INSTRUCTION MANUAL

BK PRECISION
DYNASCAN CORPORATION

MODEL 2832

Bench Type
3-1/2 Digit
MULTIMETER

BK PRECISION
DYNASCAN CORPORATION

TEST INSTRUMENT SAFETY

WARNING

An electrical shock causing 10 milliamps of current to pass through the heart will stop most human heartbeats. Voltage as low as 35 volts dc or ac rms should be considered dangerous and hazardous since it can produce a fatal current under certain conditions. Higher voltages are even more dangerous. Observe the following safety precautions:

1. Do not exceed the following input ratings. Personal injury or damage to the instrument may result.

DC VOLTS	1000 V (dc + ac peak)
AC VOLTS	1000 V rms
OHMS	250 V dc or ac rms
200 µA-2A	2 A (fuse protected)
20 A	20 A (no overload protection)
COM	Do not float more than 500 volts from earth ground.

2. Remove test leads from the instrument and point of measurement before replacing fuses or performing any servicing on the multimeter.

3. Use only shrouded safety type test leads like those supplied. Periodically inspect insulation for any burns, cuts, or breaks. Never use test leads with exposed bare wires or poor insulation.

4. Turn off equipment while making test connections in high-voltage circuits. Discharge high-voltage capacitors after removing power.

(continued on inside back cover)

Instruction Manual

for

Model 2832

Bench Type 3-1/2 Digit

MULTIMETER

B&K PRECISION

DYNASCAN CORPORATION

6460 W. Cortland St. • Chicago, IL 60635

312-889-8870

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INTRODUCTION

The **B & K-Precision** Model 2832 bench-type 3-1/2 digit multimeter is a highly versatile instrument which offers portability as well as precision. In addition to the usual digital multimeter functions of ac & dc voltage, ac & dc current, and resistance measurements, the Model 2832 also measures capacitance and features a diode test and continuity test function.

The instrument is easy to use, as all functions are selected from a panel of very logically laid out and identified push-buttons. The 3-1/2 digit LCD display features automatic minus sign, and low battery annunciators. The unit is housed in a rugged, attractive plastic case, and the carrying handle doubles as a sturdy tilt stand. The tilt stand can be folded under the instrument to allow stacking with your other instruments.

Although the instrument is a bench unit with the features expected in a bench unit, the instrument can also be operated from six "C"-cell batteries, providing full portability.

Safety features include safety jacks, safety test leads, and extensive overload protection, including a high energy fuse.

B & K-Precision offers a full line of optional accessories for the Model 2832 which can further expand the capabilities and usefulness of the instrument.

SPECIFICATIONS

Accuracy is specified for temperature range of +18°C to +28°C (75% max RH).

GENERAL SPECIFICATIONS

Display:
3-1/2 digit LCD. Displays to 1999 counts.

Ranging:
Manual ranging.

Over Range Indication:
"1" appears on leftmost character of display with all other digits blanked.

Polarity Indication:
Positive polarity assumed, minus (-) sign for negative polarity.

Sampling:
2.5 times/sec (nominal).

Maximum Common Mode Voltage:
500 V (dc + ac peak).

Calibration:
1 year for specified accuracy.

Temperature Range:
Operation: 0 to +50° C, 70% RH.
Storage: -20° to +60° C, 80% RH.

Power Requirements:
115 V ±10%, 50-60 Hz, 1 W using supplied ac adapter.
9 VDC using six "C"-cell batteries (not supplied).

Battery Life:
Approximately 2000 hours using alkaline cells.

Low Battery Indication:
"LO BAT" appears on display when battery voltage is low.

Fuses:
Double fused. 250 V, 2 A and 600 V, 4 A.

Dimensions (W x H x D):
240 x 64 x 190 mm (9.4 x 2.5 x 7.5").

Weight:
Approximately 1.75 kg (3.85 lb).

DC VOLTAGE (Manual Ranging)

RANGE	RESOLUTION	ACCURACY	INPUT IMPEDANCE
200 mV	100 µV	±(0.5% rdg. + 1 count)	10 MΩ
2 V	1 mV		
20 V	10 mV		
200 V	100 mV		
1000 V	1 V		

Response Time:
3 seconds maximum to rated accuracy within selected range.

Overload Protection (2 V to 1000 V ranges):
1000 V DC or AC rms max.

Overload Protection (200 mV range):
500 VDC or 350 VAC rms max.

NMRR (Normal Mode Rejection Ratio):
Greater than 40 dB (50/60 Hz).

CMRR (Common Mode Rejection Ratio):
Greater than 100 dB (50/60 Hz).

