



Dear Friend:

Congratulations on your purchase of B & K—Precision Test Equipment, and welcome to the B & K family. We hope your experience with your new test equipment will make you a lifetime B & K customer.

Your instrument is backed by more than 20 years of experience in designing and manufacturing. Our most important goal is your satisfaction. At B & K, test equipment is made to meet the demands of the field focusing on dependability and accuracy. We also concentrate on simplicity and operating ease with features that reduce the possibility of human error and speed the servicing process.

In order to determine the type of test units that are needed we have been guided by letters and reports from technicians and engineers who use the equipment daily. Our field tests and studies have helped provide better and faster service techniques. Close contact has been maintained with the manufacturers of consumer products which our test units will be checking and trouble-shooting.

Key personnel in our company cut their eye teeth in the TV service business. This is why we have more "sensitivity" for the problems and conditions under which the test equipment will be used.

B & K product designs are constantly reviewed, and refinements are made or new models developed to meet advances in our industry and to fill your needs. We set our standards high so you can be assured that the B & K test instruments you buy represent advanced design, quality construction, and dependable long-term performance at a price you can afford.

If you have any comments or thoughts about our products, or test equipment in general, I would be delighted to hear from you.

Thanks for your confidence in B & K and we look forward to serving you for a long time to come.

Sincerely,

A handwritten signature in cursive script that reads "Carl Korn".

Carl Korn
President

INSTRUCTION MANUAL

FOR

MODEL 2902

SUBSTITUTION MASTER

B & K DIVISION OF DYNASCAN CORPORATION

1801 West Belle Plaine Avenue

Chicago, Illinois 60613

SPECIFICATIONS

CARBON RESISTORS:

1 Watt, 10%, 500V (RX1)	10, 22, 47, 68, 100, 220, 470, 680, 1K, 2.2K, 4.7K, 6.8K.
½ Watt, 10%, 350V (RX1K)	10K, 22K, 47K, 68K, 100K, 220K, 470K, 680K, 1 Meg, 2.2 Meg, 6.8 Meg.

WIREWOUND RESISTORS:

20 Watt, 10% (RX1)	2.5, 5, 7.5, 10, 15, 25, 75, 100, 150 ohms.
15 Watt, 10% (RX100)	250, 500, 750, 1K, 1.5K, 2.5K, 5K, 7.5K, 10K, 15K.

DISC/TUBULAR CAPACITORS:

500 Volt, 10% Disc	.0001, .0005, .001, .0025, .005, .01 mfd.
600 Volt, 10% Tubular	.025, .05, .1, .25, .5 mfd.

RECTIFIER

.5A, 600 PIV Silicon.

ELECTROLYTIC CAPACITORS:

450 Volt (+100 -20%)	
Selection A	2, 5, 10, 20, 50, 100, 200 mfd.
Selection B	3, 7, 15, 35, 60, 140, 35 mfd.
750 Volt (+80 -20%)	
Selection A	500, 1000, 2000 mfd.
Selection B	500, 1500, 500 mfd.
(Protected by overvoltage indicator)	

OPERATION**CARBON RESISTOR SELECTION:**

1. Connect black test lead to COM jack.
2. To use 1 watt resistor from 10 ohms to 6,800 ohms insert red test lead into RX1 jack.
3. Select the value required on the CARBON RESISTORS rotary switch.
4. Remove power from circuit before substituting resistor.
5. Connect test leads to circuit and reapply power.
6. To use ½ watt resistors from 10K ohms to 6.8 megohms, remove red test lead from RX1 jack and reinsert it into RX1K jack.
7. Remember to multiply values selected by 1000 when connection is to RX1K jack.

POWER RESISTOR SELECTION:

Selection of power resistors is identical to selection of carbon resistors except that the POWER RESISTOR selector switch and POWER RESISTOR jacks are used. Multiply by 100 when using RX100. Power resistor wattage rating is specified as 15 watts and 20 watts on the front panel adjacent to the POWER RESISTOR jacks. However, because of a unique switching arrangement some resistors are switched in series and some in parallel. This is done to take full advantage of the maximum wattage available from the resistor combination selected. This will allow a higher usable wattage dissipation from some resistor values selected than others and is so indicated in the Power Resistor Maximum Ratings Chart that follows. Do not exceed the voltage or wattage indicated in the chart.

