

Dynamatic Model 375

VACUUM TUBE VOLTMETER



INSTRUCTION MANUAL

INFOTRONIX
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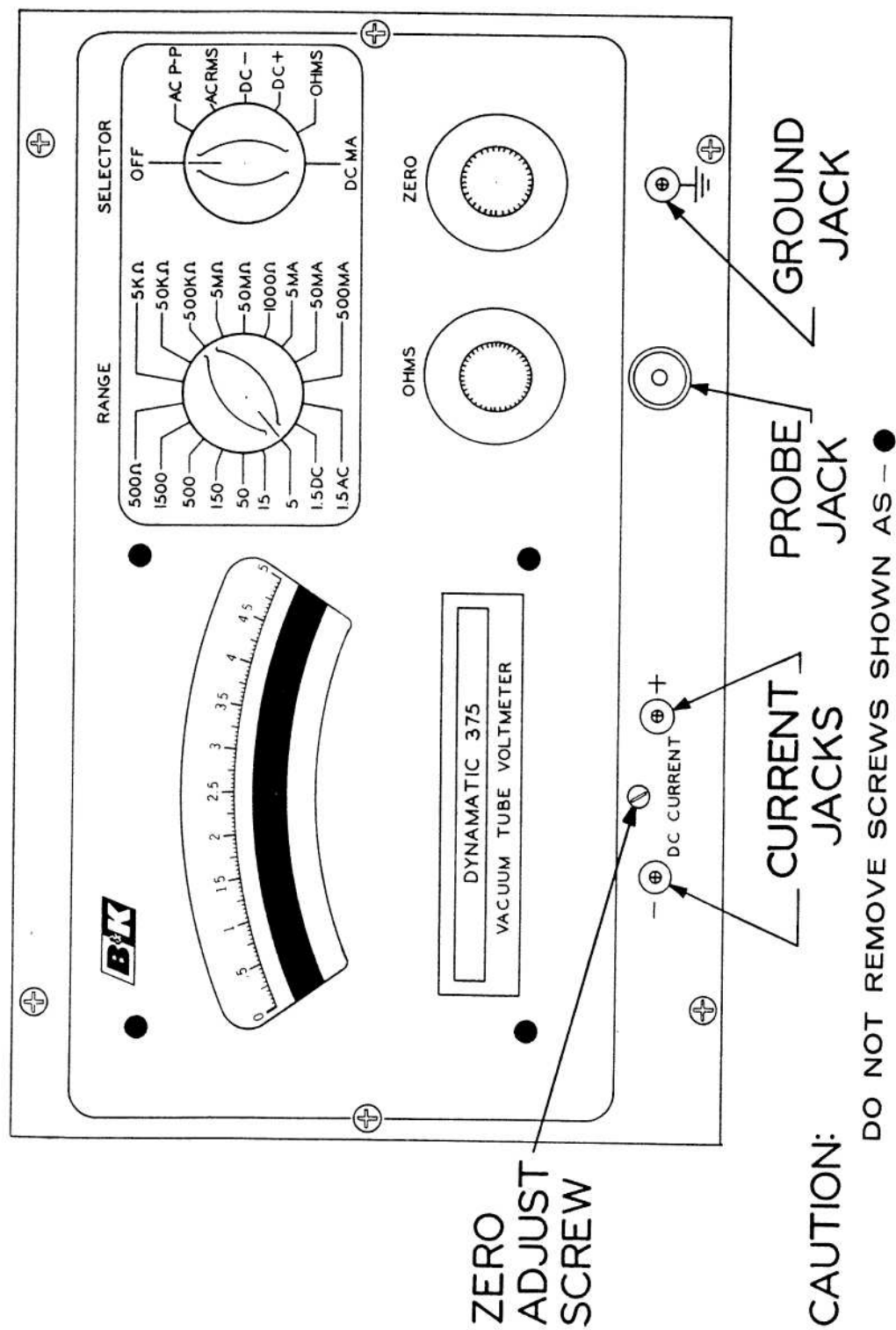


Figure 1—Front Panel Drawing of Instrument Showing Location of Controls and Jacks

OPERATING INSTRUCTIONS

FOR

Model 375

Dynamatic

VACUUM TUBE

VOLTMETER

B & K MANUFACTURING COMPANY

DIVISION OF DYNASCAN CORPORATION

1801 West Belle Plaine Avenue

Chicago 13, Illinois

SPECIFICATIONS

D. C. VOLTMETER

RANGES: 1.5, 5, 15, 50, 150, 500 and 1500 volts
full scale direct reading

INPUT RESISTANCE: 11 megohms

ACCURACY: $\pm 3\%$ of full scale

A. C. VOLTMETER

RANGES, RMS: 1.5, 5, 15, 50, 150, 500 and 1500 volts
full scale direct reading

RANGES, PEAK-TO-PEAK: 1.5, 5, 15, 50, 150, 500 and 1500 volts
full scale direct reading

ACCURACY: $\pm 3\%$ of full scale

FREQUENCY RESPONSE: 30 cycles to 2 M.C. ± 3 DB, extended to
250 M. C. with accessory R.F. probe, B & K
part number PR 38

OHMMETER

RANGES: 500, 5K, 50K, 500K, 5 Megohms, 50 Megohms and 1000
Megohms, full scale direct reading

D. C. MILLIAMMETER

RANGES: 5 M. A., 50 M. A., and 500 M. A.,
full scale direct reading

ACCURACY: $\pm 5\%$ of full scale

METER MOVEMENT

100 Microamps full scale
Iridescent knife-edge pointer, anti parallax mirror.

BATTERY

1.5 Volts size "D" cell supplied with instrument.

MULTIPLIERS

All current, voltage and resistance multipliers are 1% precision resistors.

SIZE

10 $\frac{3}{4}$ " x 6 $\frac{3}{4}$ " deep with combination swivel stand and carrying handle.
Net weight 8 lbs.

OPERATING VOLTAGE

117 volts 50-60 CPS

GENERAL

The B & K Model 375 Dynamatic VTVM enables the user to make measurements with a degree of speed and accuracy that far surpasses conventional instruments.

Each voltage, resistance and current range has a separately calibrated scale that automatically appears as the range switch is rotated. The instrument is direct reading since only the one correct scale is visible to the operator. Even peak to peak voltages are direct reading and do not require special interpretation.

The iridescent knife-edge pointer and anti-parallax mirror makes it easy for the user to obtain precise measurements. Illuminated scales eliminate reflections and permit readings even under poor lighting conditions.

A sturdy combination probe with built in switch is used for all voltage and resistance measurements. Separate front panel current jacks are isolated from the VTVM circuitry for safety and convenience.

The high input resistance (11 megohms) on all D. C. Voltage ranges minimize circuit loading when measurements are made from high resistance sources. The 1 megohm resistor built into the combination probe prevents cable capacitance from shunting any A. C. or R. F. signal when measuring D. C. voltage. An electronic bridge circuit protects the sensitive meter movement from any damage during accidental voltage overloads on all A. C. and D. C. voltage ranges. The VTVM incorporates a detector which is accurate for complex as well as sinusoidal voltages. A separate crystal diode R. F. probe is available to extend the range of A. C. measurements to 250 M.C.

A unique combination swivel stand and carrying handle provide the utmost in operator convenience. Any viewing and operating angle can be obtained regardless of the location of the instrument.

ASSEMBLY INSTRUCTIONS

An accessory package is included containing the hardware shown in figure 2. Carefully assemble the stand to the VTVM using the hardware provided in the following sequence:

Insert the knurled screw thru the stand. Position the bent washer so that the bend is locked in the "V" formed by the stand. Slip on the rubber washer and thread assembly to case of VTVM.