SPECIFICATIONS

AC VOLTAGE (Manual Ranging)

Average responding, calibrated to read rms value of sine wave.

RANGE	RESOLUTION	FREQUENCY	ACCURACY	INPUT IMPEDANCE
200 mV	100 µV	45 Hz to 500 Hz	±(1.0% rdg. + 4 counts)	10 MΩ, less than 100 pF
2 V	1 mV			
20 V	10 mV			
200 V	100 mV			
1000 V	1 V			

Response Time:
8 seconds maximum to rated accuracy within selected range.

Overload Protection (2 V to 1000 V ranges):
1000 V DC or 1000 V AC rms max.

Overload Protection (200 mV range):
500 V DC or 350 AC rms max.

DC CURRENT (Manual Ranging)

RANGE	RESOLUTION	ACCURACY	BURDEN VOLTAGE
200 µA	0.1 µA	±(1.0% rdg. + 1 count)	300 mV (max)
2 mA	1 µA		
20 mA	10 µA		
200 mA	100 µA		
2000 mA	1 mA	±(1.0% rdg + 3 counts)	1.1 V (max)
20 A	10 mA		

Response Time:
3 seconds maximum to rated accuracy within selected range.

Overload Protection (200 µA to 2000 mA ranges):
2 A, 250 V fuse and 4 A, 600 V high-energy fuse.

Overload Protection (20 A range):
No fuse.

AC CURRENT (Manual Ranging)

Average responding, calibrated to read rms value of sine wave.

RANGE	RESOLUTION	FREQUENCY	ACCURACY	BURDEN VOLTAGE
200 µA	0.1 µA	45 Hz to 500 Hz	±(1.5% rdg. + 4 counts)	300 mV rms (max)
2 mA	1 µA			
20 mA	10 µA			
200 mA	100 µA			
2000 mA	1 mA			1.1 V rms (max)
20 A	10 mA			

Response Time:

8 seconds maximum to rated accuracy within selected range.

Overload Protection (200 µA to 2000 mA ranges):

2 A, 250 V fuse and 4 A, 600 V high-energy fuse.

Overload Protection (20 A range):

No fuse.

RESISTANCE (Manual Ranging)

RANGE	RESOLUTION	ACCURACY	MAX TEST CURRENT	MAX OPEN CIRCUIT VOLTAGE
200 Ω	0.1 Ω	±(0.75% rdg. + 4 counts)	2.5 mA	Approx 3.2 V
2 kΩ	1 Ω	±(0.75% rdg. + 1 count)	250 µA	Approx 0.6 V
20 kΩ	10 Ω		50 µA	
200 kΩ	100 Ω		5 µA	
2000 kΩ	1 kΩ		500 nA	
20 MΩ	10 kΩ	±(1.5% rdg. + 5 counts)	50 nA	

Response Time:
200 Ω to 2000 kΩ ranges: 5 seconds maximum to rated accuracy within selected range.
20 MΩ range: 15 seconds maximum to rated accuracy within selected range.

Overload Protection:
500 V DC or AC rms max.

SPECIFICATIONS

CAPACITANCE (Manual Ranging)

RANGE	RESOLUTION	ACCURACY	TEST FREQUENCY
2 nF	1 pF	±(2.0% + 4 counts)	300 Hz
20 nF	10 pF		
200 nF	100 pF		
2000 nF	1 nF		
20 µF	10 nF		

Response Time:
9 seconds maximum to rated accuracy within selected range.

CONTINUITY CHECK
Built in buzzer sounds when resistance is less than approximately 200 Ω.

Range:
2 kΩ.

Resolution:
1 Ω.

Maximum Test Current:
1.5 mA.

Maximum Open Circuit Voltage:
3.2 V.

DIODE TEST
Measures approximate forward voltage for silicon or germanium diodes or semiconductor junctions.

CONTROLS AND INDICATORS

1. **POWER Switch.** Turns instrument ON and OFF. Power-on indicated by presence of characters on display.

2. **20 A Jack.** Input for 20 amp DC or AC current range.

CAUTION

Do not exceed 20 A maximum input.

3. **V Ω ⊣◀ Jack.** Input jack for voltage measurement, resistance measurement, diode testing, and continuity testing.

CAUTION

Do not exceed the MAXIMUM INPUT RATINGS listed on the inside front cover of this manual.

4. **AC/DC Switch.** Selects AC or DC in voltage and current functions. Engage switch (set to "in" position) for AC, disengage switch (set to "out" position) for DC.

5. **Display.** 3-1/2 digit LCD display with automatic decimal point and minus (-) sign. Indicates to 1999 counts. Annunciator for low battery condition. Overrange indicated by a **"1"** displayed at the leftmost digit while all other digits remain blank.

