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EMCEE ELECTRONICS MODEL 1152 DIGITAL CONDUCTIVITY METER OPERATION MANUAL

by

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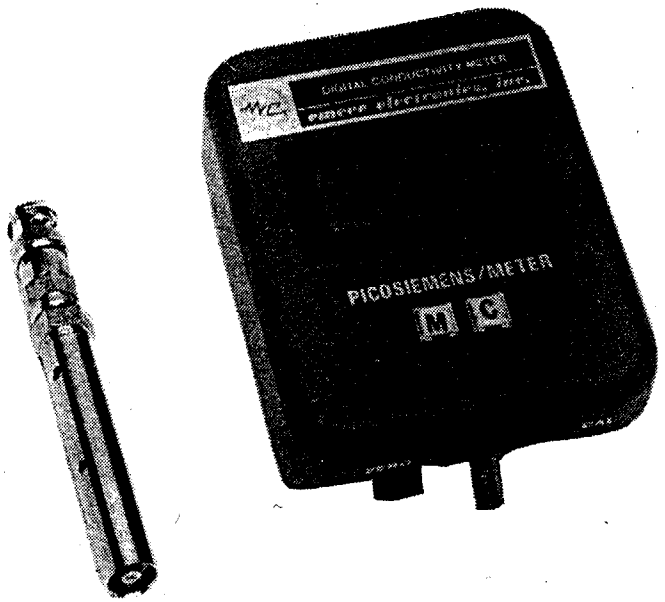
DIGITAL CONDUCTIVITY METER

MODEL 1152

OPERATION MANUAL



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DIGITAL CONDUCTIVITY METER

1.0 SCOPE

The Emcee Conductivity Meter is a reliable, convenient and inexpensive instrument for measuring the electrical conductivity of fuels. The monitor incorporates all solid-state components and is completely self-contained. The instrument will check fuel conductivity between 0 and 2000 picosiemens/meter and offers a simple calibration and zero check.

2.0 SIGNIFICANCE

Fuel products such as jet and diesel fuels which are loaded at high pumping rates, develop a static charge. The Emcee Conductivity Meter measures the ability of the fuel to dissipate that charge.

3.0 DEFINITION

The Emcee Conductivity Meter reads conductivity in picosiemens/meter which are equivalent to CU or Conductivity Units.

4.0 SUMMARY OF METHOD

The Emcee Conductivity Meter uses a probe consisting of two concentric stainless steel electrodes. When the probe is immersed in fuel, a constant voltage is applied to the electrodes. This results in an electrical current which is amplified and indicated on the meter.

5.0 APPARATUS

5.1 The Emcee Conductivity Meter with Fuel Probe is shown in Figure 1. The meter is a hand held, battery operated portable instrument.

5.2 The controls are shown in Figure 2. They consist of a measure switch and a calibrate switch.

5.3 Figure 2 shows the instrument with the probe attached and ready for fuel test.

5.4 Figure 3 shows the location of the probe calibration number.

5.5 Figure 4 shows the instrument zero check.

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5.6 Figure 5 shows the instrument calibration check.

5.7 Figure 6 shows a typical fuel test.

5.8 The Accessory Cable Kit shown in Figure 7 includes a 5' cable and a portable reel with a 45' cable . This kit enables the operator to connect the probe to the 5' cable for short extension or the 45' cable for use in a large tank. The kit also is supplied with a grounding cable for attachment between the conductivity meter and tank ground.

5.9 Figure 8 shows a cable reel with attached meter and probe. The probe can be lowered into a tank to check the conductivity at various levels.

6.0 PREPARATION OF SAMPLE

The sample container (preferably a one liter metal container) should be cleaned with a solvent and rinsed with the fuel to be tested. After the sample for test has been withdrawn, wait approximately two minutes for charges in the fuel to dissipate.

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7.0 TEST PROCEDURE

7.1 Attach probe to bottom connector on conductivity meter.

7.2 Depress MEASURE switch (M) with probe OUT of fuel sample. Reading should be 000 +/- 001 in approximately 3 seconds (Figure 4). If reading is outside limits, remove probe and recheck zero by depressing MEASURE switch.

7.2.1 If zero adjustment is okay without probe but not when probe is attached, the probe should be thoroughly rinsed with isopropyl alcohol followed by reagent grade toluene and allowed to air dry before retesting for zero.

