SECTION I

INTRODUCTION AND SPECIFICATIONS

1-1. INTRODUCTION

1-2. The Fluke Model 341A and Model 343A DC Voltage Calibrators provide dc voltages of 0 to 1100 volts in three ranges. Voltages are selected by eleven-position decade switches, which provide in-line, digital readout of the instrument output voltage. The Model 341A employs six-dial readout, with 1 ppm resolution, and the Model 343A employs seven-dial readout, with 0.1 ppm resolution.

1-3. A controlled current limiter, a fixed current limiter, and an electronic crowbar circuit provide protection against instrument malfunction and operator error. Output current or voltage, depending on function desired, are continuously monitored by a front panel meter.

1-4. The instruments are designed for rack-mount installation, using the mounting brackets supplied, and are equipped with resilient feet and tilt-down bail for field or bench use.

1-5. ELECTRICAL SPECIFICATIONS

OUTPUT VOLTAGE

Model 341A:	0 to 1111.110 volts dc
Model 343A:	0 to 1111.1110 volts dc

VOLTAGE RANGES

Model 341A:

Range (volts)	Output (volts)
10	0 to 11.11110 (10 uv steps)
100	0 to 111.1110 (100 uv steps)
1000	0 to 1111.110 (1 mv steps)

Model 343A:

Range (volts	Output (volts)
10	0 to 11.111110 (1 uv steps)
100	0 to 111.11110 (10 uv steps)
1000	0 to 1111.1110 (100 uv steps)

RESOLUTION

Model 341A:	1 ppm of range (10 uv maximum)
Model 343A:	0.1 ppm of range (1 uv maximum)

ACCURACY OF OUTPUT

NOTE: The following accuracy specifications apply after (1 hour) warmup at standard reference conditions of 23°C ±5°C for the Model 341A and 23°C ±1°C for the Model 343A, up to 70% relative humidity, constant line voltage, and constant load.

Model 341A:

Range	Accuracy (whichever is greater)
10 V	±0.01% of setting or ±0.0003% of range
100 V	±0.01% of setting or ±0.0002% of range
1000 V	±0.01% of setting or ±0.0002% of range

Model 343A:

Range	Accuracy (whichever is greater)
10 V	±0.003% of setting or ±0.0003% of range
100 V	±0.003% of setting or ±0.0001% of range
1000 V	±0.003% of setting or ±0.0001% of range

TEMPERATURE COEFFICIENT OF OUTPUT

Model 341A: Less than (5 ppm of setting +0.1 ppm of range +2 uv) per °C from +15° to +35°C. Less than (8 ppm of setting +0.1 ppm of range +2 uv) per °C from 0° to +50°C.

[redacted]

Model 343A: Less than (3 ppm of setting +0.1 ppm of range +2 uv) per °C from +15° to +35°C. Less than (5 ppm of setting +0.1 ppm of range +2 uv) per °C from 0° to +50°C.

STABILITY OF OUTPUT

The following stability specifications apply at the standard reference conditions noted under ACCURACY OF OUTPUT:

Model 341A:

10V range (whichever is greater)
±0.0007% of setting or 5 uv per hour
±0.003% of setting or 15 uv per month

100V range (whichever is greater)
±0.0007% of setting or 10 uv per hour
±0.003% of setting or 25 uv per month

1000V range (whichever is greater)
±0.0007% of setting or 20 uv per hour
±0.003% of setting or 50 uv per month

Model 343A:

10V range (whichever is greater)
±0.0005% of setting or 5 uv per hour
±0.0015% of setting or 15 uv per month

100V range (whichever is greater)
±0.0005% of setting or 10 uv per hour
±0.0015% of setting or 25 uv per month

1000V range (whichever is greater)
±0.0005% of setting or 20 uv per hour
±0.0015% of setting or 50 uv per month

OUTPUT CURRENT

0 to 25 milliamps at any output voltage.

OVERCURRENT PROTECTION

Automatically limits output current at any present level between 1 and 25 milliamps via continuously variable front panel control. Panel lamp illuminates during limiting.

SHORT-CIRCUIT PROTECTION

At output voltage dial settings of 299.99X (299.999X on the Model 343A) or less, normal operation is restored upon removal of overload. At output voltage dial settings of 300.000 (300.0000 on the Model 343A) or above, the instrument trips to STANDBY when the output is short-circuited.

RIPPLE AND NOISE (all frequencies)

Model 341A:
60 Hz Line - Less than 100 uv rms or 1 mv p-p.
400 Hz Line - Less than 100 uv rms or 2 mv p-p.

Model 343A:
60 Hz Line - Less than 50 uv rms or 400 uv p-p.
400 Hz Line - Less than 100 uv rms or 2 mv p-p.

SETTLING TIME

Model 341A: Within 50 ppm of final output in 5 seconds.
Model 343A: Within 25 ppm of final output in 5 seconds.

LINE REGULATION

0.0005% of setting + 25 uv for a 10% line voltage change from nominal.

LOAD REGULATION

0.0005% of setting + 25 uv for a full load change.

ISOLATION

Either output terminal may be floated up to 500 volts dc from chassis ground.

REMOTE SENSE

Separate terminals are provided for sensing the output voltage directly at the load, thereby eliminating errors due to voltage drop in the instrument-to-load connecting wires.