6. **CX (+) Jack.** Positive input for capacitance measurements.

7. **CX (-) Jack.** Negative input for capacitance measurements.

8. **20 A/ 20 MΩ/20 µF Switch.** Selects 20 A range for DC and AC current functions, 20 MΩ range for resistance function, and 20 µF range for capacitance function.

9. **1000 V/2000 mA/2000 kΩ/2000 nF Switch.** Selects 1000 V range for DC and AC voltage functions, 2000 mA range for DC and AC current functions, 2000 kΩ range for resistance function, and 2000 nF range for capacitance function.

10. **200 V/200 mA/200 kΩ/200 nF Switch.** Selects 200 V range for DC and AC voltage functions, 200 mA range for DC and AC current functions, 200 kΩ range for resistance function, and 200 nF range for capacitance function.

11. **20 V/20 mA/20 kΩ/20 nF Switch.** Selects 20 V range for DC and AC voltage functions, 20 mA range for DC and AC current functions, 20 kΩ range for resistance function, and 20 nF range for capacitance function.

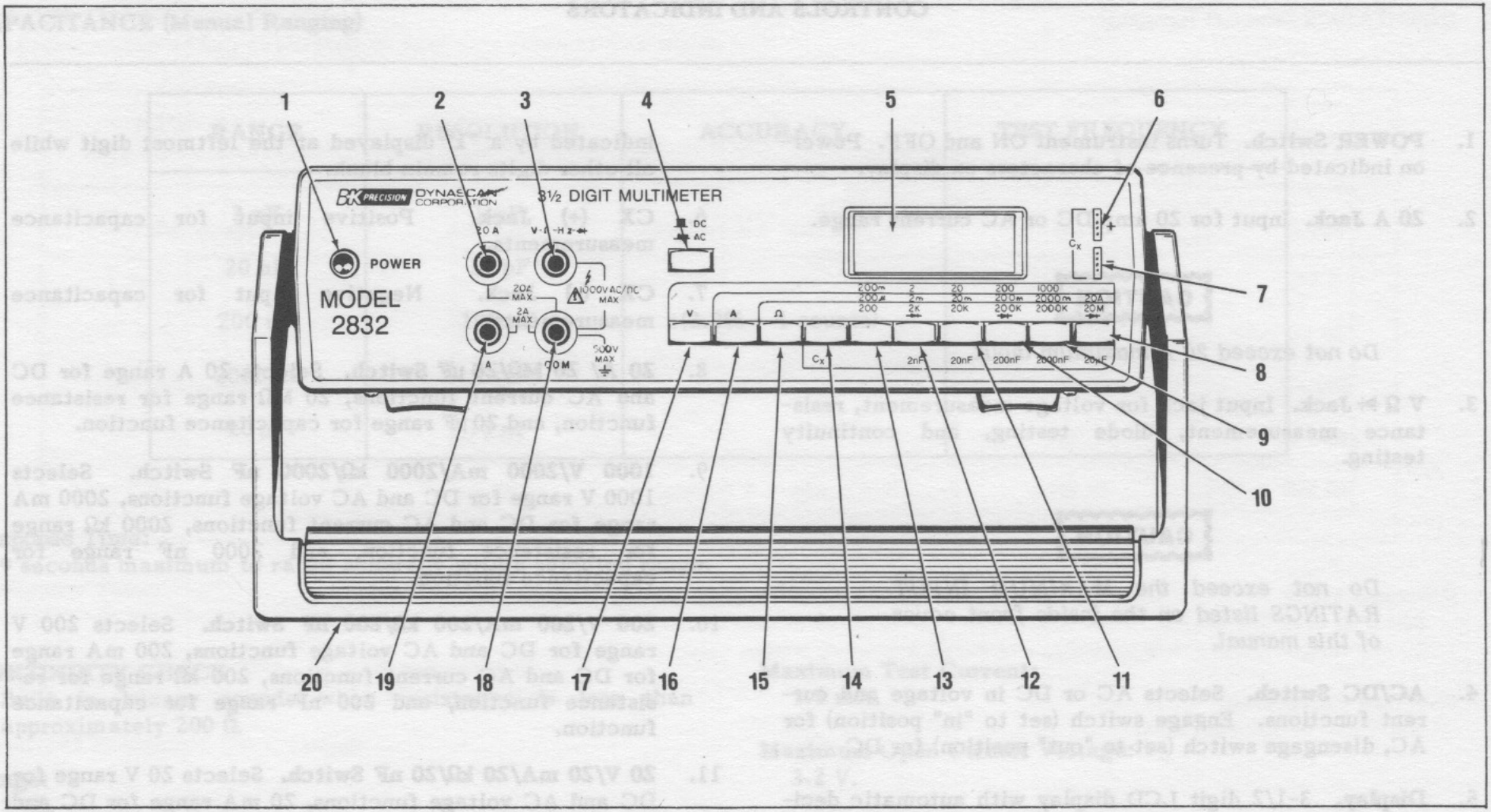

Fig. 1. Front Panel Controls and Indicators.

