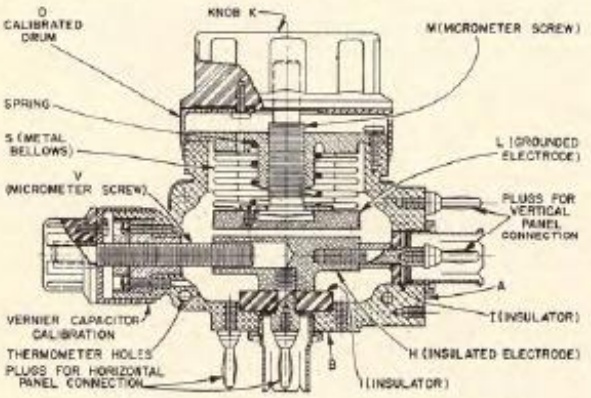
Type 1690-A DIELECTRIC SAMPLE HOLDER

FEATURES:

Specimens can be measured over a wide range of frequencies with the same holder in different measuring circuits.
Precision calibration provided for each unit.
Calibration takes account of corrections for edge fringing and stray capacitance.
Rigid casting supports entire structure. ■ Complete shielding.
Large, easily read dials.



USES: The TYPE 1690-A Dielectric Sample Holder is a micrometer-driven sample holder of the Hartshorn type,* used for the measurement of dielectric constant and dissipation factor of specimens of dielectric materials in the form of standard ASTM 2-inch diameter disks. It is suitable for any flat sample whose largest dimension is not over 2 inches and whose thickness is not over 0.3 inch.

It can be used with resonant circuits for susceptance-variation or frequency-variation measurements, with the TYPES 1615-A, 716-C and 716-CS1 Capacitance Bridges, the TYPES 874-LBA and 900-LB Slotted Lines, and the TYPE 1602-B UHF Admittance Meter.

A precision micrometer screw, M, with large instrument knob, K, drives the movable grounded electrode, L, with respect to a fixed, insulated electrode, H. An accurately divided drum, D, indicates the electrode spacing. The micrometer screw is electrically shunted by a metal bellows, S, to assure a positive, low-resistance connection. A release mechanism automatically disengages the drive to prevent damage when the electrodes are in contact. The movable electrode adjusts itself to the plane of the specimen surface.

The vernier capacitor with micrometer screw, V, is for use in the susceptance-variation method of measurement.

The assembly is mounted in a rugged aluminum casting, B, which it shields on four sides. Two removable cover plates, which permit access to the electrodes, complete the shielding. The holder can be mounted on either horizontal or vertical panels.

* L. Hartshorn and W. H. Ward, *Proceedings of the Institution of Electrical Engineers*, Vol. 79, pp. 597-609 (1936).

SPECIFICATIONS

Electrodes: Diameter, 2.000 in ± 0.0025 in. Surfaces ground optically flat within a few wavelengths.

Electrode Spacing: Adjustable from zero to 0.3 in, indicated by micrometer reading in mils.

Vernier: Incremental capacitance is 5 pF, nominal.

Calibration: For main capacitor, a chart gives calculated air capacitance as a function of spacing. Correction curve gives the measured deviations from calculated values over range from 300 mils to 10 mils spacing. In accordance with recommended ASTM practice, calibration is referred to the calculated geometric value at a spacing of 100 mils. Accuracy is ±0.2% ± 0.1 mil.

For vernier capacitor, correction chart is provided, from which capacitance differences can be determined to an accuracy of ±0.004 pF.

Zero Capacitance: Approximately 11 pF.

Operating Temperature: Up to 100°C.

Frequency: No significant error occurs at frequencies below 100 Mc/s.

Accessories Supplied: TYPE 1690-P1 Adaptor Assembly for mounting to TYPES 1615-A, 716-C and -CS1 Capacitance Bridges; hardware for mounting sample holder on TYPES 1611-B and 1644-A Bridges and TYPE 1862-C Megohmmeter.

Accessories Available: TYPE 1690-P2 Adaptor Assembly to TYPE 874-LBA Slotted Line or TYPE 1602-B UHF Admittance Meter.

Mechanical Data: Carrying and storage case supplied.

Dimensions: 6¼ by 5¾ by 4½ in (160, 150, 115 mm) over-all.

Net Weight: 3¾ lb (1.8 kg), including case.

Shipping Weight: 13 lb (6 kg).

For a more detailed description, see the *General Radio Experimenter*, August 1951.

Catalog No.	*Description*	*Price*
1690-9701	**Type 1690-A Dielectric Sample Holder**	**$435.00**
1690-9602	**Type 1690-P2 Adaptor Assembly** (for connection to coaxial equipment)	**20.00**

PATENT NOTICE. See Note 4, page 11.