POWER RESISTOR MAXIMUM RATINGS CHART

VALUE	MAXIMUM WATTS	MAXIMUM VOLTS	VOLTS	MAXIMUM WATTS	MAXIMUM VOLTS
2.5 Ohms	20	7	250	18	67
5.0	30	12	500	21	102
7.5	40	17	750	28	145
10.0	30	17	1000	21	145
15.0	25	19	1500	17.5	162
25.0	20	22	2500	14	187
50.0	20	32	5000	14	265
75.0	30	47	7500	21	397
100.0	40	63	10000	28	530
150.0	30	67	15000	21	560

DISC/TUBULAR CAPACITOR SELECTION:

1. Connect black test lead to COM jack and red test lead to CAP jack.
2. Make selection on selector switch located directly above CAP jack.
3. Connect test leads to circuit where substitution is to be made.

NOTE: For specialized circuits or experiments, capacitors and resistors can be connected in series at various combinations of values.

RECTIFIER CONNECTIONS:

1. Connect red test lead between the AC input and the RECT jack (anode) to obtain a positive (+) output.
2. Connect black test lead to COM jack to obtain positive (+) rectified DC output voltage.

The rectifier can be connected in series with a resistor to operate as a positive or negative peak clipper if required.

CONNECTING THE MODEL 2902 AS A FILTERED DC POWER SUPPLY:

To connect the Model 2902 to provide a well filtered positive DC output voltage make connections between the various sections of the 2902 as shown in Figure 1.

SINGLE ELECTROLYTIC SELECTION:

Select the value required from either the inner A or outer B range on the ELECTROLYTIC capacitor selection switch. Set the ELECTROLYTIC switch at this value. If you have selected the inner range A, insert the test leads into the COM jack and the red jack labeled A on the left. Make sure that the Surge Protector switch is fully to the left. Connect the leads to the circuit for substitution being sure to observe polarity; black to (-) negative, red to (+) positive. If the warning light does not glow, slide the Surge Protector switch to the right. As the Surge Protector moves to the right, a resistor is placed in series with the electrolytic to prevent arcing or accidental heating of a capacitor being bridged. When the switch is fully to the right, the resistor is removed from the circuit and the capacitor is connected directly. If you desire that the electrolytic remain in the circuit for a period of time, merely slide the Surge Protector button down to the SUB position. To release the Surge Protector switch, slide the switch button up, and the switch will automatically reset to the DISCH position. This disconnects the capacitor from the circuit.

CAUTION: Do not change the setting of the ELECTROLYTIC rotary switch when the Surge Protector switch is in the SUB position. Severe damage to the switch by the high charging currents, or destruction of the low voltage capacitors can occur. To change the setting of the ELECTROLYTIC rotary switch, first return the Surge Protector switch to the DISCH (normal) position.

DUAL ELECTROLYTIC CAPACITOR SELECTION:

Use the same procedure as above, except insert a red test lead in each red jack. The black jack remains common to both capacitors and is connected to the negative side of the circuit. The Surge Protector switch protects dual electrolytics in the same manner as it protects the single type, as described above.

PARALLEL ELECTROLYTIC CAPACITOR SELECTION:

Follow the same procedure as above, except connect both red test leads together. To determine the value substituted, merely add the two values indicated on the two ranges, A and B, at that setting.

SERIES ELECTROLYTIC CAPACITOR SELECTION (Non-Polarized Application):

In some instances a non-polarized electrolytic capacitor may be needed. Examples are for audio or video coupling, or for connections to a loudspeaker. It may also be used in solid state circuits where you are uncertain of polarity, but need an electrolytic for substitution.