12. **2 V/2 mA/2 kΩ/2 nF Switch.** Selects 2 V range for DC and AC voltage functions, 2 mA range for DC and AC current functions, 2 kΩ range for resistance function, and 2 nF range for capacitance function. Works in conjunction with **200 Ω** and **Ω** switches to select diode test/continuity function.

13. **200 mV/200 µA/200 Ω Switch.** Selects 200 mV range for DC and AC voltage functions, 200 µA range for DC and AC current functions, and 200 Ω range for resistance function. Works in conjunction with **2 kΩ** and **Ω** switches to select diode test/continuity function.

14. **CX Switch.** Selects capacitance function.

15. **Ω Switch.** Selects resistance function. When **200 Ω** and **2 kΩ** switches are both engaged, the diode test/continuity test function is selected.

16. **A (amp) Switch.** Selects current function.

17. **V Switch.** Selects voltage function.

18. **COMmon Jack.** Input for common test lead for all measurements except capacitance.

CAUTION

Connect to earth ground or reference point not more than 500 volts (dc + ac peak) from earth ground.

19. **A (amp) Jack.** Input for 200 µA to 2 A DC or AC current range.

CAUTION

Do not exceed 2.0 A maximum input.

20. **Handle/Tilt Stand.**

21. **Fuse** (not shown). 2.0 A fuse. Overload protection for 200 µA to 2 A current range. Located on rear panel.

22. **Battery Compartment** (not shown). Pull-out tray with provision for six "C" cell batteries. Opens with thumbscrew located on rear panel. Also includes storage area for test leads and spare fuse.

23. **AC Adapter Jack** (not shown). Jack for connection to supplied ac adapter.

WARNING

Use of test equipment may expose the operator to electric shock hazards. Observe all instructions contained in the TEST INSTRUMENT SAFETY section of this manual before using this instrument.

CAUTION

The TEST INSTRUMENT SAFETY section of this manual lists maximum voltage and current input limits which must be observed. Failure to adhere to these limits may result in damage to the instrument.

POWER SOURCES

The Model 2832 can be used as a bench instrument, powered from the ac adapter. Additionally, the instrument can be operated in field applications, powered from six internally-contained "C"-cell batteries (not supplied).

1. To power the instrument from an ac outlet, connect the ac adapter to the **AC Adapter Jack** and plug the adapter into an ac outlet.
2. To power the instrument from batteries, install batteries (refer to "battery installation" instructions in the MAINTENANCE section of this manual).

NOTE

Do not attempt to recharge rechargable batteries (i.e., "ni-cads", etc.) with the batteries installed in an instrument using the ac adapter. When the ac adapter is connected to the adapter jack, the batteries are disconnected from the instrument power bus. Additionally, the supplied ac adapter is not intended for such use.

VOLTAGE MEASUREMENTS

1. Press the **V** function switch.
2. Select AC or DC measurement using **AC/DC** switch. Set for DC measurement by setting switch to disengaged ("out") position. Push switch "in" for AC measurement.
3. If the voltage to be measured is unknown, start with the **1000 V** range.
4. When an approximate voltage range is known, simply press the switch for the range desired. Greatest resolu-

tion is attained using the range closest to an overrange for the voltage being measured.

5. Connect the red test lead to the **V Ω ⊣⊢** jack and the black test lead to the **COM** jack.

6. Connect the test leads across the circuit points to be measured.

7. Read the measured value from the display.

CURRENT MEASUREMENTS

WARNING

*For current measurements, the meter must be connected in **series** with the load. If incorrectly connected (in parallel with the load), the meter presents a very low impedance (almost a short), which may blow the fuse or damage the meter or equipment under test. The 20 A range has no fuse protection and may severely damage the meter or equipment under test or cause personal injury.*

For current measurements greater than 2 A, high current test leads should be used. High current measurements with standard test leads could cause the leads to heat up, or in extreme cases, to melt. This not only affects the accuracy of the measurement, but could result in injury to the operator.

1. Press the **A** function switch.

2. Select DC or AC measurement using the **AC/DC** switch. Set for DC measurement by disengaging the switch ("OUT" position). For AC measurement engage the switch ("IN" position).