7.2.2 If zero reading is outside of limits with probe removed, perform calibration procedure outline in Section 10.0.

7.3 Depress CALIBRATE switch (C) with probe OUT of fuel sample. After 3 seconds, reading should be 10 times the probe calibration number +/- 005 (Figure 5).

SAMPLE

Probe No. = 40
Meter Reading = 400 +/- 5 or 395 to 405

7.4 Insert probe in fuel to upper holes and depress MEASURE switch. Report reading after 3 seconds for stabilization. (Due to the polarization of the fuel sample the apparent reading will continue to change. Only the reading 3 seconds after depressing the MEASURE switch is correct).

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8.0 PRECISION

The electrical parameters are factory calibrated to 1% of reading. However, due to fuel measurement characteristics, the repeatability and reproducibility limits are as follows:

PS/M	REPEATABILITY	REPRODUCIBILITY
50	4	12
100	6	18
150	8	23
200	9	27
250	10	30
300	11	34
400	5%	10%

Limits Applicable at Room Temperature only.

9.0 BATTERY REPLACEMENT

9.1 The Model 1152 Conductivity has an internal battery checking circuit. If batteries are weak the meter will read for a short time and shut itself off. If batteries are too low the unit will not turn on.

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9.2 When battery replacement is indicated remove the 4 screws holding the back plate exposing the battery housing at the top of the meter.

9.3 Remove the 2 screws on the battery housing and set the housing cover to one side (Figure 9).

9.4 Observe the polarity markings and insert three new batteries as shown in Fig. 9. Battery replacement must be (3) 6 volt Alkaline Nema 1414A Emcee P/N 001-00-5341. Any other battery replacement will invalidate the UL and the CSA Intrinsically Safe Rating.

9.5 Replace back panel and check zero and calibration.

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10.0 CALIBRATION

10.1 If either ZERO or CALIBRATE is outside the limits listed in 7.2 or 7.3 the following steps should be completed.

10.2 Remove the probe.

10.3 Insert a small screwdriver into the hole marked ZERO while depressing the MEASURE switch. Adjust the control until the display reads 000 +/- 001.

10.4 While depressing the CALIBRATE switch, insert a small screwdriver into the CALIBRATE hole and adjust for 10 times the probe calibration number +/- 002.

10.5 Attach the probe and depress the MEASURE switch. The reading should be 000 +/- 001. If zero adjustment is okay without probe but not when probe is attached the probe should be thoroughly rinsed with isopropyl alcohol followed by reagent grade toluene and allowed to air dry before retesting for zero.

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Figure 1

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Figure 2

Figure 3

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Figure 4

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Figure 5

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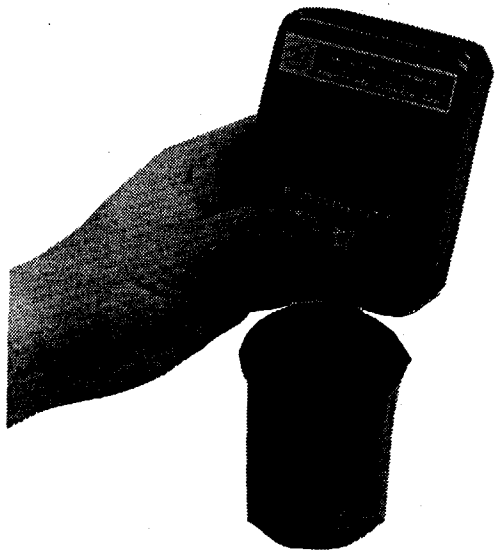

Figure 6

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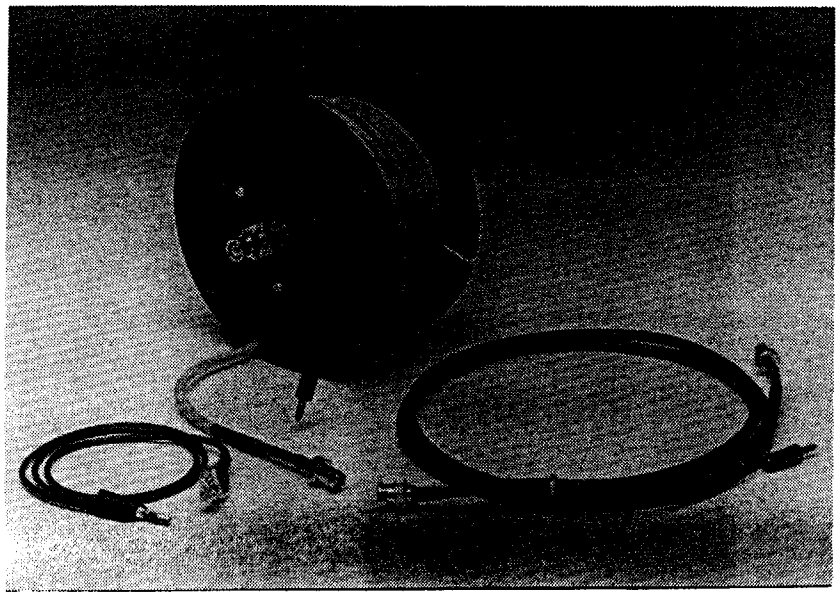