After assembly the instrument can be conveniently placed on a top shelf or work bench and adjusted for the desired viewing angle. Simply tightening the knurled screws on both sides of the stand prevents the instrument from rotating.

For carrying purposes, swing rear support to the top of the VTVM and tighten hand screws. Figure 3 shows the position of the stand when it is used as a carrying handle.

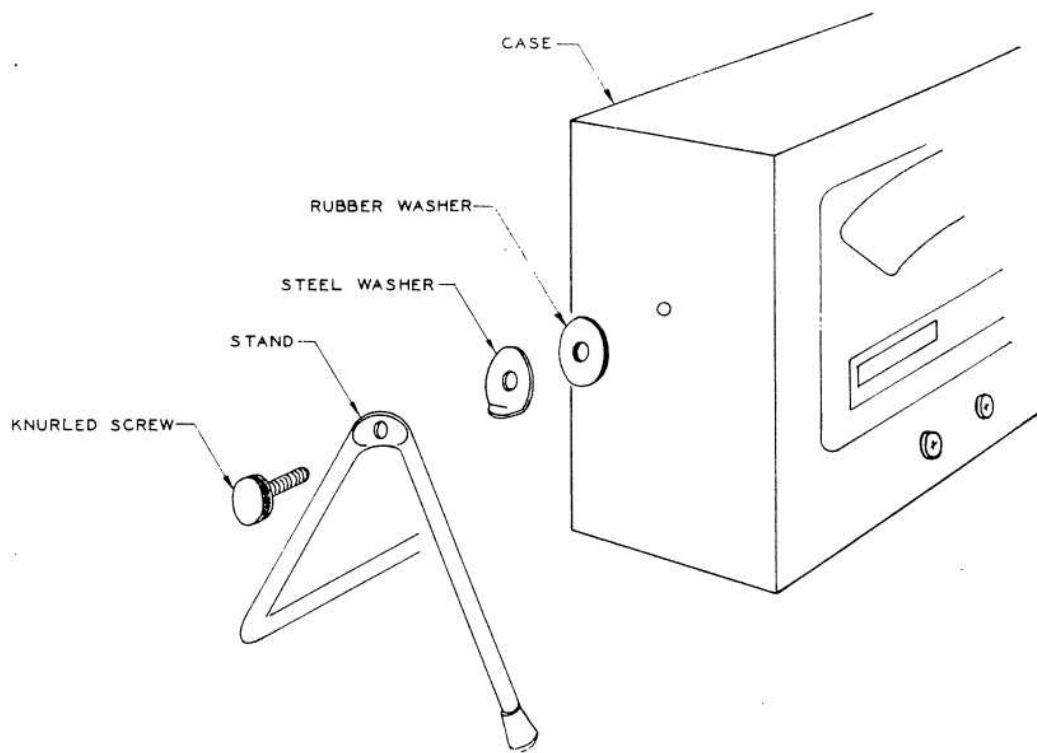


Figure 2—Assembly of Stand To Case

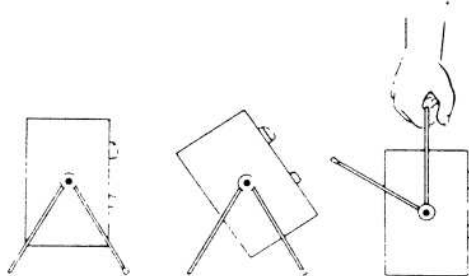


Figure 3—Various Positions of Stand

OPERATING INSTRUCTIONS

GENERAL

After positioning the instrument at the desired location, adjust the meter movement zero adjust screw for zero reading on any range. The adjustment screw is centered just above the — and + current jacks. See Figure 1, for location of meter zero adjust. This is a mechanical adjustment and should be made with the SELECTOR SWITCH in the Off position or in the Current position.

Before attempting any measurement, allow the instrument to warm up for a 15 minute period.

If the RANGE and SELECTOR switches are improperly set, it will be impossible to properly adjust the instrument with the ZERO control. This feature will immediately tell the technician to recheck the RANGE and SELECTOR switches for erroneous settings and thus avoid a measurement error.

The case of the VTVM is connected to the ground jack of the front panel. It is extremely important that the technician exercises caution when working on AC-DC equipment, that is, equipment that has one side of the power line connected to the chassis. When connecting the ground of the VTVM to this type of equipment, the case of the VTVM will also be connected to the power line. Most technicians employ an isolation transformer for safety when working on AC-DC equipment.

Exercise extreme caution when making any high voltage measurements. It is good practice to connect the ground lead first and then use only one hand to hold the probe. Keep your other hand away from the chassis. For maximum safety stand on a thick rubber or fibre mat.

HOW TO READ THE METER SCALES

Voltage And Current Scales

All of the AC, peak-to-peak, DC voltage and current ranges are read on scales similar to those shown in Figure 4. These scales are basically linear since the spacing between the markings are equal.

Between long lines the scales are subdivided by small lines. For example, figure 4A reads 8.2 volts because the pointer is on the 1st small division beyond 8 volts. Since there are 5 small divisions or lines between 8 and 9 volts, each small division line represents 0.2 volts. The 0.2 volts is added to the 8 volts for this measurement.

The same method of interpolation is applied to the remaining scales shown in figure 4B through 4E inclusive.

Resistance Ranges

All of the resistance ranges are similar in spacing to the 0 to 500 OHM range with the numerical labeling multiplied by some power of ten. The only exception is the 1000 Megohm range between 100 and 1000 Megohms.

Figure 5A shows the 0 to 500 ohm range. The first half of this scale is divided by long lines in ohms with 10 ohms at center scale. The zero to 5 ohms is further subdivided by small lines into 0.2 ohm per division. From 5 to 10 ohms, the small lines represent 0.5 ohms division. From 10 to 20 ohms, the small lines represent 1 ohms per division. From 20 to 30 ohms, the small lines represent 2 ohms per division. From 30 to 50 ohms, the small lines represent 10 ohms per division. From 100 to the first medium size line, the small lines represent 20 ohms per division. The first medium size line beyond 100 ohms is 200 ohms. The next medium line is 300 ohms and the last medium line between 100 and 500 ohms is 400 ohms. Figure 5A shows a measurement of 3.2 ohms on the 500 ohm range. Figure 5B shows a measurement of 220 ohms on the 5K range.

