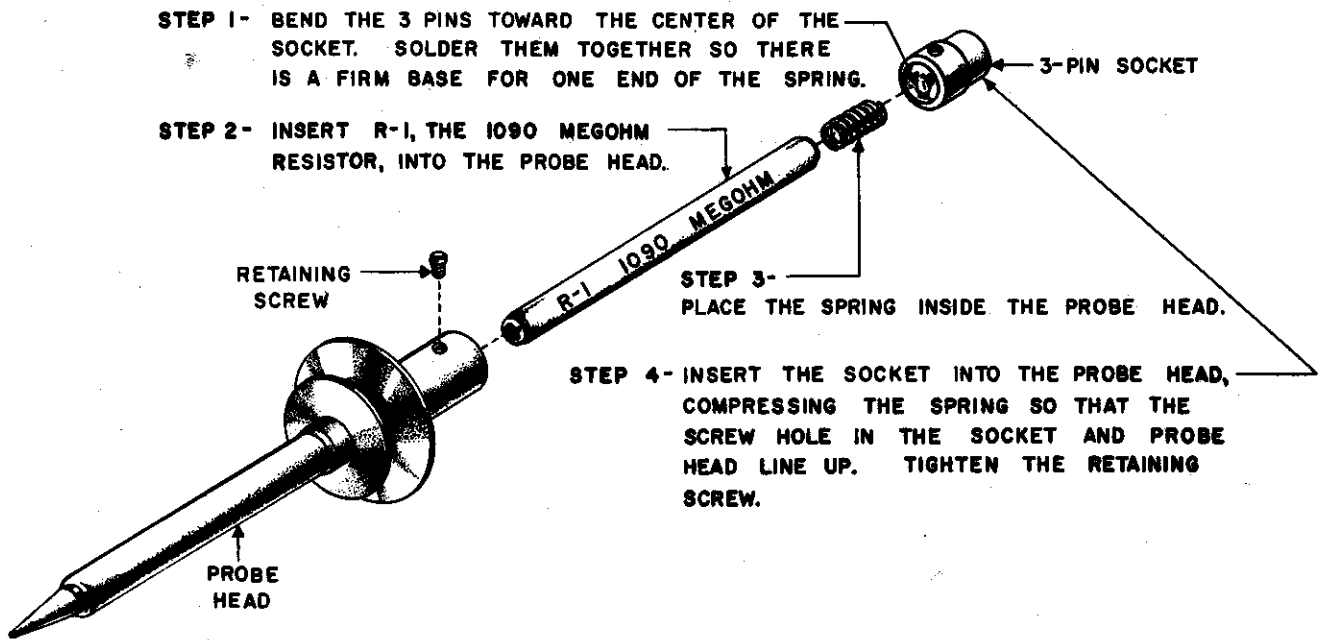


FIGURE 2. PROBE HEAD ASSEMBLY

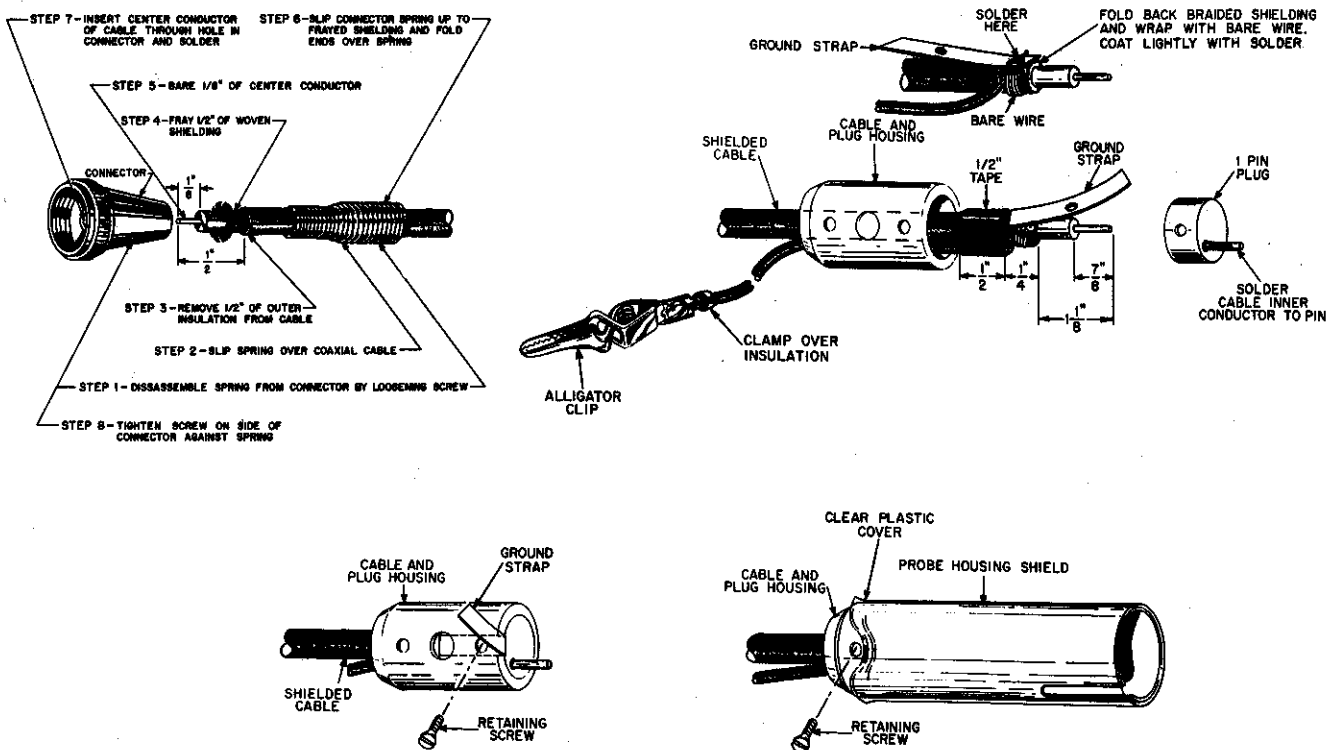


FIGURE 3. CABLE ASSEMBLY

SEE FIGURE 3.

- ✓ Attach the connector to one end of the cable as shown in Figure 3.
- ✓ Place the cable and plug housing over the other end of the cable. From the end of the cable remove $1\frac{1}{8}$ " of the outer insulation. Unravel the shielding and fold it back over the cut-off insulation.
- ✓ Remove about $\frac{1}{4}$ " of insulation from both ends of the 12" ground wire. Hold one end of the ground wire on the shielding. Take the bare wire and wrap 3 turns around the shielding and the bare end of the ground wire.
- ✓ Place the small hole of the ground strap over the two ends of the bare wire.
- ✓ Coat the end of the ground strap, the bare wire, and the shielding with solder. Be careful not to apply too much heat or the insulation around the inner conductor will melt.
- ✓ Remove $\frac{7}{8}$ " of the insulation from the inner conductor. Insert the inner conductor into the pin of the 1-pin plug, and solder it.
- ✓ Fold the ground strap back toward the 1-pin plug, and line up the center hole in the ground strap with the hole in the plug.
- ✓ Remove the tape wrapped around the probe housing shield. Wrap the tape around the cable and ground lead. Insert the ground lead through the slotted hole in the end of the cable and plug housing.
- ✓ Slide the cable and plug housing down onto the plug. Line up the hole in the end of the cable and plug housing with the holes in the ground strap and the plug. Tighten a retaining screw into this hole. Bend the ground strap back.
- ✓ Insert the cable and plug housing into the probe housing shield. Push back the plastic cover and fasten the parts together with a retaining screw.
- ✓ Connect the free end of the ground lead under the screw on the alligator clip. Clamp the two small lugs, on the end of the clip, down on the wire's insulation.

