

INSTRUCTION

FOR

MANUAL

PRECISE 111A MODIFICATION KIT

PRECISE ELECTRONICS & DEVELOPMENT CORP.

76 EAST SECOND STREET

MINEOLA, NEW YORK

INTRODUCTION

The Precise Model 111A Modification Kit has been designed to update your Precise Model 111 Tube Tester. With this Adaptor, the usefulness of your Tube Tester is expanded to include the testing of Compactrons, Novars, Nuvistors and 10 pin Sylvania Tubes.

There is no guesswork in assembling this kit. The instructions are carefully written and are easy to follow. If you exercise a reasonable amount of care in the construction of this kit, you will find the results gratifying and you will have a tube tester, updated, and still rated one of the finest available.

UNPACKING INSTRUCTIONS

Unpack your kit carefully, and inspect each part thoroughly while checking it against the parts list in the front section of the manual. Do not dispose of the packing material until all parts have been checked against the parts list. Inspect this material if any small parts appear to be missing. If any damaged or missing parts are noted, notify us immediately and the necessary items will be supplied promptly. Small hardware items are counted by weight, and there is a greater possibility of error in this area. Although the parts will be promptly forwarded to you upon request, time can be saved by obtaining them locally or from your own "junk box" if possible. Handle each part gently, because many electronic components are delicate in nature. Place the parts in a safe location on a flat surface away from the table or workbench edge, where they will be readily accessible as construction of the kit progresses.

SOLDERING INSTRUCTIONS

Any electronic equipment can only perform as well as the electrical connections in the circuit will let it. A poor connection will result in substandard, intermittent, or inoperative conditions in a portion, or all of the circuit. By far the greatest number of kits returned for service are found to be defective due to poorly soldered connections.

In order to avoid possible delay and servicing cost, it is recommended that the following information about proper soldering techniques be observed if you are not already proficient at soldering. Good quality ROSIN CORE RADIO SOLDER is necessary to make soldering easy and to insure lasting connections. DO NOT USE ACID CORE SOLDER. This type of solder will corrode connections and provide electrical leakage paths which will lead to premature operational failure. ALL GUARANTEES ARE VOIDED AND NO REPAIR OF, OR PARTS REPLACEMENTS WILL BE MADE IN INSTRUMENTS SHOWING EVIDENCE OF ACID CORE SOLDER OR PASTE FLUXES.

A. A soldering iron rated between 35 to 60 watts is ideal or a soldering gun may be used. For printed circuit boards, an iron rated at no more than 35 watts is recommended. Before attempting to solder any connections, the iron must be properly "tinned" (coated with solder). In order to accomplish this, heat the iron until it reaches operating temperatures, and wipe with a cloth until the tip is bright and clean. If the tip is pitted and corroded, it may be necessary to file or steel wool it lightly until all traces of corrosion are removed. Apply a generous amount of ROSIN CORE solder to all surfaces of the tip and then remove any excess.

B. Inspect all wires (leads) and terminals to make sure that they are clean and bright. If necessary, clean the terminals and leads with emery cloth or steel wool, but DO NOT use paste or other separate fluxes to get the solder to "take". Clear away any particles of steel wool, if used, to avoid the possibility of "short circuits" (unintentional connections). The parts in your kit have been selected for easy soldering and this procedure should rarely, if ever, be necessary.

C. Make a good mechanical connection before soldering. It is not necessary to wrap a lead around a terminal several times; a simple hook in the lead pinched tightly to the terminal with pliers will suffice, and also will leave room for additional leads, when required. (Occasionally, wire that is too large to bend will be encountered. In this case, position the wire so that it passes through the terminal and a good solder connection can be made).

D. Place a flat side of the soldering iron tip against the connection to be soldered and hold it until it is heated enough to melt the solder.

E. Keeping the soldering iron in contact, place solder against the heated terminal at the point where the leads, terminal and soldering iron are all in contact, and the solder will immediately flow over the joint. Do not use more solder than is necessary to thoroughly "wet" the connection. It is not normally necessary to fill the entire terminal hole with solder, but each lead at the junction must be coated with solder as well as the portion of the terminal immediately in contact with the lead.

F. Remove the solder from the connection, then the iron. Avoid moving any of the leads until the joint has hardened. If a good connection is made, the solder will have a bright, mirror-like finish and will cover all the leads and terminals smoothly. Add more solder only if it becomes necessary to do so.