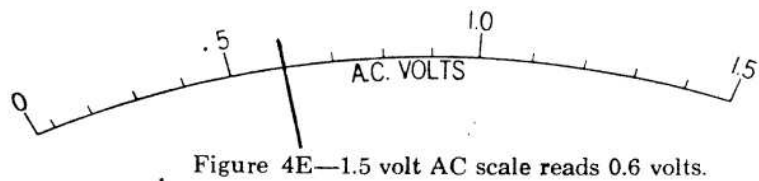
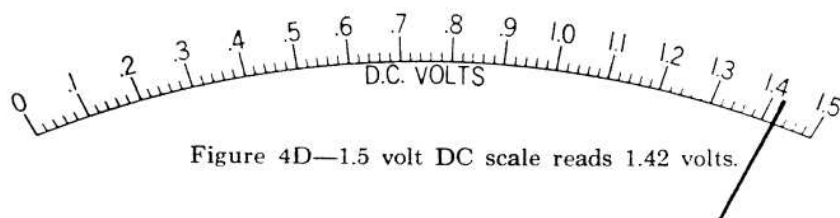
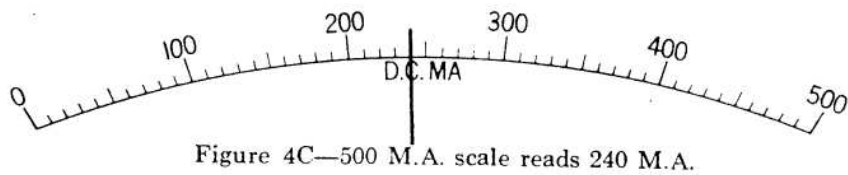
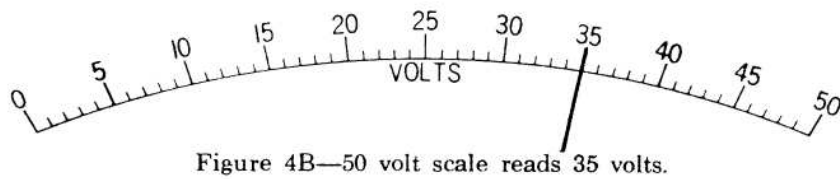
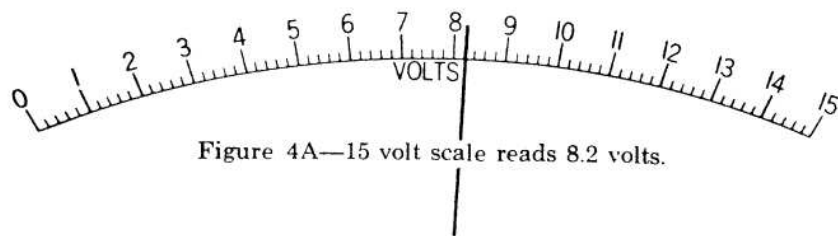


Figure 4—Voltage and Current Scales.

"Infinity" (∞) is marked on each scale and this is the position the meter pointer is adjusted to with the OHMS control. (See operating instructions RESISTANCE MEASUREMENTS.)

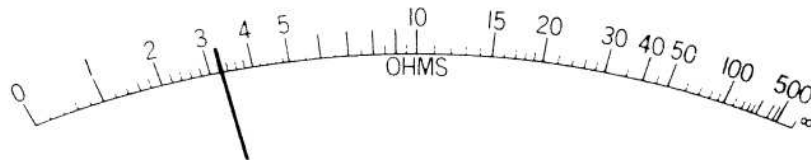


Figure 5A—Reads 3.2 Ohms on the 500 Ohm Range.

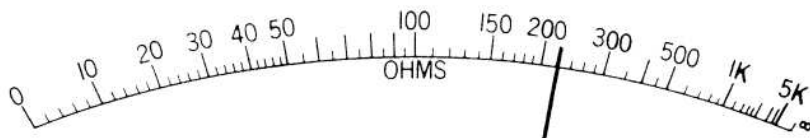


Figure 5B—Reads 220 Ohms on the 5K Range.

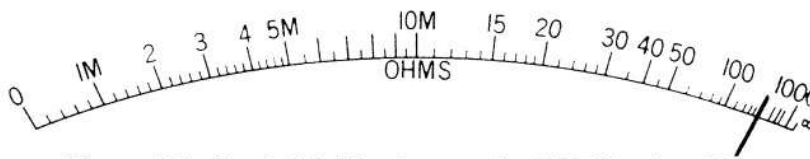


Figure 5C—Reads 200 Megohms on the 1000 Megohms Range.

Figure 5—Scales for Resistance

On the 1000 megohm range Figure 5C, between 100 and 1000 megohms, the first medium line is 200 megohms. The second medium line is 300 megohms. The third medium line is 400 megohms. The fourth medium line is 500 megohms. Figure 5C shows a measurement of 200 megohms on the 1000 megohm range.

USING THE ANTI-PARALLAX MIRROR

To read the meter to the greatest accuracy, the anti parallax mirror should be used. Parallax comes about when the eye of the observer is not directly over the meter pointer. This causes the needle to be displaced to the right or to the left, depending upon which side of the needle the observer's head is placed. When using the anti parallax mirror, position the eye until the meter pointer and the reflection of the pointer in the mirror coincide. Use only one eye. The meter can now be read to the greatest accuracy, see Fig. 6.

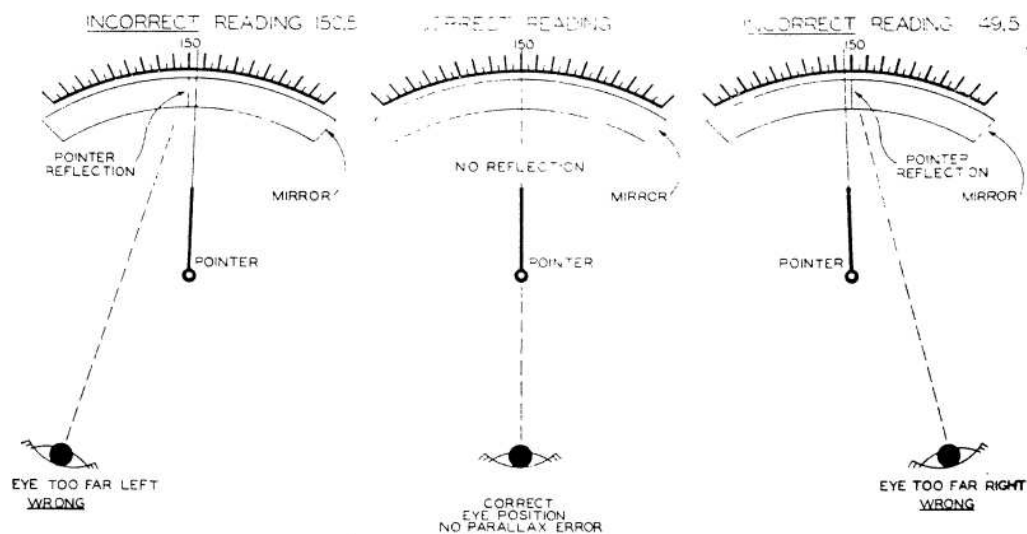


Figure 6—Using the Anti-Parallax Mirror

D. C. VOLTAGE MEASUREMENTS

1. Set the SELECTOR switch to + D.C. or — D.C. as required. When measuring a positive voltage with respect to ground, the selector switch is placed in the + D.C. position. When measuring a negative voltage with respect to ground, the selector switch is placed in the — D.C. position, ground refers to negative input to VTVM.
2. Place the SLIDE SWITCH on the probe to the D.C. position.
3. Set the RANGE switch to a full scale voltage range higher than the D.C. voltage to be measured. If the voltage to be measured is not known, set the range switch on the highest or 1500 volt range and then switch down to lower ranges until the reading is approximately mid-scale.
4. Adjust the ZERO control for zero reading on the meter scale just before making your measurement. Short the probe tip to the ground lead during this adjustment.
5. If the meter reads backwards, simply reverse polarity by setting the SELECTOR switch to the opposite polarity and repeat step 4.
6. Read the D.C. voltage directly on the voltage scale visible thru the window opening.

A.C. RMS MEASUREMENTS

The B & K Dynamatic 375 is designed to accurately read the RMS value of a sinusoidal voltage. Other types of waveforms are classified as complex and are normally described by their peak-to-peak amplitudes. When taking measurements on complex waveforms see section on peak-to-peak A.C. measurements.

1. Set the SELECTOR switch to A.C. RMS.
2. Place the SLIDE SWITCH on probe to the A.C.-OHMS position.
3. Set the RANGE switch to a full scale voltage range higher than the A.C. RMS voltage to be measured. If the voltage to be measured is not known, set the range switch on the 1500 volt range and later switch to a lower range until the reading is approximately mid-scale.
4. Adjust the ZERO control for zero reading on the meter scale just before making your measurement. Short the probe tip to the ground lead during this adjustment.
5. Read the A.C. RMS voltage directly on the voltage scale visible thru the window opening.