FINAL ASSEMBLY

Insert the probe head assembly into the probe shield. The pin on the plug inside the shield must fit into one of the holes of the socket on the probe head.

The cable and its attached components may be used with other probe heads. All that is necessary is to remove the Hi-Voltage Probe Head and insert the one desired.

USING THE PROBE

CAUTION: *The High-Voltage Probe cable shielding must always be grounded. If this is not done the entire VTVM case will be "hot". This condition may result in a serious shock hazard. A safe habit is to keep one hand in your pocket while making measurements. Always hold the probe housing shield — NEVER grasp the probe on or near the guard discs or on the head of the probe.*

The High-Voltage Probe may be used to measure DC voltages up to 50,000 volts. Actually, the resistor in the probe serves as a 100:1 multiplier. Each range of the VTVM is extended 100 times. The probe multiplier resistor is in series with the input string of multipliers of the VTVM, which maintains the isolation of the meter from the voltage to be measured.

Remove the DC test prod from the VTVM. Attach the cable of the High-Voltage Probe to the VTVM. Connect the probe ground lead to the same ground to which the common lead of the VTVM is connected. Adjust the VTVM switch for the proper DC voltage range. Apply power to the equipment under test, and touch the probe tip to the desired measurement location.

A few of the more common uses for a High-Voltage Probe are: Measurement of high DC voltages where AC pulses are present. In such cases, the probe acts as a low-pass filter. An example of such an application is the voltage at the plate of a horizontal output tube in a TV receiver. Another application is the measurement of low voltages in high-resistance circuits, such as measuring the grid bias of the vertical blocking oscillator in a TV receiver.