Figure 7

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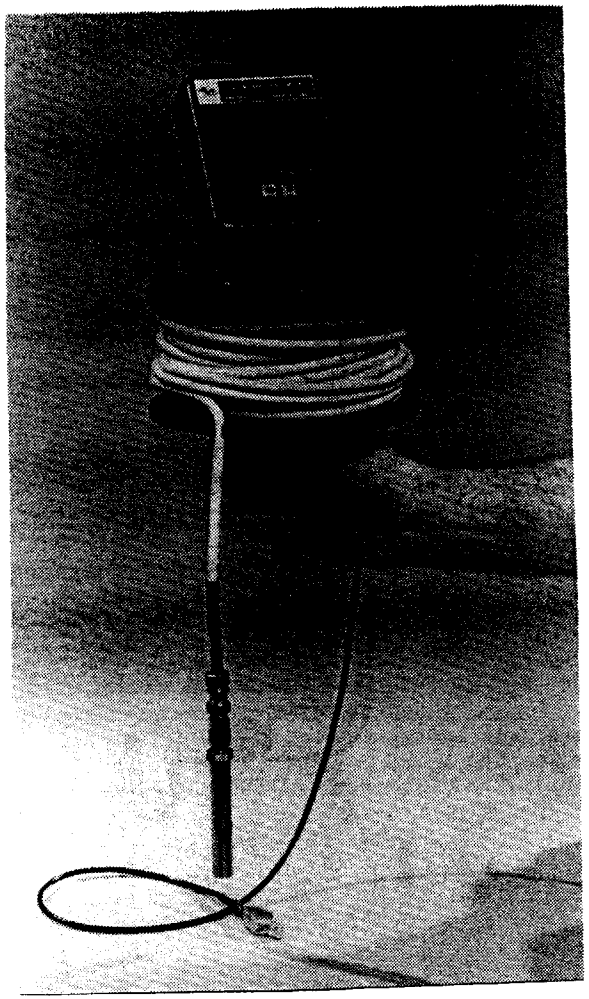

Figure 8

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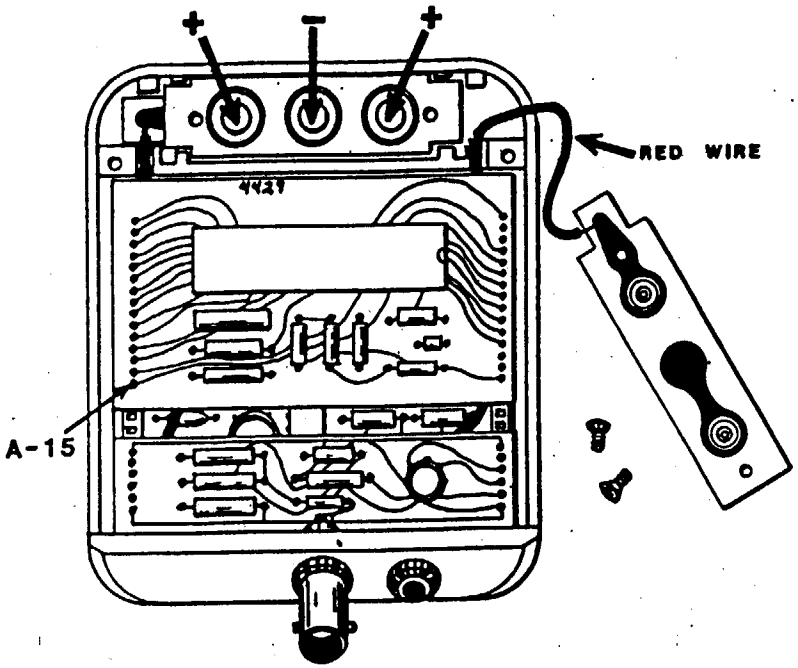

Figure 9

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