3. If the current to be measured is unknown, start with the meter in the **20 A** range, using the **20 A** jack. If the current might exceed 2 A, use high current test leads.

4. When an approximate current range is known, simply press the switch for the range desired. Greatest resolution is attained using the range closest to an overrange for the current being measured.

   a. For current measurements of 2 A or less, connect the red test lead to the **A** jack and the black test lead to the **COM** jack.

   b. For current measurements greater than 2 A, connect a red high current test lead to the **20 A** jack and connect a black high current test lead to the **COM** jack.

5. Remove power from the circuit under measurement and open the normal circuit path where the measurement is to be taken. Connect the meter in series with the circuit.

6. Apply power to the circuit and read the measured value on the display.

RESISTANCE MEASUREMENTS

1. Remove power from the equipment under test.
2. Press the Ω function switch.
3. Connect the red test lead to the **V Ω →+** jack and the black test lead to the **COM** jack.
4. Connect the test leads to the desired point of measurement and observe the reading on the display.
5. If the resistance range is unknown, start with the lowest range. If an overrange is indicated, continue selecting higher ranges until the overrange indication ceases. At this range, greatest resolution is achieved.

CONTINUITY TESTING

1. First, perform steps 1 through 4 of RESISTANCE MEASUREMENTS. Activate the continuity tone by simultaneously engaging the **200 Ω** and **2 kΩ** switches.
2. If the continuity sensed by the meter is below the continuity threshold, the continuity tone will sound and the resistance reading will appear on the display.
3. Press any of the range switches to disable the continuity tone.

DIODE TESTING

1. Perform steps 1 through 3 of RESISTANCE MEASUREMENTS.
2. Simultaneously press the **200 Ω** and **2 kΩ** switches.
3. The meter uses conventional-current lead polarity for diode testing (i.e., current flow assumed from positive-to-negative).

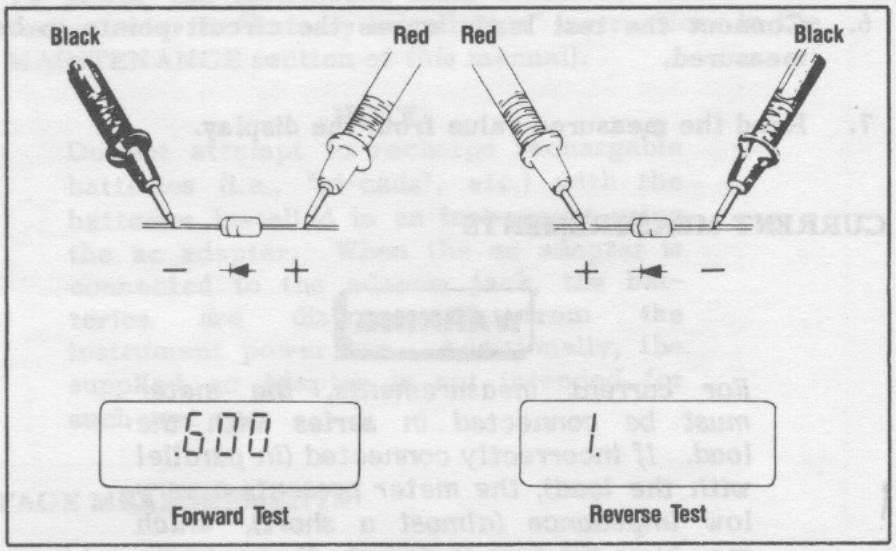

Fig. 2. Diode Test.

4. To check the forward-bias condition of a diode, place the black test lead on the cathode of the diode and the red test lead on the anode of the diode. Properly functioning diodes will be forward-biased with this lead orientation. A forward voltage drop of approximately 0.6 volts for silicon diodes or 0.3 volts for germanium diodes should be observed. An overrange display under this condition indicates an open diode or junction.

5. To check the reverse-bias condition of a diode, place the red test lead on the cathode and the black test lead on the anode. Properly functioning diodes will give an overrange display, indicating very high reverse resistance. A reading less than overrange indicates a leaky diode.

CAPACITANCE MEASUREMENTS

CAUTION

Always discharge capacitors (by shorting leads together) before inserting the leads into the **CX** *test jacks. Inserting a charged capacitor into the capacitance test jacks could damage the instrument.*

1. Press the **CX** switch and make sure that the **AC/DC** switch is in the **DC** position (disengaged).

2. Insert the capacitor leads into the **CX (+)** and **CX (-)** jacks. If the capacitor is polarized, be sure to insert the negative lead in the **CX (-)** jack and the positive lead in the **CX (+)** jack.

