SECTION 1

GENERAL INFORMATION

1–1. SCOPE.

The purpose of this manual is to supply information which will assist in the installation, operation, and maintenance of two Megger® Null Balance Earth Testers, Catalog Numbers 63241 and 63220. See Figure 1-1 for a typical earth test package with a hand-crank instrument, carrying case, and accessory kit containing rods and leads.

The earth tester contains either a hand-cranked ac generator or a battery-powered oscillator with four resistance ranges adjustable from 0.01 to 9990 ohms. The earth tester measures ground resistance by applying a test current through the earth electrode under test which returns through the soil and a remote current terminal. The potential between the earth electrode and a remote potential terminal is observed and balanced against an equal potential in the earth tester. When a null condition is achieved, a digital readout in ohms is displaced which, under proper test procedures, is the earth electrode resistance.

1–2. GENERAL DESCRIPTION.

The earth tester is portable with a compact, two-piece, metal case having four rubber feet. A multiplier switch, three resistance decades, and a null balance meter are mounted on the top. A vinyl carrying case is available.

a. HAND-CRANKED TESTER. In addition to the above, the hand-cranked earth tester has five binding posts mounted at the top of the instrument. The hand-crank is mounted on the right side with a recess provided to store the handle when not in use.

b. BATTERY-OPERATED EARTH TESTER. In addition to the general features, the battery operated earth tester has four binding

posts mounted at the top of the instrument and an operating pushbutton to the left of the meter. Six 1-1/2 volt (Size C, NEDA Type 14, Eveready 935 or equal) dry cell batteries provide power. Two screw-cap tubular battery compartments permit batteries to be inserted without opening instrument case. There is a battery-check position on the multiplier switch, with a battery condition scale on the meter.

1–3. REFERENCE DATA.

a. HAND-CRANKED EARTH TESTER.

1. Physical Characteristics

(a) Length	9-1/2 inches 240 mm
(b) Width	6-1/2 inches 165 mm
(c) Height	6-3/4 inches 172 mm
(d) Weight	9 lbs. 4 kg.

2.	Type of Operation	Hand-Cranked AC Generator
3.	Operating Temperature Range	20° to 120° F -7° to 49°C
4.	Output	150 to 160 volts (open circuit) at 100 Hz.
5.	Accuracy	±1% of range in use with probe resistances up to 1500 ohms.
6.	Resistance Range	0.01 ohm to 9990 ohms in four overlapping ranges.

b. BATTERY-OPERATED EARTH TESTER.

1. Physical Characteristics

(a) Length	9-1/2 inches 240 mm
(b) Width	6-1/2 inches 165 mm
(c) Height	5 inches 127 mm
(d) Weight	6 lbs. 2.7 Kg.

2.	Type of Operation	Battery-Driven Oscillator
3.	Operating Temperature Range	41° to 113° F 5° to 45° C
4.	Output	140 Volts (open circuit) at 126 Hz.
5.	Accuracy	± 2% of range (with 0.01 multiplier, percent error is larger).
6.	Resistance Range	0.01 ohms to 9990 ohms in four overlapping ranges.
7.	Types of Batteries	Six 1-1/2 volt (Size C, NEDA 14 Type, Eveready 935, or equivalent).
8.	Maximum Battery Drain	400 Milliamps (batteries at lowest possible internal resistance).

TABLE 1-1. EQUIPMENT DATA

NOMENCLATURE			Overall Dimensions English (Metric)			Shipping Weight English (Metric)	
Item	Name	Catalog No.	Height	Width	Depth	Net	Gross
1	Megger Null Balance Hand-Cranked Earth Tester	63220	6-3/4 (172)	6-1/2 (165)	9-1/2 (240)	9 (4)	14 (6.4)
	or						
1-A	Megger Null Balance Battery Operated Earth Tester	63241	5 (127)	6-1/2 (105)	9-1/2 (240)	6 (2.7)	10 (4.5)
2	Case, Vinyl	63850	7 (178)	10-3/4 (273)	7 (178)	3-1/2 (1.6)	5-1/2 (2.5)
3	Set of 3 leads as follows:	63576				8 (3.6)	10 (4.5)
3.1	25' coded Red (7.5M)						
3.2	50' coded Yellow (15M)						
3.3	100' coded Blue (30M)						
4.1	Set of 2 Galvanized Steel Ground Rods	63580	20 (508)	-	-	3 (1.4)	5 (2.3)
4.2		63582	30 (762)	-	-	6 (2.7)	9 (4.0)
5	Heavy Canvas Carry-All (for holding Cat. No. 63576 leads and two pair of rods, Cat. Nos. 63580 or 63582).	63578	-	-	-	3 (1.4)	5 (2.3)