G. Inspect the connection to make sure that there is no contact between the terminal just soldered and adjacent terminals, and that excess solder has not flowed to the bottom of the terminal causing a possible short circuit to the chassis.

H. Keep the soldering iron tip clean as construction progresses by wiping frequently with a cloth. This can be done while the iron is at full operating temperature.

If you have not soldered electrical connections before, time spent practicing with wire scraps is advisable. The reward will be a properly functioning kit after completion, and the fine feeling of satisfaction that goes along with a job well done.

GENERAL ASSEMBLY INSTRUCTIONS

Only a few tools are necessary to construct your kit. The basic tools required are a small screwdriver, a pair of long nose pliers, a pair of regular "gas" pliers, a pair of wire-cutters, and a soldering iron or gun, rated as described under "Soldering Instructions". Use of a soldering iron is recommended since the heat is steady and they are easy to handle.

The iron used should have a small tip to facilitate soldering connections in small places. If a soldering gun is used, care should be exercised to avoid overheating the connection being soldered.

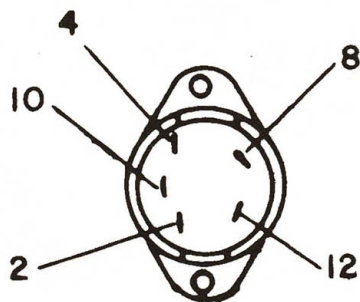
A. Mechanical Assembly

Note that each step has a space designated next to it in the left hand column. This space is provided to check or "X" out each step as it is completed. If it should become necessary to leave the construction for a while, the checked-off spaces will enable you to quickly determine where you stopped.

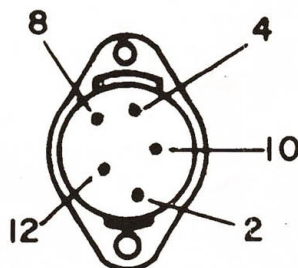
PARTS LIST

CK.	PART #	PART DESCRIPTION	QTY.
()	37-37	10 Pin Sylvania Socket	1
()	37-38	Novar Socket	1
()	37-40	Compactron Socket	1
()	37-39	Nuvistor Socket	1
()	13-9	S. Pole 8 Position Switch (111S10)	2
()		Escutcheon plate or decal	1
()	28-20	Large Pointer Knob	2
()	14-12	6-32 x 1/4 R.H.M.S.	4
()	15-7	6-32 Palnut	4
()	15-51	3/8 Lockwasher	2
()	15-22	3/8 Hex Nut	2
()	14-1	2-56 x 1/4 R.H.M.S.	4
()	15-32	#2 Lockwasher	4
()	15-1	2-56 Hex Nut	4
()		Hook-up wire	17 ft.

DIAGRAM NO. 2

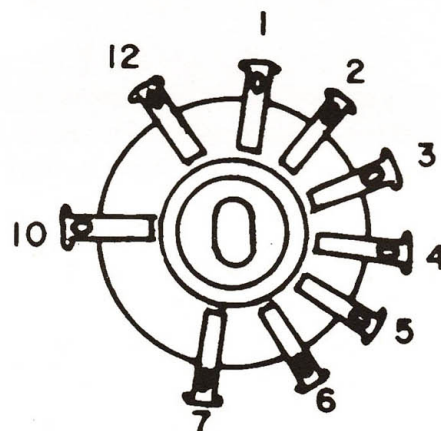


BOTTOM VIEW



TOP VIEW

DIAGRAM NO. 3



ORIENTATION AND LUG NUMBERS FOR SIO (II) AND SIO (I2)