3. Select the desired range. If the value is unknown start with the lowest range (**2 nF**). If an overrange is indicated, continue selecting higher ranges until the overrange indication ceases. At this range, greatest resolution is achieved.

4. Read the capacitance value from the display.

CONSIDERATIONS

1. Only measure capacitance values by directly inserting the capacitors leads into the **CX** test jacks. Connecting wire between the capacitor under test and the **CX** test jack adds capacitance and causes erroneous readings.

2. Capacitors (especially electrolytics) often have extremely wide tolerances. Typically, measured values of up to 100% greater than the rated value are observed. However, values are seldom drastically below the rated value.

3. This multimeter applies a very low voltage to the component under measurement. There is no danger of exceeding the electrical ratings of most components or of retaining a dangerous voltage on a capacitor when it is removed from the meter.

4. This multimeter utilizes an ac measurement method for capacitance. Therefore, the meter is inherently more immune to capacitance value error than meters using the timed dc-ramp method when measuring high-leakage capacitors; a situation common with electrolytic capacitors.

5. To conserve battery life (when batteries are being used to power the multimeter), turn the power off when measurements are complete. A low battery condition is indicated by **LO-BAT** appearing in the upper-left corner of the readout. This indicates that about 20% of the 2,000 hour battery life remains. When the **LO-BAT** indicator is active, the batteries should be replaced as soon as possible.

WARNING

The following instructions are for use by qualified service personnel only. To avoid electrical shock, do not perform servicing other than contained in the operating instructions unless you are qualified to do so.

Remove test leads from instrument and point of measurement before performing any servicing.

CASE REMOVAL AND REPLACEMENT

1. Remove the test leads and disconnect the adapter. If batteries are installed, remove the batteries.
2. Lay the instrument on its back for access to the retaining screws.
3. Remove the two Phillips head screws that retain the rear rubber feet. Do not remove the front rubber feet. Remove the two Phillips head screws located next to the front rubber feet. These screws secure the top case to the bottom case.
4. Turn the instrument over. Fully loosen the battery compartment door screw, but keep the storage tray fully pushed in. Gently lift off the top case, pulling straight up. Make sure that the rear panel stays inserted in the bottom half of the case.
5. Flip the top of the case over to the right (as viewed from the rear of the unit).
6. Replace the top case by reversing the procedure.
7. When reassembling the case, make certain of the following points:
   a. The battery leads and ground wire must clear the case mounting spacers before tightening the case screws.
   b. The tilt stand must be properly positioned within the case cut-outs.
   c. The front and rear panels must be properly indexed with the corresponding case slots.

   When case halves are properly reassembled, top case half will rest flush with bottom case half without additional force.

FUSE REPLACEMENT

If current measurements are not possible on the 200 μA through 2000mA ranges, check for blown overload protection fuse which is contained in the rear panel fuseholder. Replace

only with original type 2 A, 250 V normal blow 3 AG fuse (Dynascan part number 190-251-9-001).

This multimeter also includes a high energy fuse to protect against accidental connection to high energy sources. The high energy fuse is a 1-3/8 x 13/32" BBS cartridge-type fuse mounted inside the unit on the main circuit board, and is retained by a fuse clip. An opened condition is not readily visible with this type of fuse. Therefore, verify fuse condition with a continuity test. Replace a blown fuse only with original type 4 A, 600 V high energy fuse (Dynascan part number 194-008-9-001). Under normal operation, this fuse should not require replacement for the life of the instrument. If you suspect a blown fuse, always check the rear panel fuse first.

TEST LEADS

Use only shrouded safety type test leads, like those supplied. Periodically examine the test leads to ensure that the conductors are not intermittent or broken. Also make sure that good contact pressure exists at the test lead receptacles and fuseholder, and keep these areas free from dirt and corrosion. For safety from electrical shock, periodically check for evidence of damage to the insulation. Never use test leads with exposed bare wires. cracked insulation, or burned spots on the insulation. Use only high-current leads for measurements above 2 A.

BATTERY INSTALLATION

1. The battery compartment door is located on the instrument rear panel. Loosen the thumbscrew to open the door.
2. Remove the test leads and the spare fuse from the compartment. Pull the tray toward the outside of the instrument.
3. When tray is fully pulled out, tilt the tray downward to access the batteries.
4. Remove the exhausted batteries by prying cell free from battery holder using a small screwdriver (or other suitable tool).
5. Install six "C"-cell batteries noting correct polarity, as shown in Fig. 3.