PARTS LIST

Symbol Number	Description	Stock Number	Description	Quantity	Stock Number
R-1	Resistor, 1090 megohm, 5%	838001	Plug, 1-pin	1	502130
			Screw, retaining, 4-36 x 1/8"	3	563230
			Separator	2	870022
			Socket, 3-pin	1	502230
			Solder, rosin core	6"	930005
			Spring	1	470055
			Strap, ground	1	470048
			Tape	4"	811001
			Wire, #18 stranded	12"	804004
			Wire, #20 bare	2"	805003
			ANOTHER ACCESSORY YOU MAY WANT		
			Stock No.	Description	
			83Y127	RF Probe Kit	

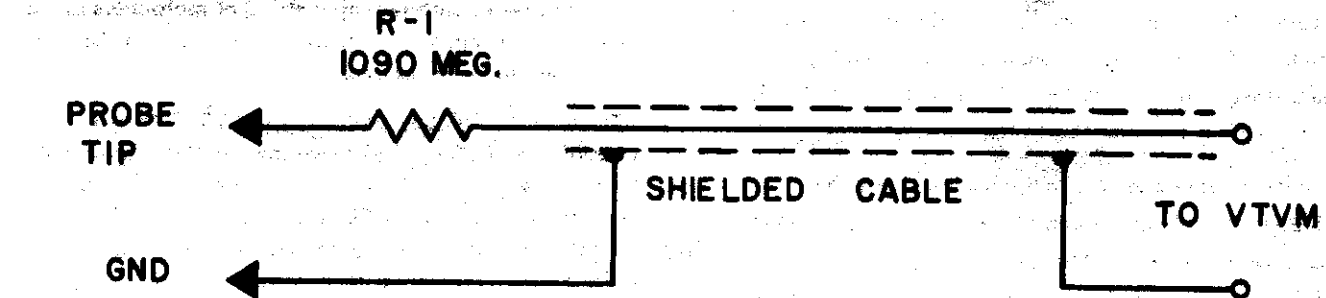


FIGURE 4. SCHEMATIC DIAGRAM

KNIGHT-KIT SERVICE FACILITIES

TECHNICAL CONSULTING SERVICE

If, after following the instructions and suggestions given in this manual you are still unable to obtain proper performance from your kit, we invite you to contact our Technical Consulting Service for further assistance.

The consultant handling your inquiry will be familiar with all the details of your unit and will make every effort to assist you. However, the effectiveness of his advice depends entirely upon the amount, detail and presentation of the information you are able to provide. Please be as accurate and thorough as possible.

Use the following as a guide for your correspondence:

1. Have you checked all the suggestions under Service Hints? Careful consideration of these points may solve your problem without writing.
2. Have you made a thorough check of all wiring and soldering? Each solder connection should have a shiny metallic finish. Reheat any connection that appears at all doubtful; you will find it best to add a little solder as you reheat the connection. Be sure there are no parts accidentally touching each other, the chassis or nearby terminals. Be especially careful in checking wiring and soldering of switches and small terminals. If shielded cable is used, inspect each connection for proper wiring, shorting of small strands of cable shielding and melted insulation causing internal shorts between the shield and inner conductor.
3. If the kit is of the type that requires calibration or alignment, double check these procedures. Be as specific as possible in your report. Outline adjustments made and the alignment procedure employed.
4. When you write be sure to describe all associated equipment. Specifically note the switch positions. Define as clearly as possible the symptoms as noted and mention any particular circumstance under which the problem occurs (after unit has been on for some time, only when jarred or moved, only when used for a particular purpose, etc.).
5. If you have gone through the service hints, be sure to outline the results and note any measurements taken which are out of tolerance.
6. Be sure to give the kit model number, serial number, and/or date of purchase. Also mention the date on the back of the assembly manual (this number appears in the series of numbers at the lower right hand corner on the back of the manual).

INSPECTION SERVICE

You may return your completed Knight-Kit for inspection and repair within one year from purchase for a service charge of \$1.00 for this particular kit. An additional charge will be made for parts damaged in construction.

Kits not completely wired or which require extensive re-work will incur an additional labor charge. You will be notified of these charges prior to our repairing your kit.

No service charge will be made for a period of 90 days from date of purchase, if malfunctioning of the completed kit is due to a defective part.

Service charges for kits returned after the one year period will be on a time and materials basis.

PACKING INSTRUCTIONS

Should you find it necessary to return your Knight-Kit, be sure to pack it carefully. The original carton should be used, if available. If not, a sound carton of similar size may be used. Cushion your Knight-Kit tightly using plenty of packing material. Mark: **FRAGILE—DELICATE ELECTRONIC EQUIPMENT.**

SHIPPING INSTRUCTIONS

Ship your unit by Parcel Post Insured. Please include remittance to cover repair costs plus return postage and insurance. Postage and insurance may be estimated by referring to the "how to order page" in our catalog. This will save you costly COD fees; any excess remittance will be refunded.

When you return a kit please enclose your order papers and a letter explaining why you are returning the unit. On the front of the package print "FIRST CLASS LETTER ENCLOSED" and apply postage on the package for the enclosed letter.

ADDRESS CORRESPONDENCE AND RETURN KITS TO:

KNIGHT ELECTRONICS CORP. • Knight-Kit Service Department
2100 Maywood Drive • Maywood, Illinois

KNIGHT-KIT PARTS WARRANTY

Allied guarantees that only premium-quality parts are selected for use in Knight-Kits. Every Knight-Kit part is fully warranted for a period of one year from date of purchase against defects in material and workmanship. Prompt No-Charge replacements of defective parts will be made.