111 K A B MODIFICATION KIT

- () STEP 1. Place template over the area containing the Precise emblem so that it will fit within the gray striping.
- () STEP 2. Using any kind of adhesive or scotch tape, fasten template in place.
- () STEP 3. Center punch through the four cross marks on the template.
- () STEP 4. Using any small drill bit, drill four holes through center punched marks. The proper hole sizes will be made from the other side of the front panel in a later step.
- () STEP 4a. Remove the 14 wood screws that fasten the front panel to the carrying case of your Precise Model 111 Tube Tester.
- () STEP 4b. Remove 1 machine screw from the bottom of the carrying case which holds the chassis in place.
- () STEP 4c. Remove the Tube Tester from the carrying case.
- () STEP 5. Remove the 5U4 and 6X4 tubes.
- () STEP 6. Remove the fuse holder from the power chassis.
- () STEP 7. Remove the neon bulb holder from the power chassis.
- () STEP 8. Remove the (2) screws and (4) nuts holding the power chassis to the front panel.
- () STEP 9. Bend chassis forward using extreme care not to damage any components.
- () STEP 10. Cut holes to proper size as indicated on the template with large drill bits or greenlee punches.
- () STEP 11. Remove template.
- () STEP 12. Insert Compactron 12 pin socket (designated H209) from underside of panel. Orient the same as sockets already in Tube Tester.
- () STEP 13. Using the holes in the mounting plate of the socket as a template drill (2) #28 holes through the front panel.
- () STEP 14. Secure with (2) 6-32 x 1/4 R.H.M.S. and (2) palnuts.
- () STEP 15. Insert Novar 9 pin socket (designated H208) from underside of panel. Orient the same as sockets already in Tube Tester.

- () STEP 16. Using the holes in the mounting plate of the socket as a template drill (2) #28 holes through the front panel.
- () STEP 17. Secure with (2) 6-32 x 1/4 R.H.M.S. and palnuts.
- () STEP 18. Place a 3/8" lockwasher on both rotary switch shafts (designated S10(11) and S10(12)) and insert them in the remaining 3/8" diameter holes from the under-side of the panel. Orient as shown on Diagram 3.
- () STEP 19. Place escutcheon plate on switch shafts from front of panel and secure with 3/8" hex nuts. Switch below Compactron socket will be designated S10(11). The switch below Novar socket will be designated S10(12).
- () STEP 20. Find the point equidistant between the two 7 pin sockets, and the oneoctal socket and panel button and center punch this point.
- () STEP 21. Drill a 1/2" diameter hole.
- () STEP 22. Insert 5 pin Nuvisior socket (designated H214) from the top side of the panel. Orient as shown in Diagram #2.
- () STEP 23. Using the holes in the mounting plate of the socket as a template drill (2) #43 holes through the front panel.
- () STEP 24. Secure with (2) 2-56 x 1/4 R.H.M.S., (2) #2 washers and (2) 2-56 hex nuts.

BEFORE PROCEEDING OBSERVE THE FOLLOWING CAUTION: DO NOT CUT WIRES GOING TO THE NOVAL SOCKET AS THIS MAY RESULT IN THEIR BEING TOO SHORT TO RECONNECT. ALSO CARE SHOULD BE TAKEN TO REMEMBER FROM WHICH LUGS THE WIRES HAVE BEEN DISCONNECTED.

- () STEP 25. Unsolder and remove all wires from 9 pin Noval socket.
- () STEP 26. Remove (2) screws and nuts securing this socket.
NOTE: If socket is riveted to the panel, as in the case of factory wired equipment, it will be necessary to drill out the rivets holding this socket.
- () STEP 27. Insert 10 pin socket (designated H68A) from underside of front panel. Orient the same as sockets already in Tube Tester.
- () STEP 28. Secure with (2) 2-56 x 1/4 Machine screws, washers and hex nuts.
- () STEP 29. Replace wires to pins 1 through 9 inclusive as they were originally. Solder.
- () STEP 30. Connect a wire from center pin #10 of H68A (S) to plate jack (NS)

WIRING

NOTE: "S" means solder immediately. "N.S." means do not solder.

NOTE: Refer to Diagram #3 for switch lug numbers.

- () STEP 1. Connect a wire from S10(11) #12 (S) to S10(12) #12 (N.S.)
- () STEP 2. Connect a wire from S10(11) #1 (S) to S10(12) #1 (N.S.)
- () STEP 3. Connect a wire from S10(11) #2 (S) to S10(12) #2 (N.S.)
- () STEP 4. Connect a wire from S10(11) #3 (S) to S10(12) #3 (N.S.)
- () STEP 5. Connect a wire from S10(11) #4 (S) to S10(12) #4 (N.S.)
- () STEP 6. Connect a wire from S10(11) #5 (S) to S10(12) #5 (N.S.)
- () STEP 7. Connect a wire from S10(11) #6 (S) to S10(12) #6 (N.S.)
- () STEP 8. Connect a wire from S10(11) #7 (S) to S10(12) #7 (N.S.)

