

72-6345-1
72-6346-1
72-6347
72-6348

INSTRUCTION MANUAL
FOR
MEGADEK[®]
HIGH RESISTANCE DECADE BOXES

JAMES G. BIDDLE CO.
Plymouth Meeting, Pa. 19462

SECTION A

INTRODUCTION

The MEGADEK[®] family of precision high-range decade boxes combines selected glass based, metal film resistors and high quality Kel-F insulated switches to accomplish the convenience of full ten-step coverage of all values up to 110 gigaohms, with high accuracy and excellent long term stability.

MEGADEK[®] instruments are useful as laboratory tools wherever small currents or high resistance are encountered, and make excellent reference standards in the manufacture of high value resistors.

MEGADEK[®] instruments are available in two accuracy classes and several range and enclosure configurations.

SECTION B

RECEIVING INSTRUCTIONS

Your MEGADEK[®] has been thoroughly tested and inspected to rigid inspection specifications before being shipped and is ready for use after it is set up as indicated in the Installation Section.* Check the equipment received against the packing list. Notify James G. Biddle Co., Plymouth Meeting, Pa. of any shortage of materials. The MEGADEK[®] should be examined for damage received in transit. If any damage is found, file a claim with the carrier at once and notify James G. Biddle Co. or its nearest representative giving a detailed description of the damages observed.

* If applicable.

SECTION C

SPECIFICATIONS:

Range:

5-dial: 0-111,110 megohms in 1-megohm steps.
 3-dial: 0-1,110 megohms in 1-megohm steps.

Voltage Rating:

Maximum Voltage: Across terminals or to case: 2500V dc or peak
 Per step on any switch: 1000V dc or peak

Continuous Voltage: 1000 volts dc or peak. (Derate to 600V
 for settings of 1 or 2 megohms to avoid heating error).

Limit of Error:

ACCURACY CLASS	LIMIT OF ERROR at 25 ± 1°C, 0-50%RH, 100 ± 10 V	
	1, 10, 100 Meg Steps	1000 & 10,000 Meg steps
1%	1%, 1-year	1.5%, 1-year
0.1%	0.03% initial 0.1% 1-year	0.2% initial 0.5% 1-year

Temperature Coefficient, Voltage Coefficient:

ACCURACY CLASS	TEMPERATURE COEFFICIENT in PPM/°C, over 15-35°C			VOLTAGE COEFFICIENT in PPM/Volt
	1, 10, 100 Meg steps	1000 M steps	10,000 M steps	
1%	200	500	1000	10
0.1%	100	500	1000	2

Zero Resistance: 0.01 ohms maximum
 Insulation Resistance: Typical 10¹⁴ ohms

SECTION C
(CONT'D.)

Terminals:

Three: Two-Kel-F 5 way binding posts.
One-Metal ground post.

Dimensions and Weight:

In cast aluminum case:

Dimensions: 13¼" x 4½" x 5" high, (33.7 x 10.8 x 12.7 cm)
Weight: 7 lbs. (3.2 kg.)

In steel case, with hinged lid, tilt-up feet, and handle:

Dimensions: 15" x 8" x 6¼" high (38.1 x 20.3 x 15.9 cm)
Weight: 13 lbs. (5.9 kg.)

Catalog Numbers:

Accuracy Class	No. of Dials	Cast Aluminum Case Catalog Numbers	Steel Carrying Case Catalog Numbers
1%	3	72-6347	72-6347-1
1%	5	72-6348	72-6348-1
0.1%	3	72-6345-1	72-6345
0.1%	5	72-6346-1	72-6346

SECTION D

ROUTINE MAINTENANCE

With normal use MEGADEK[®] instruments require little or no maintenance.

The Kel F insulators on the five way binding posts should be cleaned occasionally to avoid the shunting effect of accumulated dirt. Wiping with an alcohol moistened cloth is sufficient.

If the instrument should be removed from its case for any reason, the resistors must not be touched with the fingers. Fingerprints will substantially affect the resistor values and may initiate progressive deterioration of accuracy.

Calibration of the MEGADEK[®] high value resistance boxes requires a precision bridge such as the James G. Biddle Cat. No. 71-131 Kelvin-Wheatstone Deviation Bridge, or another MEGADEK[®] with known corrections which can be used as a variable reference in a suitable Wheatstone Bridge set-up.

Note: Replacement resistors for Cat. 72-6345 & 72-6346 must be selected along with matching trimming resistors, by the J. G. Biddle Co. for each individual dial step. It is not recommended that these replacements be made in the field.

If switch contact lubrication should ever be required, use only a pure silicone lubricant applied very sparingly. Dow-Corning DC-4 is recommended. (Ordinary lubricants have a low leakage resistance which may change the calibration of the higher decade resistors.)