A.C. PEAK TO PEAK MEASUREMENTS

Figure 7 shows some typical waveforms that can be read directly on the B & K Dynamatic 375. The peak-to-peak voltage is accurately indicated regardless of waveform.

1. Set the SELECTOR switch to A.C. P-P.
2. Place the SLIDE SWITCH on probe to the A.C.-OHMS position.

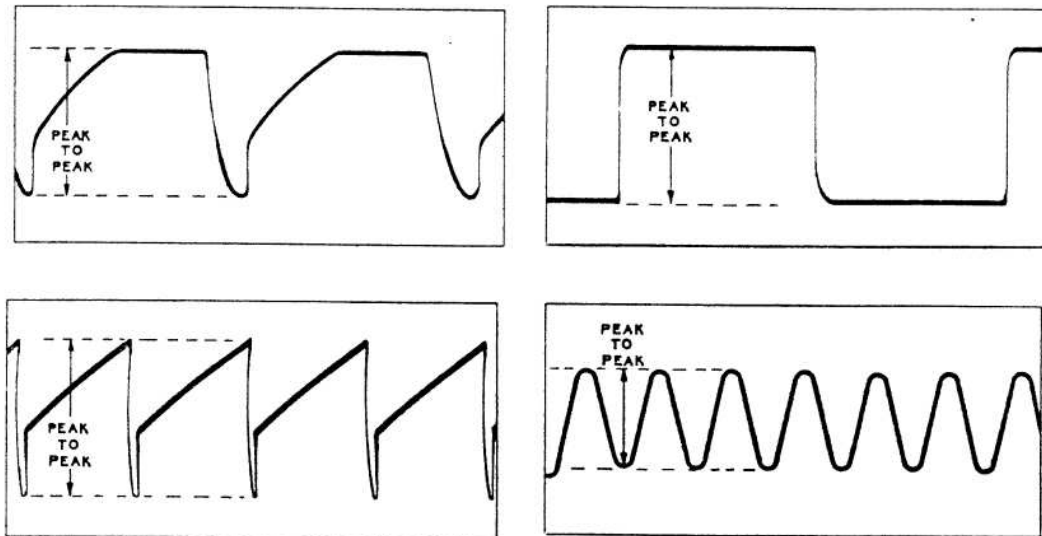


Figure 7—Typical Peak To Peak Waveforms

3. Set the RANGE switch to a full scale voltage higher than the peak-to-peak voltage to be measured. If the voltage to be measured is not known, set the range switch on the 1500 volt range and later switch down until the reading is approximately mid-scale.

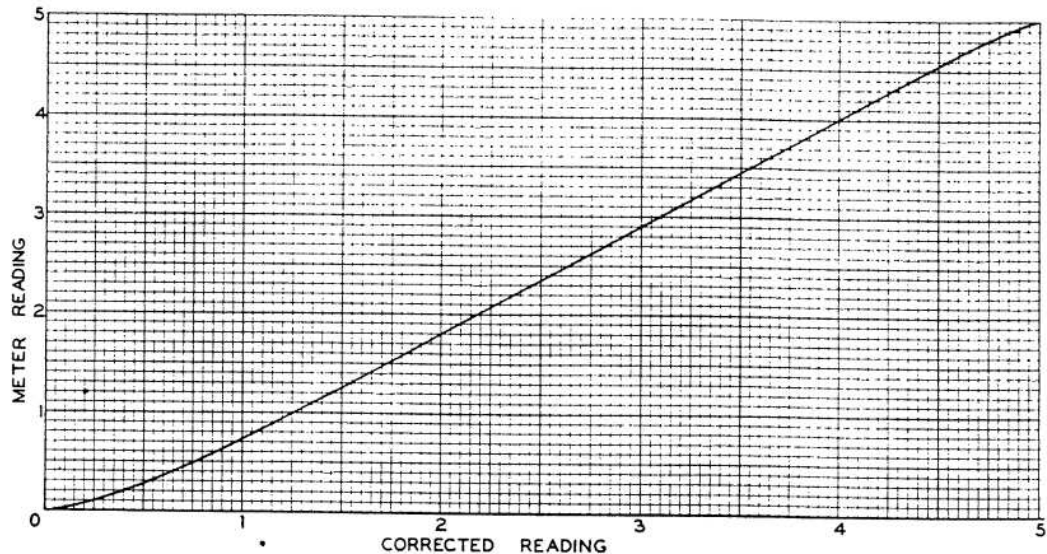


Figure 8—Correction Curve for Low Voltage Peak to Peak Measurements (0 to 4.5 P.P.)

4. Adjust the ZERO control for zero reading on the meter scale just before making your measurement. Short the probe tip to the ground lead during this adjustment.
5. Read the A.C. peak-to-peak voltage directly on the voltage scale visible thru the window opening.
6. For maximum accuracy when measuring peak-to-peak voltages between 0 and 4.5 volts, the correction curve, Figure 8 should be consulted.

RESISTANCE MEASUREMENTS

A wide range of resistance measurements can be made with your B & K Dynamatic 375. Resistances up to 1000 megohms can be accurately determined. Exercise caution when making resistance measurements on the low resistance ranges. As much as 150 M.A. of current can flow thru the device being tested on the lowest resistance range. When checking current sensitive devices, such as instrument fuses and semi-conductors, use the range where the current is limited to a fraction of the amount required to damage the device under test. The following list shows the maximum currents which can flow on each of the resistance ranges:

Range	Maximum Current
500 OHMS	150 M.A.
5000 OHMS	15 M.A.
50 K	1.5 M.A.
500 K	150 Microamps
5 M	15 Microamps
50 M	1.5 Microamps
1000 M	0.15 Microamps

1. Always remove the power from the equipment you are testing before making resistance measurements.
2. Set the SELECTOR switch to OHMS.
3. Place the SLIDE SWITCH on the probe to the A.C.-OHMS position.
4. Set the RANGE switch to a full scale resistance higher than the resistance to be measured. If the resistance to be measured is not known, set the range switch to the 1000 Megohm range and later switch down until the reading is approximately mid-scale.
5. Adjust the ZERO control for a zero reading on the meter scale with the probe shorted to the ground lead. Unshort the test leads and set the OHMS adjust for "infinity". Repeat if necessary since there is a small amount of interaction between these two controls. Perform these adjustments just before taking a reading.
6. If the meter won't adjust for "infinity" the battery should be replaced. (See Maintenance section.)
7. Resistance is read directly on the resistance scale visible thru the window opening.

D. C. CURRENT MEASUREMENTS

The current measuring circuit is independent of the VTVM circuitry. It is possible to take current measurements with the VTVM line cord removed from the power line. The protective feature of the VTVM bridge circuit is absent during current measurements. It is possible to overload the sensitive meter and cause permanent damage if precautions are not observed. Always start current measurements on the 0 to 500 M. A. range. Switch down to the 0 to 50 M. A. range ONLY if the meter reads below 50 M. A. on the 0 to 500 M. A. range. Switch down to the 0 to 5 M. A. range ONLY if the meter reads below 5 M. A. on the 0 to 50 M. A. range.

1. Set the SELECTOR switch to D.C.M.A.
2. Set the RANGE switch to 500 M.A.
3. De-energize the power to the equipment under test.
4. Series connect the circuit with the test leads provided into the front panel jacks marked CURRENT. Observe polarity.
5. Energize the equipment under test.
6. If the meter reads backwards, de-energize equipment before reversing leads.
7. Read D. C. current directly on scale behind window opening.
8. Set the RANGE switch to a lower current range only after observing the previously stated precautions.

MAINTENANCE

Follow disassembly instructions before making repairs or changing tubes.