NOTE: Switch S10(4) is marked Switch (I) front panel

- () STEP 9. Connect a wire from S10(4) #12 (S) to S10(12) #12 (S)
- () STEP 10. Connect a wire from S10(4) #1 (S) to S10(12) #1 (S)
- () STEP 11. Connect a wire from S10(4) #2 (S) to S10(12) #2 (S)
- () STEP 12. Connect a wire from S10(4) #3 (S) to S10(12) #3 (S)
- () STEP 13. Connect a wire from S10(4) #4 (S) to S10(12) #4 (S)
- () STEP 14. Connect a wire from S10(4) #5 (S) to S10(12) #5 (S)
- () STEP 15. Connect a wire from S10(4) #6 (S) to S10(12) #6 (S)
- () STEP 16. Connect a wire from S10(4) #7 (S) to S10(12) #7 (S)
- () STEP 17. Connect a wire from H209 #1 (S) to H208 #1 (N.S.)
- () STEP 18. Connect a wire from H209 #2 (S) to H208 #2 (N.S.)
- () STEP 19. Connect a wire from H209 #3 (S) to H208 #3 (N.S.)
- () STEP 20. Connect a wire from H209 #4 (S) to H208 #4 (N.S.)

2. Recheck your work.

- a. Go back through the assembly and wiring steps and check for omissions and errors.
- b. Check the switches and tube sockets to make certain that they are in the proper position and that the pin numbers have been accurately designated.

SERVICING

WARRANTY

PRECISE Electronics & Development Corp. warrants that for a period of 90 days from the date of purchase, all parts contained in PRECISE kits shall be free of defects in materials and workmanship under normal operation and service. PRECISE Electronics & Development Corp. will furnish replacement parts at no charge, reserving the right to request prior return of the defective merchandise.

This warranty does not apply and no replacement will be made of parts damaged by improper handling or wiring by the customer. The foregoing warranty is in lieu of all other warranties, either expressed or implied for this unit.

The foregoing warranty is voided and no kit or part thereof will be repaired or replaced if acid core solder or paste fluxes are used.

SERVICE

If difficulty is experienced with your kit, and it is not possible to locate and repair the trouble following the procedures under "IN CASE OF DIFFICULTY", the services of PRECISE Electronics & Development Corp. are available to you. A staff of trained, competent technical correspondents can be contacted and can usually help you find the trouble by mail, with no charge for the service. If preferred, the completed kit may be returned for service, observing the instruction under FACTORY SERVICE.

The function of the TECHNICAL CORRESPONDENCE department is to provide assistance to customers who encountered difficulty with construction, use or installation of PRECISE Electronics & Development Corp. equipment. The correspondents are limited to analyze and suggest remedies for trouble in this equipment only; they are not in a position to provide information on modification, or operation of equipment outside of the normally intended functions.

In order to obtain effective information from the Technical Correspondence department, it is necessary to furnish as much accurate information as possible. Wherever possible, use the following procedure.

- A. Follow the trouble shooting procedures outlined under "IN CASE OF DIFFICULTY" - - it is possible that the trouble will be located and it will not be necessary to write.
- B. When writing, describe the nature of the difficulty as clearly as possible.
- C. Identify the kit by name, model number, and the date purchased, if possible.
- D. Furnish your name and address, in printing or typing, at the start and end of the letter.

FACTORY SERVICE

If you elect to return your kit for repair, the completed instrument, including all test leads or cables, may be returned to PRECISE Electronics & Development Corp. for inspection, repair, and necessary adjustment.

If the kit is returned for improper or non-operation, the minimum charge will be \$5.95, if the trouble is caused by wiring errors. Defective parts will be replaced at no charge, under the terms of the Warranty, provided that the defect is not caused by mishandling or improper wiring.

If the kit returned for repairs is wired in such a manner that it is evident that wiring instructions were disregarded or changes made in the circuit, there will be a charge at an hourly rate which will be quoted on prior to repair of the unit. This also applies to kits returned partially wired.