SECTION E

PARTS LIST:

RESISTORS:

<u>JGB PART NO.</u>	<u>DESCRIPTION</u>
13538-7 or 13174-4	1M, 1/2 W
13538-8 or 13174-5	10M, 1/2 W
13174-1	100M, 1/4 W
13174-2	1000M, 1 W
13174-3	10,000M, 1 W

SWITCHES:

13316 Rotary Switch, 11 pos.

KNOBS:

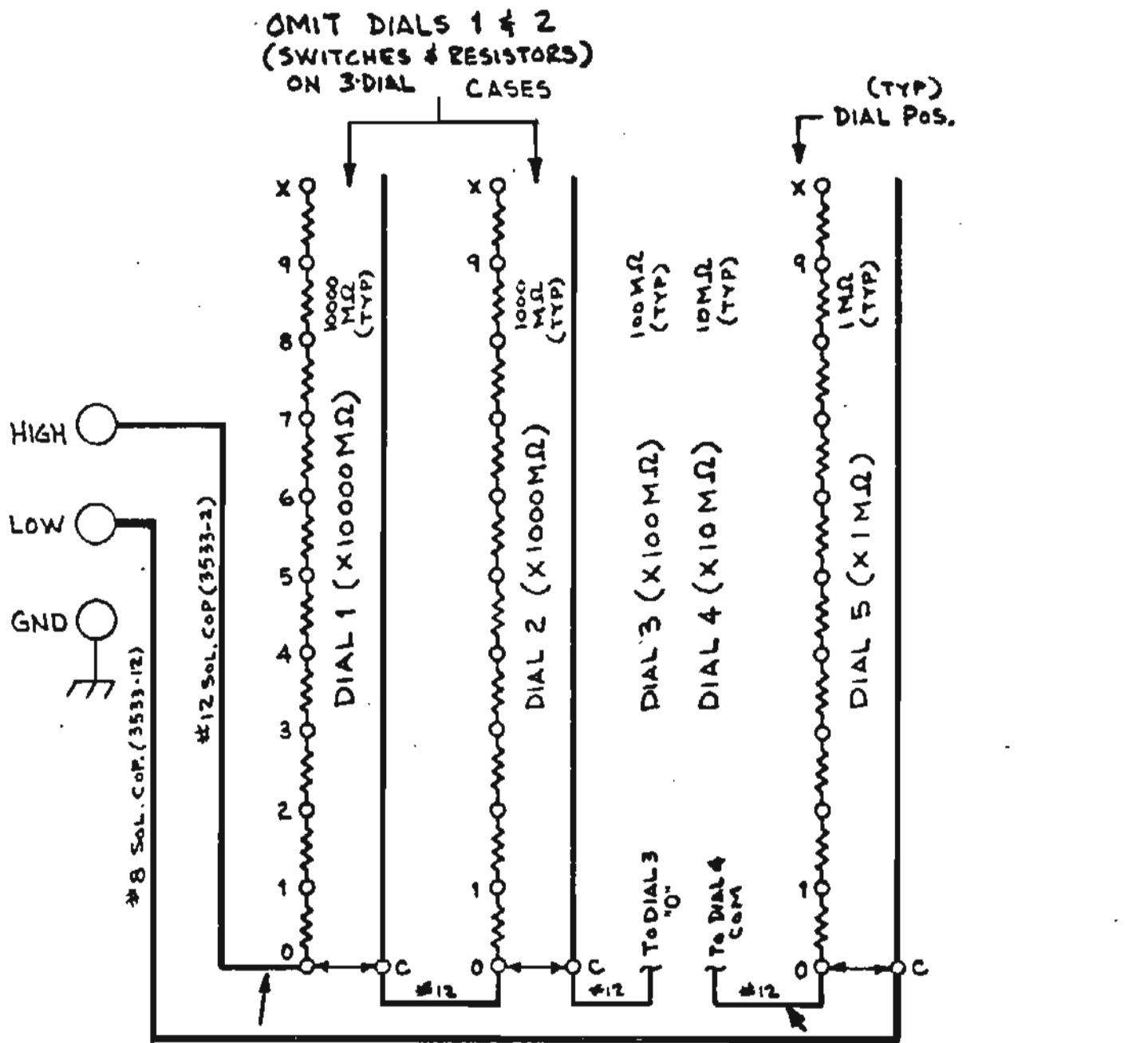
11970 Knob, 0-X Bottom Index

BINDING POSTS:

11166-2 & 13315 Binding Post (High & Low)
11166-4 Binding Post (Gnd)

MISCELLANEOUS:

7196-3 Hole Plug



CONN. TO DIAL 3 "0"
ON 3-DIAL CASES

"MEGADEK" WIRING DIAGRAM

FOR 72-6347 & 72-6348 (SHOWN)

(3-DIAL) & (5-DIAL)

& 72-6345-1 & 72-6346-1

TYP LEAD CONN
FROM DIAL 4 TO DIAL