CAUTION: Be sure to replace instrument in case and fasten with front panel screws. The instrument will calibrate erroneously unless mounted in the case.

Occasionally it will be necessary to replace the 1½ volt battery which is associated with the ohmmeter circuit. Failure of the battery is indicated when it is no longer possible to properly ZERO and OHMS adjust the instrument on the 0 to 500 ohms resistance range. Replace the used battery immediately before corrosion takes place.

Replacing the 12AU7 bridge tube or 6AL5 peak to peak detector will correct most field failures. Be sure to age tubes for 48 hours before calibration.

DISASSEMBLY INSTRUCTIONS

1. Disconnect the line cord from the power outlet.
2. Remove the 6 screws, shown in figure 1, with a Phillips head screwdriver. Caution:— Do not remove the 4 screws in the black area which surround the meter movement.
3. Holding one hand on the panel, slowly tilt the top of the instrument towards you. The instrument panel is now free and can be cautiously removed from the case.
4. Place the instrument face down on a soft clean cloth pad for protection.
5. To replace the battery, first remove the white polyethelene filler by grasping the ends of the filler with forefinger and thumb and pulling upwards. Hold the instrument down with your free hand to prevent jarring. The positive battery contact is spring loaded. Simply pull this contact away from the battery for easy removal.
6. To re-assemble the instrument, tilt the case until the back is parallel with the top of the bench. Grasp the instrument panel with both hands at the edges and slowly lower the instrument panel down into the case. Replace the 6 panel screws.

CALIBRATION

Your B & K Dynamatic VTVM has been properly calibrated at the factory with highly accurate standards. The internal calibration controls should be adjusted only when absolutely necessary. If the 6AL5 P-P detector, 12AU7 bridge tube or a component has been replaced, the instrument should be recalibrated.

1. Place instrument in a horizontal position as shown in Fig. 9. Set the RANGE switch to 500 M.A. Allow the instrument to stabilize a minimum of 48 hours if tubes have been replaced. If a component has been replaced allow at least 1 hour warm up before proceeding.
2. Adjust METER ZERO CRANK with a screwdriver for zero on the 500 M.A. range. See Figure 1 for location of this adjustment.
3. Remove calibrate snap-out cover plate by prying with a thin blade screwdriver. Replace when calibration is completed.

D. C. Voltage Calibrate

- A. Set the RANGE switch to 1.5 volts D.C.
- B. Set the SELECTOR switch to + DC.
- C. Position the SLIDE SWITCH on probe to the DC position.
- D. Zero adjust the instrument with ZERO control while the probe tip is shorted to the ground lead.
- E. Connect the probe and ground lead to an accurately known 1.5 volt source.
- F. Meter will now deflect to approximately full scale.
- G. Slowly rotate the DC CALIBRATE CONTROL, Figure 9 until the meter reads exactly full scale. (1.5 volts.)
- H. The instrument is now accurately calibrated for all the DC voltage ranges.

A. C. and Peak-to-Peak Voltage Calibrate

- A. Set the RANGE switch for 1.5 volts A.C.
- B. Set the SELECTOR switch to + DC.
- C. Zero adjust the meter with the front panel ZERO control. Short the probe tip to the ground lead during this adjustment.

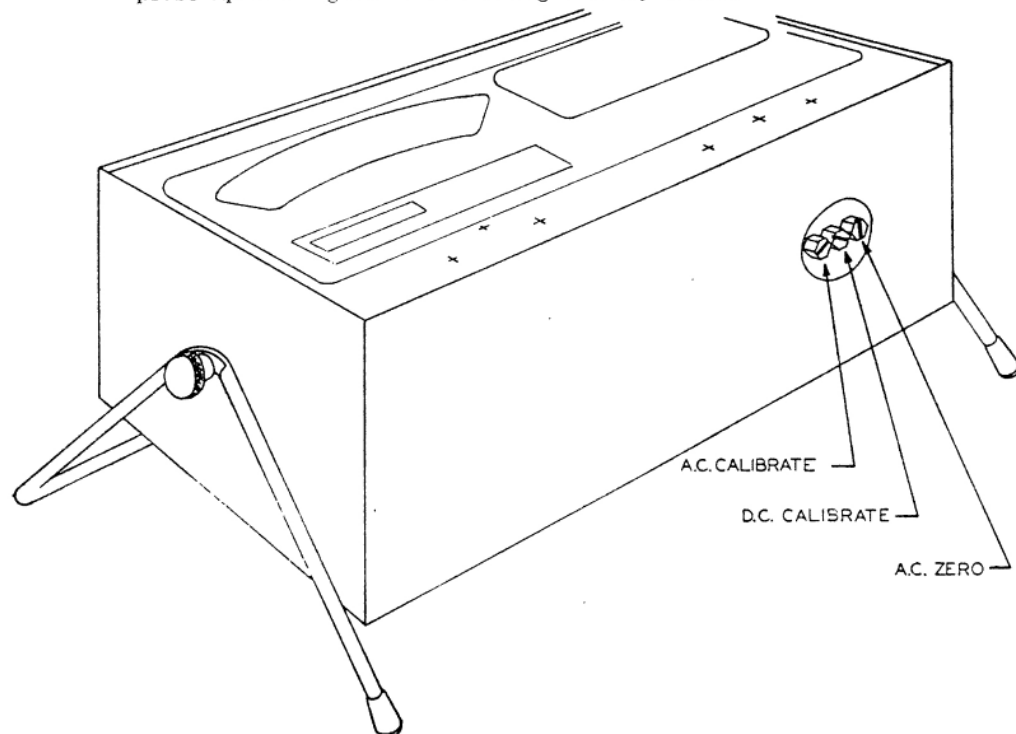


Figure 9—Location of Calibration Controls

- D. With the probe tip still shorted to the ground lead, set the SELECTOR to P-P and zero adjust the meter with the AC ZERO control, Figure 9, for a zero reading on the meter scale.
- E. Set the RANGE switch to 15 V. Set the SELECTOR switch to AC RMS. Position the SLIDE SWITCH on the probe to the AC-OHMS position.
- F. Connect the probe and ground lead to an accurately known 15 volt RMS 50/60 CPS sine wave source.
- G. Slowly rotate the AC CALIBRATE CONTROL, Figure 9 until the meter reads exactly full scale. (15 volts.)
- H. The instrument is now accurately calibrated for all AC RMS and peak-to-peak ranges.

B & K Model 375 Parts and Price List

SCHEMATIC SYMBOL	DESCRIPTION	B & K PART No.	DEALER'S NET
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CAPACITORS

C-1	.005 MFD. @ 500V \pm 20% P.C. Disc.		
C-2	Ceramic Capacitor	CC-A005-500-20	.09
C-3	10 MFD. @ 175V Pigtail Tubular Electrolytic	CL-10-175	.96
C-4	.05 MFD. @ 400V \pm 10% Paper Tubular Capacitor	CP-A05-400-10	.18
C-5	.02 MFD. @ 500V \pm 10% P.C. Disc Ceramic Capacitor	CC-A02-500-10	.15
C-6	.01 MFD. @ 500V \pm 10% Disc Ceramic Capacitor	CCA-01-500-10	.15