When shipping a kit to PRECISE Electronics & Development Corp. for repairs, do everything possible to minimize the possibility of damage during shipment. Return the unit complete with cables. BE SURE TO TAG THE EQUIPMENT WITH YOUR NAME, ADDRESS, DATE PURCHASED, AND A STATEMENT OF THE NATURE OF THE DIFFICULTY. Wrap the equipment in heavy paper to protect the finish, and place in a strong carton. Seal the carton with gummed tape or stout cord and plainly label the pack:

TO: PRECISE Electronics & Development Corp.
76 EAST SECOND STREET
MINEOLA, NEW YORK

Make sure that your name and address appear on the outside of the carton, along with "FRAGILE" or "HANDLE WITH CARE" markings in bright color. Ship the package via Parcel Post Insured, or Prepaid Express.

It should be noted that the carrier cannot be held responsible for damages in transit if the article is inadequately packed, in his opinion.

PARTS RETURN

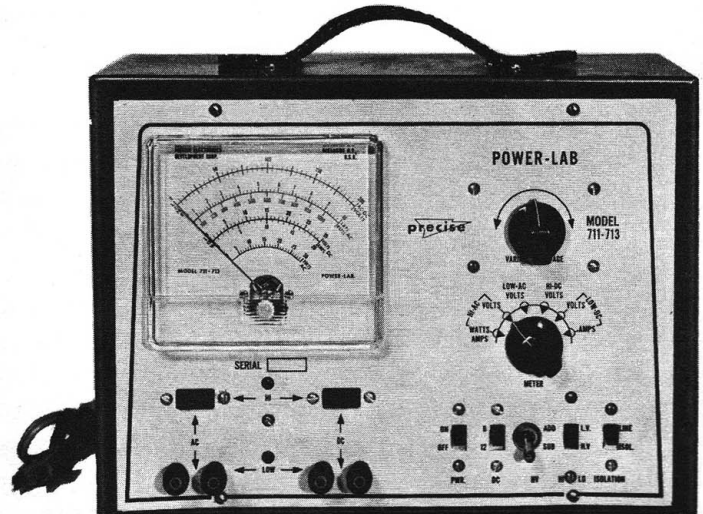
PLEASE NOTE that it is necessary to obtain authorization before returning any component of this kit for replacement. In order to avoid delay in placing your kit in operation, the necessary component will be sent upon notification of the need for it. Instructions concerning the return of the defective item will be provided when replacement is shipped. The defective component must be returned prepaid and a letter enclosed describing the defect. Be sure to give your name, address, the kit model number, and, if possible, the date of purchase with your request.

POWER LAB

HIGH POWER LOW POWER AC POWER DC POWER

One instrument takes the place of more than 11 pieces of equipment . . . the most useful, often used, test device in your shop. You can get all this COMPLETE IN ONE KIT (kit or wired):

- * A BATTERY ELIMINATOR
- * A BATTERY CHARGER
- * A HIGH CURRENT LINE VOLTAGE VARIAC
- * AN AC LINE VOLTAGE METER
- * AN AC LINE AMMETER
- * AN AC LINE WATTMETER
- * AN AC LINE ISOLATION TRANSFORMER
- * A LOW VOLTAGE, HIGH CURRENT AC SUPPLY
- * A DC HIGH CURRENT AMMETER
- * A DC LINE VOLTAGE VARIABLE SUPPLY
- * AN AGC BIAS BOX



MODEL 711

(100 Watts of Isolation)... 711K - \$59.95 kit
711W - 74.95 wired

MODEL 713

(300 Watts of Isolation)... 713K - \$69.95 kit
713W - 89.95 wired

	VOLTS	MAXIMUM	CONTINUOUS
Low Voltage DC	2 ranges 0-15v Full Wave 0-30v Full Wave Bridge	20 amps* 20 amps*	10 amps* 10 amps*
Low Voltage AC	0-24v		20 amps*
High Voltage AC	No Isolation 90-140 volts	20 amps 2000 watts	10 amps 1000 watts
High Voltage AC	Model 713 with Isolation 90-140 volts		3 amps 300 watts
High Voltage AC	Model 711 with Isolation 90-140 volts		1 amp 100 watts
High Voltage DC	120-200 volts	1 amp**	.75 amp**

*Depending on voltage.

**May be increased up to 10 amperes at additional cost.

There's NO OTHER INSTRUMENT LIKE THE POWER-LAB ON THE MARKET. Here again, Precise engineering is proud to be the first to supply a need that has too long existed in the service trade.

PRECISE ELECTRONICS AND DEVELOPMENT CORP.
76 East Second Street Mineola, New York