WARM-UP TIME

Model 341A: Within 50 ppm of final output at turn-on. Within 15 ppm of final output in 30 minutes.

Model 343A: Within 25 ppm of final output at turn-on. Within 5 ppm of final output in 30 minutes.

INPUT POWER

115/230 volts ac ±10%, 50 to 440 Hz, single phase. Approximately 70 volt-amperes fully loaded.

1-6. ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE RANGE

Operating: 0° to +50°C
Storage: −40° to +65°C

RELATIVE HUMIDITY

0 to 70%

SHOCK

Withstands 15 g, 11 millisecond, half sine wave shock per MIL-T-21200.

VIBRATION
Withstands 10 Hz to 55 Hz, 4.5 g maximum per MIL-T-21200.

ALTITUDE
Up to 10,000 feet operating and 50,000 feet non-operating, per MIL-T-21200.

1-7. MECHANICAL SPECIFICATIONS

SIZE
3½ inches high by 17 inches wide by 18 inches deep.

MOUNTING
Mounting brackets provided for standard EIA 19-inch rack mount, and resilient feet provided for bench use. Tapped holes also provided for attaching chassis slides. The instrument outline drawing is shown [redacted]

WEIGHT
23 pounds

1-8. GENERAL SPECIFICATIONS

DESIGN
Solid-state throughout

FUSES
Single-fused ac line and high voltage

METER
Monitors output voltage and current

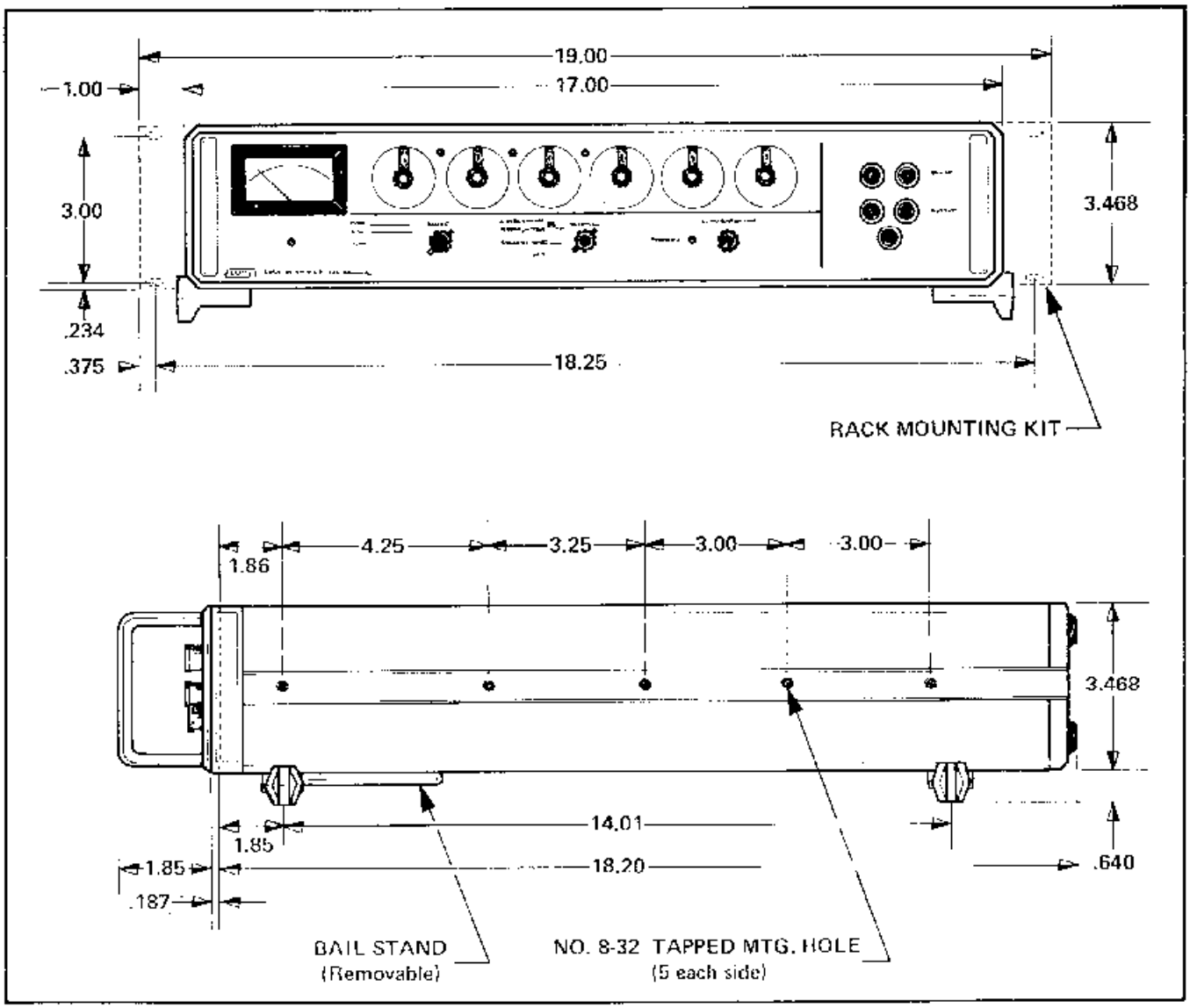

Figure 1-1. MODEL 341A/343A OUTLINE DRAWING