RESISTORS — CONTROLS

R-1	7 Megohm $\frac{1}{2}$ W \pm 1% Carbon Resistor	RC-7M-A-1	.24
R-2	2 Megohm $\frac{1}{2}$ W \pm 1% Carbon Resistor	RC-2M-A-1	.24
R-3	700K Ohms $\frac{1}{2}$ W \pm 1% Carbon Resistor	RC-700K-A-1	.24
R-4	200K Ohms $\frac{1}{2}$ W \pm 1% Carbon Resistor	RC-200K-A-1	.24
R-5	70K Ohms $\frac{1}{2}$ W \pm 1% Carbon Resistor	RC-70K-A-1	.24
R-6	1K Ohms $\frac{1}{2}$ W \pm 1% Carbon Resistor	RC-1K-A-1	.24
R-7	100 Ohms $\frac{1}{2}$ W \pm 1% Carbon Resistor	RC-100-A-1	.24
R-8	20K Ohms $\frac{1}{2}$ W \pm 1% Carbon Resistor	RC-20K-A-1	.24
R-9	10K Ohms $\frac{1}{2}$ W \pm 1% Carbon Resistor	RC-10K-A-1	.24
R-10	9.1 Ohms $\frac{1}{2}$ W \pm 5% Carbon Resistor	RC-9A5-A-5	.24
R-11	20.4 Ohms $\frac{1}{2}$ W \pm 1% Carbon Resistor	RC-20A4-A-1	.24
R-12	2.004 Ohms $\frac{1}{2}$ W \pm 1% W. W. Resistor	RW-2A004-A-1	.66
R-13	.2 Ohms $\frac{1}{2}$ W \pm 1% W. W. Resistor	RW-A2-A-1	.66
R-14	900K Ohms $\frac{1}{2}$ W \pm 1% Carbon Resistor	RC-900K-A-1	.24
R-15	315K Ohms $\frac{1}{2}$ W \pm 1% Carbon Resistor	RC-315K-A-1	.24
R-16	138K Ohms $\frac{1}{2}$ W \pm 1% Carbon Resistor	RC-138K-A-1	.24
R-17	25K Ohm $\frac{1}{4}$ Watt Pot. (Ohms Adjust)	P-92	.54
R-18	10K Ohm $\frac{1}{4}$ Watt Pot. (Zero Adjust)	P-78	.54
R-19	10K Ohm $\frac{1}{2}$ W \pm 5% Carbon Resistor	RC-103-A-5	.12
R-20			
R-21	6.8 Megohm $\frac{1}{2}$ W \pm 10% Carbon Resistor	RC-685-A-10	.06
R-22	680 Ohms $\frac{1}{2}$ W \pm 5% Carbon Resistor	RC-681-A-5	.12
R-23			
R-24	22K Ohms $\frac{1}{2}$ W \pm 5% Carbon Resistor	RC-223-A-5	.12
R-25	3.3 Megohm $\frac{1}{2}$ W \pm 10% Carbon Resistor	RC-335-A-10	.06
R-26	27K Ohms $\frac{1}{2}$ W \pm 5% Carbon Resistor	RC-273-A-5	.12
R-27	11K Ohms		
R-30	15K Ohms (Triple Section Pot. Assembly		
R-32	11K Ohms (Internal)	P-93	1.02
R-28	47K Ohms $\frac{1}{2}$ W \pm 5% Carbon Resistor	RC-473-A-5	.12
R-29	20 Megohm $\frac{1}{2}$ W \pm 5% Carbon Resistor	RC-206-A-5	.12
R-31	91 Megohm $\frac{1}{2}$ W \pm 10% Carbon Resistor	RC-916-A-10	.12
R-33	1260 Ohms $\frac{1}{2}$ W \pm 1% Carbon Resistor	RC-1260-A-1	.24
R-34	Part of Probe (see Miscellaneous)		
R-35	47K Ohms $\frac{1}{2}$ W \pm 5% Carbon Resistor	RC-473-A-5	.12
R-36	100K Ohms $\frac{1}{2}$ W \pm 5% Carbon Resistor	RC-104-A-5	.12
R-37	1.5K Ohms $\frac{1}{2}$ W \pm 1% Carbon Resistor	RC-1500-A-1	.24
R-39	4.7K Ohms $\frac{1}{2}$ W \pm 10% Carbon Resistor	RC-473-A-10	.06