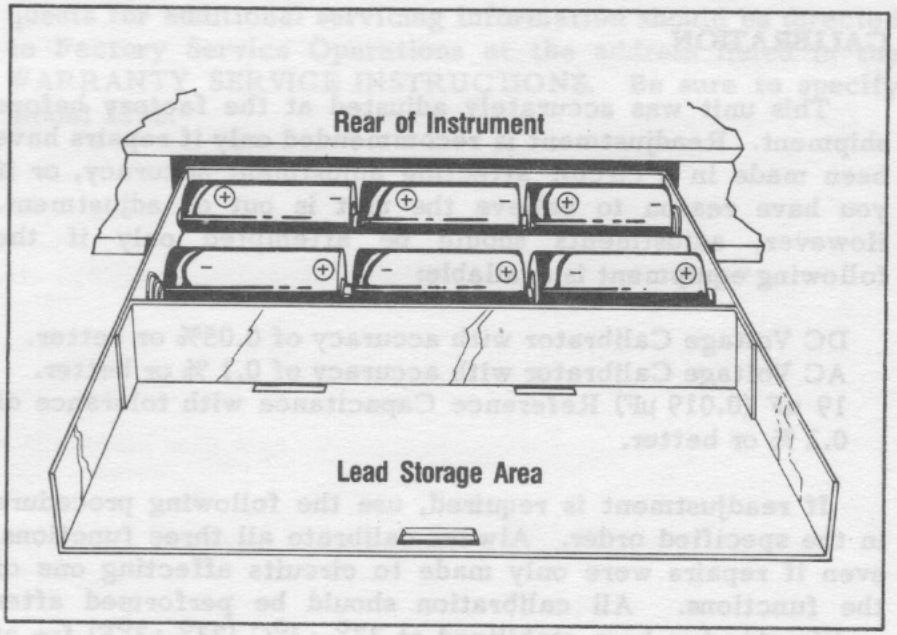

Fig. 3. Battery Installation.

CAUTION

Make certain that the batteries are installed properly, noting correct polarity, before turning the instrument on.

Do not remove the black plastic battery holder from the metal tray. Doing so could damage the battery holder leads.

6. Tilt the metal tray up and push it into the compartment. Hand-tighten the thumbscrew.

CALIBRATION

This unit was accurately adjusted at the factory before shipment. Readjustment is recommended only if repairs have been made in a circuit affecting adjustment accuracy, or if you have reason to believe the unit is out of adjustment. However, adjustments should be attempted only if the following equipment is available:

DC Voltage Calibrator with accuracy of 0.05% or better.
AC Voltage Calibrator with accuracy of 0.1 % or better.
19 nF (0.019 µF) Reference Capacitance with tolerance of 0.2 % or better.

If readjustment is required, use the following procedure in the specified order. Always calibrate all three functions, even if repairs were only made to circuits affecting one of the functions. All calibration should be performed after multimeter has been stabilized at 23° ±2°C (73° ±3°F) for at least 30 minutes.

DC Voltage Calibration

1. Adjust the output of the DC voltage calibrator for 190 mV.
2. Set the multimeter for the **DC V** function and select the **200 mV** range.
3. Connect the DC voltage calibrator output to the multimeter voltage input jacks.
4. Adjust VR 1 on the multimeter for a reading of 190.0 or 190.1 on the LCD display.
5. Disconnect the DC voltage calibrator from the multimeter.

AC Volts Calibration

1. Adjust the output of the AC voltage calibrator for 190 mV.
2. Set the multimeter for **AC V** function and select the **200 mV** range.
3. Connect the AC voltage calibrator to the multimeter voltage input jacks.
4. Adjust VR 2 on the multimeter for a reading of 190.0 ±1 digit on the display.
5. Disconnect the AC voltage calibrator from the multimeter.

Capacitance Calibration

1. Set the multimeter for **DC** and **CX** functions and select the **20 nF** range.

2. Connect a precision 19 nF reference capacitor to the **CX** test jacks.

3. Adjust VR 4 on the multimeter for a reading of 19.00 on the LCD display.

INSTRUMENT REPAIR AND CALIBRATION SERVICE

Because of the specialized skill and test equipment needed for instrument repair and calibration, many customers prefer to rely upon **B & K-Precision** authorized service agencies for this purpose. To use this service, even if you multimeter is no longer under warranty, follow the instructions given in the WARRANTY SERVICE INSTRUCTIONS portion of this manual. There is a nominal charge for instruments out of warranty.

ADDITIONAL SERVICING INFORMATION

Refer to the separately supplied Schematic Diagram & Parts List. An experienced instrument technician can perform most servicing with this document as a reference. Requests for additional servicing information should be directed to Factory Service Operations at the address listed in the WARRANTY SERVICE INSTRUCTIONS. Be sure to specify Model 2832.

ACCESSORIES

ACCESSORIES SUPPLIED

AC Adapter.