WARRANTY/SERVICE INSTRUCTIONS

1. Refer to the maintenance section of the instruction manual for adjustments that may be applicable.
2. Check common electronic parts, such as transistors and batteries. Always check instruction manual for applicable adjustments after such replacement.
3. Defective parts removed from units under warranty should be returned to the factory, *prepaid*. The package should include the model number, serial number and date of product purchase. These parts will be exchanged at no charge.
4. If the above procedures do not correct the difficulty, pack the product securely (preferably in the original carton or double packed), forward it prepaid (express preferred) to your nearest B & K Authorized Service Agency. A detailed list of troubles encountered should be enclosed.

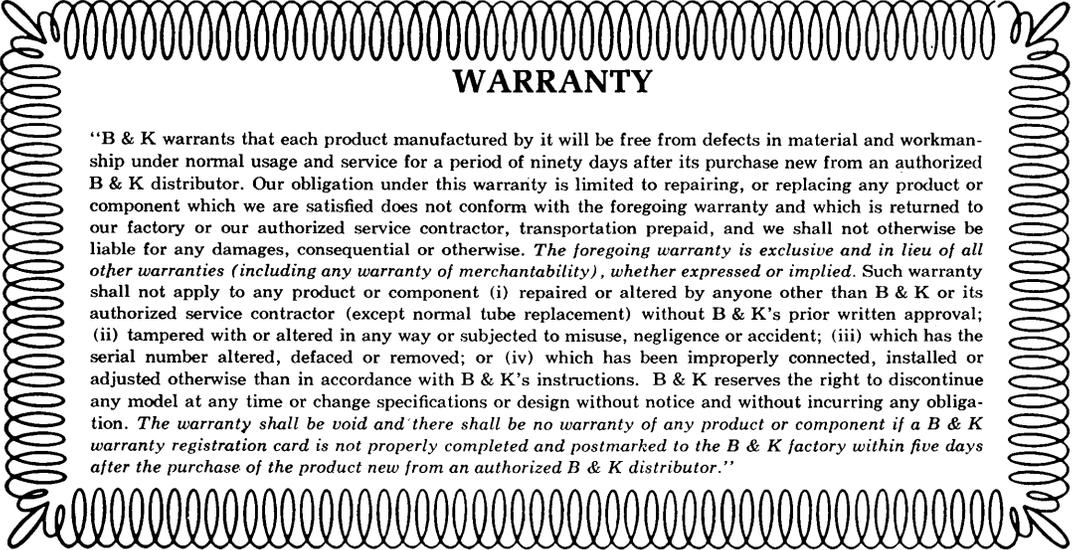
Contact your local B & K Distributor for the name and location of your nearest service agency, or write to:

Service Department

DYNASCAN CORPORATION

2815 W. Irving Park Rd.

Chicago, Illinois 60613



WARRANTY

"B & K warrants that each product manufactured by it will be free from defects in material and workmanship under normal usage and service for a period of ninety days after its purchase new from an authorized B & K distributor. Our obligation under this warranty is limited to repairing, or replacing any product or component which we are satisfied does not conform with the foregoing warranty and which is returned to our factory or our authorized service contractor, transportation prepaid, and we shall not otherwise be liable for any damages, consequential or otherwise. *The foregoing warranty is exclusive and in lieu of all other warranties (including any warranty of merchantability), whether expressed or implied.* Such warranty shall not apply to any product or component (i) repaired or altered by anyone other than B & K or its authorized service contractor (except normal tube replacement) without B & K's prior written approval; (ii) tampered with or altered in any way or subjected to misuse, negligence or accident; (iii) which has the serial number altered, defaced or removed; or (iv) which has been improperly connected, installed or adjusted otherwise than in accordance with B & K's instructions. B & K reserves the right to discontinue any model at any time or change specifications or design without notice and without incurring any obligation. *The warranty shall be void and there shall be no warranty of any product or component if a B & K warranty registration card is not properly completed and postmarked to the B & K factory within five days after the purchase of the product new from an authorized B & K distributor.*"



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