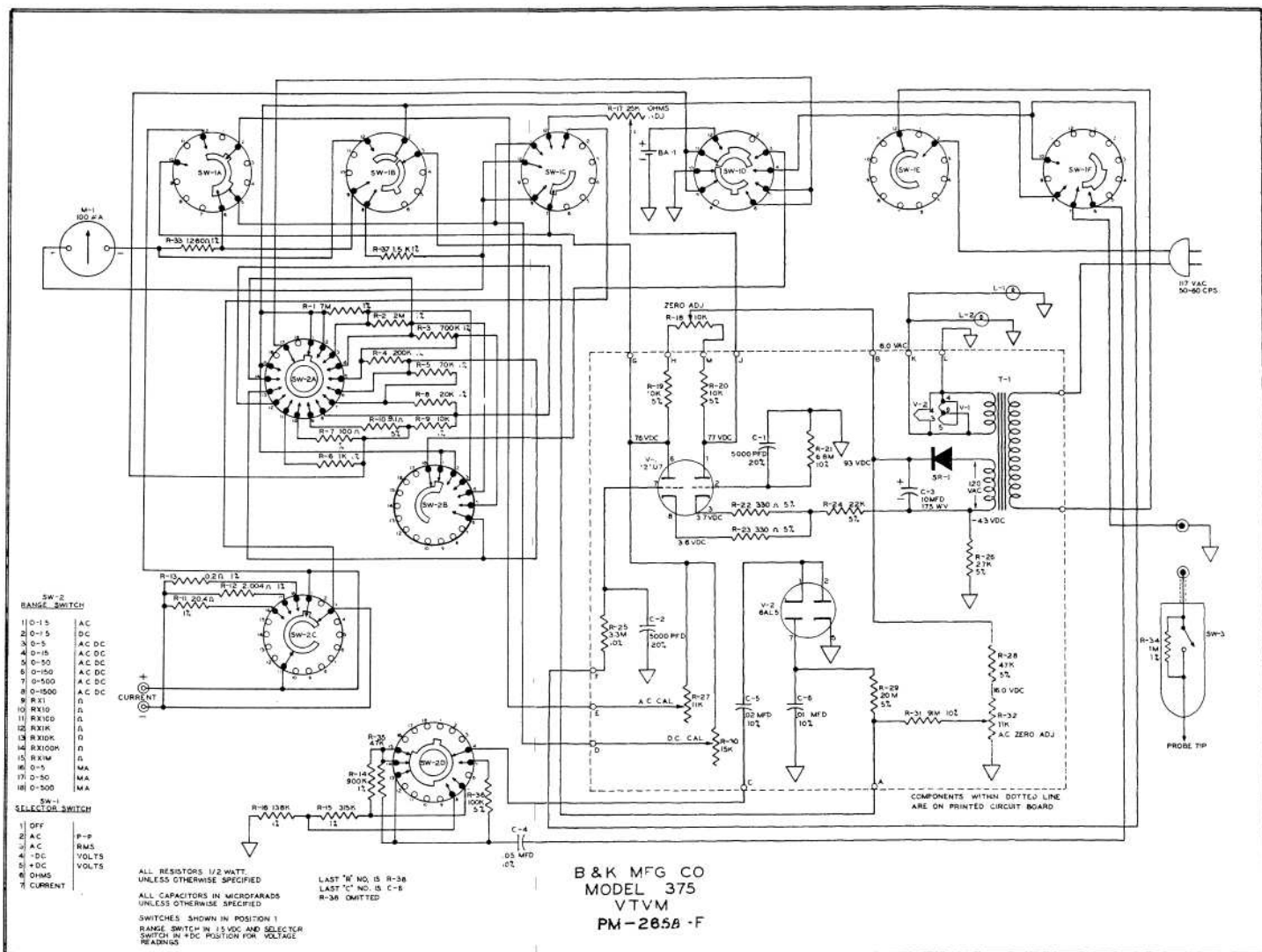
SWITCHES

SW-1	Selector Switch	S-58	2.52
SW-2	Range Switch	S-57	3.63

SCHEMATIC SYMBOL	DESCRIPTION	B & K PART No.	DEALER'S NET
MISCELLANEOUS			
BA-1	1½ Volt Dry Battery.....	BC-1	.20
L-1	{ No. 47 Pilot Lamp.....	PL-3	.12
L-2			
SR-1	Selenium Rectifier 65 MA.....	E-65PC	.66
T-1	Power Transformer.....	TP-20	2.28
V-1	12AU7 Tube.....	V-12AU7	2.45
V-2	6AL5 Tube.....	V-6AL5	1.85
PR-37	AC/DC Probe Assembly consisting of:.....	ASM65	4.95
	Plastic Shell, Top Half (Holds Switch).....	CA-7T	.75
	Plastic Shell, Bottom Half.....	CA-7B	.75
R-34	1 Megohm ½ W ± 1% Carbon Resistor.....	RC-105-A-1	.24
SW-3	Slide Switch.....	S-22	.12
	Probe Tip.....	SM-13	.09
	Wire, Shielded (3½').....	W-7	.87
	Probe Lead Connector.....	J-10	.36
PR-38	RF Probe Assembly.....		7.95
	Case.....	A-181A	5.94
	Stand Assembly.....	ASM-76	1.29
	Consists of:		
	Stand, Plated.....	A-184A	.90
	Rubber Tips (2).....	RU-4	each .03
	Rubber Sleeves (2).....	RU-2	each .03
	Stand Hardware Package.....	ASM-78	1.02
	Consists of:		
	Knurled Knob for Stand (2).....	SM-15	each .24
	Rubber Washer for Stand (2).....	RU-5	each .03
	Steel Washer for Stand (2).....	A-191-A	each .15
	Switch Gear.....	GE-1	.42
	Line Cord Strain Relief.....	H-195	.06
	Plastic Battery Block.....	H-293	.03
	Plug Button, Case Bottom.....	H-291	.09
	Pin Jack, Black.....	J-33	.12
	Pin Jack, Red.....	J-34	.12
	Probe Connector, Panel.....	J-16	.24
	Knob (Range and Selector).....	K-27	.24
	Knob, (Ohms and Zero Adjust).....	K-28	.18
	Dial Glass, Screened.....	LE-8A	.27
	Line Cord.....	W-14	.33
	Complete Printed Circuit Board, Less Tubes.....	ASM-74	12.12
	Printed Circuit Hold Down Strap.....	A-193A	.15
	Complete Calibrated Meter and Drum		
	Assembly consisting of:.....	ASM-75	24.93
	Drum Assembly.....	ASM-73	2.52
	Drum Shaft.....	SM-14B	.18
	Drum Retain. Spring (2).....	SP-12	each .12
	Drum Mounting Bracket.....	A-173D	1.56
	Meter Housing and Battery Assembly.....	ASM-77	1.59
M1	Meter Movement Only.....	ME-15	16.50
	Rubber Bumpers (2).....	H-292	each .03
	Red Test Lead.....	ASM-69	.84
	Black Test Lead.....	ASM-68	.84
	Zero Adjust Crank Assembly.....	CA-11	.06
	Carton and Fillers.....	PKG-78	1.14
	Instruction Manual.....	PM262	2.00
	Condensed Operating Instructions.....	PM-282	

(Prices subject to change without notice)

Minimum charge \$1.00 per invoice. Orders will be shipped C.O.D. unless previous open account arrangements have been made or remittance accompanies order. Advance remittance must cover postage or express charges.



WARRANTY

This B&K product is made of the finest material and then carefully tested at the factory before shipment. It carries the standard RETMA warranty against defects in material and workmanship for a period of 90 days from date of purchase. Should any defect be discovered within this warranty period, return the unit to the distributor from whom it was purchased.

BE SURE TO MAIL YOUR WARRANTY REGISTRATION CARD
IMMEDIATELY TO REGISTER YOUR UNIT WITH THE FACTORY.



B & K MANUFACTURING COMPANY
DIVISION OF DYNASCAN CORPORATION
1801 W. BELLE PLAINE AVE. • CHICAGO, 13

INSTRUCTIONS FOR

DYNASCAN MODEL AV-1A R.F. PROBE

The Dynascan Model AV-1A R.F. Probe can be used with the following vacuum tube voltmeters:

1. B & K Model 175
2. B & K Model 177
3. B & K Model 375
4. Precision Apparatus Model V-75
5. Precision Apparatus Model V-95
6. Precision Apparatus Model 48
7. Most other VTVM's with 11 megohm input resistance.

The AV-1A R.F. Probe enables the operator to make measurements of sine wave voltages at frequencies up to 250 MHz. This probe employs a crystal diode which is used as a half wave rectifier as shown in Fig. 1. The half wave rectifier circuit develops a DC voltage that is proportional to the peak value of the sine wave input signal. R-1 is a calibrating resistor which converts this peak reading to the proper reading on the VTVM.

Connect the R.F. Probe to your VTVM and put the Selector Switch to the +DC position. Use the DC ranges on the Range Switch. The DC readings that you will now obtain will be the RMS readings of the sine wave being measured. For example, a signal is to be measured and it is found that on the 15V DC range the meter reads 12V. This indicates that the RMS reading of the sine wave input signal is 12V.

Always use the ground lead from the R.F. Probe as the ground connection to the circuit under test. Do not use the long separate ground lead available from the VTVM front panel. Use of this long lead will result in inaccurate readings.

This Probe can be used in circuits where the DC voltage does not exceed 400V and where the AC voltage does not exceed 25V RMS.

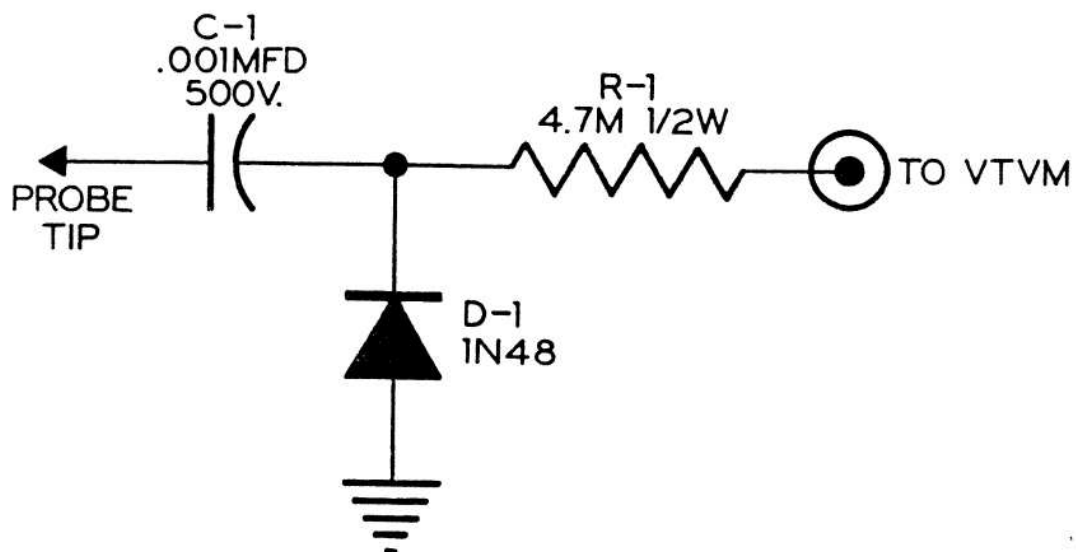


Fig. 1 -- R.F. Probe

DYNASCAN MODEL AV-1A REPLACEMENT PARTS LIST

Schematic Symbol	Description	Dynascan Part Number
	Plastic Housing Top (with lettering)	380-018-9-002
	Plastic Housing Bottom	380-016-9-001
C-1	.001 mfd @ 500V -10% disc ceramic capacitor	020-501-6-102
D-1	1N48 diode	150-001-9-002
	Alligator Clip	741-010-9-001
	Mic. Connector	770-001-9-001
R-1	4.7 megohm ½ watt 1% carbon res.	002-102-3-475
	Probe Tip	769-008-9-001

INSTRUCTIONS FOR
B & K MODEL PR-38 R.F. PROBE

*0-10
probe*

The B & K Model PR-38 R.F. Probe when used with the Model 375 VTVM will enable the operator to measure sine wave voltages at frequencies up to 250 mc. The PR-38 R.F. Probe employs a crystal diode which is used as a half wave rectifier. See Fig. 1.