One Set Safety Test Leads, 1 red, 1 black.

One Spare Fuse, 2.0 A.

Schematic Diagram & Parts List.

OPTIONAL ACCESSORIES

CP-1 Clamp-On AC Current Probe.

HV-6 High Voltage Probe, 6 kV.

PR-28 High Voltage Probe, 40 kV.

PR-23 Demodulator Probe.

PR-21 Isolation/Direct Probe.

FP-10 High-Current Test Leads.

FP-30 Replacement Test Lead Set.

WARRANTY SERVICE INSTRUCTIONS
(For U.S.A. and its Overseas Territories)

1. Refer to the MAINTENANCE section of your **B & K-Precision** instruction manual for adjustments that may be applicable.

2. If the above-mentioned does not correct the problem you are experiencing with your unit, pack it securely (preferably in the original carton or double-packed). Enclose a letter describing the problem and include your name and address. Deliver to, or ship PREPAID (UPS preferred in U.S.A.) to the nearest **B & K-Precision** authorized service agency (see list enclosed with unit).

If your list of authorized **B & K-Precision** service agencies has been misplaced, contact your distributor for the name of your nearest service agency, or write to:

B & K-Precision, Dynascan Corporation
Factory Service Operations
6460 West Cortland Street
Chicago, Illinois 60635
Tel (312) 889-8870
Telex: 25-3475

Also use this address for technical inquiries
and replacement parts orders.

LIMITED ONE-YEAR WARRANTY

DYNASCAN CORPORATION warrants to the original purchaser that its **B & K-Precision** product, and the component parts thereof, will be free from defects in workmanship and materials for a period of one year from the date of purchase.

DYNASCAN will, without charge, repair or replace, at its option, defective product or component parts upon delivery to an authorized **B & K-Precision** service contractor or the factory service department, accompanied by proof of the purchase date in the form of a sales receipt.

To obtain warranty coverage in the U.S.A., this product must be registered by completing and mailing the enclosed warranty registration card to DYNASCAN, **B & K-Precision**, 6460 West Cortland Street, Chicago, Illinois 60635 within fifteen (15) days from the date of purchase.

Exclusions: This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alterations or repairs. It is void if the serial number is altered, defaced or removed.

DYNASCAN shall not be liable for any consequential damages, including without limitation damages resulting from loss of use. Some states do not allow limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific rights and you may also have other rights which vary from state to state.

For your convenience we suggest you contact your **B & K-Precision** distributor, who may be authorized to make repairs or can refer you to the nearest service contractor. If warranty service cannot be obtained locally, please send the unit to **B & K-Precision** Service Department, 6460 West Cortland Street, Chicago, Illinois 60635, properly packaged to avoid damage in shipment.

B & K-Precision Test Instruments warrants products sold only in the U.S.A. and its overseas territories. In other countries, each distributor warrants the **B & K-Precision** products which it sells.

(continued from inside front cover)

5. For voltage or current measurements in high voltage equipment, do not touch equipment, meter, or test leads while power is applied.

6. If possible, familiarize yourself with the equipment being tested and the location of its high voltage points. However, remember that high voltage may appear at unexpected points in defective equipment.

7. Use an insulated floor material or floor mat to stand on, and an insulated work bench surface; make certain such surfaces are not damp or wet.

8. Keep "one hand in the pocket" while handling an instrument probe. Be particularly careful to avoid contacting a nearby metal object that could provide a good ground return path.

9. When using a probe, touch only the insulated portion. Never touch the exposed tip portion.

10. Some equipment with a two-wire ac power cord, including some with polarized power plugs, is the "hot chassis" type. This includes most recent television receivers and audio equipment. A plastic or wooden cabinet insulates the chassis to protect the customer. When the cabinet is removed for servicing, a serious shock hazard exists if the chassis is touched. Not only does this present a dangerous shock hazard, but damage to test instruments or the equipment under test may result. To make measurements in "hot chassis" equipment, always connect an isolation transformer between the ac outlet and the equipment under test. The **B & K-Precision** Model TR-110 or 1604 Isolation Transformer, or Model 1653 or 1655 AC Power Supply is suitable for most applications. To be on the safe side, treat all two-wire ac powered equipment as "hot chassis" unless you are sure it has an isolated chassis or an earth ground chassis.

11. When testing ac powered equipment, remember that ac line voltage is usually present on some power input circuits such as on-off switch, fuses, power transformer, etc. any time the equipment is connected to an ac outlet, even if the equipment is turned off.

12. Never work alone. Someone should be nearby to render aid if necessary. Training in CPR (cardio-pulmonary resuscitation) first aid is highly recommended.

B&K PRECISION

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