The half wave rectifier circuit develops a DC voltage that is proportional to the peak value of the sine wave input signal. R-1 is a calibrating resistor which converts this peak reading to the proper reading on the VTVM.

Connect the R.F. Probe to the Model 375 and put the Selector Switch to the DC+ position. Use the DC ranges on the Range Switch. The DC readings that you will now obtain will be the RMS readings of the sine wave being measured. For example, a signal is to be measured and it is found that on the 15V DC range the meter reads 12V. This indicates that the RMS reading of the sine wave input signal is 12V.

Always use the ground lead from the R.F. Probe as the ground connection to the circuit under test. Do not use the long separate ground lead available from the VTVM front panel. Use of this long lead will result in in-accurate readings.

The Probe can be used in circuits where the DC voltage does not exceed 400V, and where the AC voltage does not exceed 25V RMS.

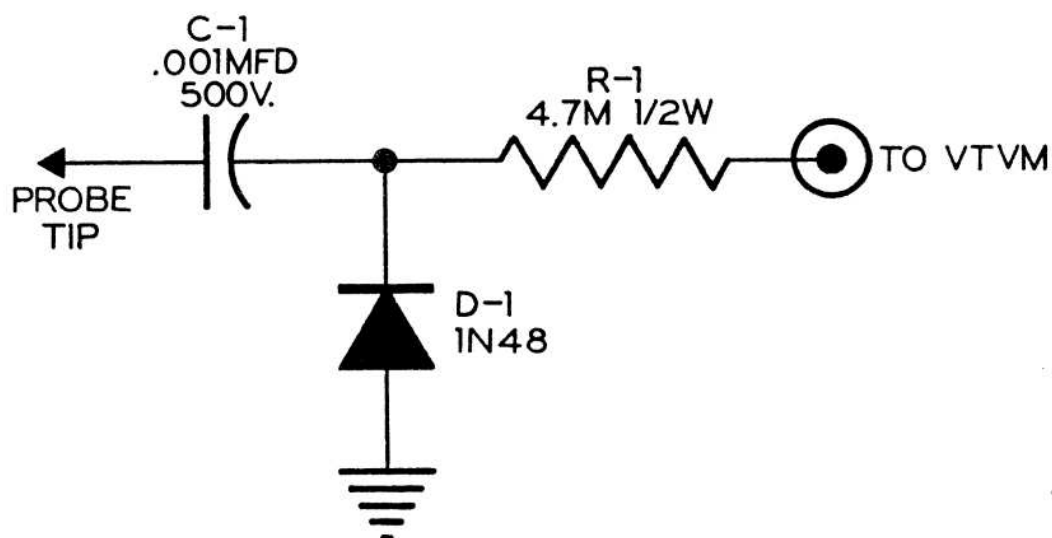


Fig. 1 -- R.F. Probe

B & K MODEL PR-38 REPLACEMENT PARTS LIST

<u>Schematic</u> <u>Symbol</u>	<u>Description</u>	<u>B & K</u> <u>Part No.</u>	<u>Dealer's</u> <u>Net</u>
	Plastic Housing Top (with lettering)	CA-7A	.27
	Plasting Housing Bottom	CA-7B	.18
C-1	.001 mfd @ 500V-10% disc, ceramic cap.	CC-A-001-500-10	.09
D-1	1N 48 diode	D-IN48	.60
	Alligator Clip	H-44	.09
	Mic. Connector	J-10	.36
R-1	4.7 megohm $\frac{1}{2}$ W 1% Carbon Resistor	RC-4A7M-A-1	.24
	Probe Tip	SM-13	.09
	Cable (3 $\frac{1}{2}$ ft.)	W-7-PR-38	.27

61
INDIVIDUAL
WIDE-VIEW
SCALE FOR
EACH RANGE
GIVES

Quick, Direct, Error-Free Readings *without Multiplying!*



New VTVM DYNAMATIC 375 Automatic Vacuum-Tube Voltmeter

- Individual Full-Size Scale for Each Range
- Range Switch Automatically Sets Correct Scale
- Only One Scale Visible at Any One Time
- All Scales Are Direct Reading
- No Multiplying . . . No False Readings
- Includes DC Current Ranges, too

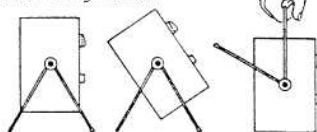
Here's another exciting first by B&K. With direct-reading single scales, this professional automatic VTVM makes it easier, faster than ever to read the exact answer accurately on the correct scale . . . *without reading difficulty, calculation, or chance of error.* Greatly simplifies true reading of peak-to-peak voltages of complex wave forms in video, sync and deflection circuits, pulse circuits, radar systems, etc.

All scales are direct reading. Every scale is the same full size, and only one scale is visible at any one time. *Once you set the range switch properly, it is impossible to read the wrong scale.*

The DYNAMATIC 375 utilizes a single DC-AC ohms probe, anti-parallax mirror, and other desired features . . . to make accurate measurements with utmost convenience and reliability in laboratory, factory production, or service shop.

Includes sturdy swivel stand which permits tilting "375" to any desired viewing angle, swings up as convenient carry-handle.

See Your B&K
Distributor
or Write for
Catalog AP18-N



Ranges: DC Volts	0 - 1.5, 5, 15, 50, 150, 500, 1500
AC Volts (rms)	0 - 1.5, 5, 15, 50, 150, 500, 1500
AC Volts (peak-to-peak)	0 - 1.5, 5, 15, 50, 150, 500, 1500
DC Current	0 - 5 ma, 50 ma, 500 ma
Ohms	0 - 500 ohms, 5 k, 50 k, 500 k, 5 meg, 50 meg, 1000 meg

Input Resistance: 11 megohms on all DC ranges

Accuracy: $\pm 3\%$ full scale AC and DC

Meter Movement: Sensitive 100 microampere

Precision Multiplier Resistors with $\pm 1\%$ accuracy

Anti-Parallax Mirrored Scale for precise readings

Easy-to-See Iridescent Knife-Edge Pointer

Single DC-AC Ohms Probe (supplied)

Includes $1\frac{1}{2}$ volt Battery. Operates on 117 volts 50-60 cycle AC
Sturdy, handsome metal case with convenient combination swivel stand and handle. Size: $10\frac{3}{4}'' \times 6\frac{3}{4}'' \times 4''$ deep. Net wt: 8 lbs.

Model 375

Net, \$89⁹⁵

B & K MANUFACTURING CO.
1801 W. BELLE PLAINE AVE • CHICAGO 13, ILL.
Canada: Atlas Radio Corp., 50 Wingold, Toronto 19, Ont.
Export: Empire Exporters, 277 Broadway, New York 7, U.S.A.

