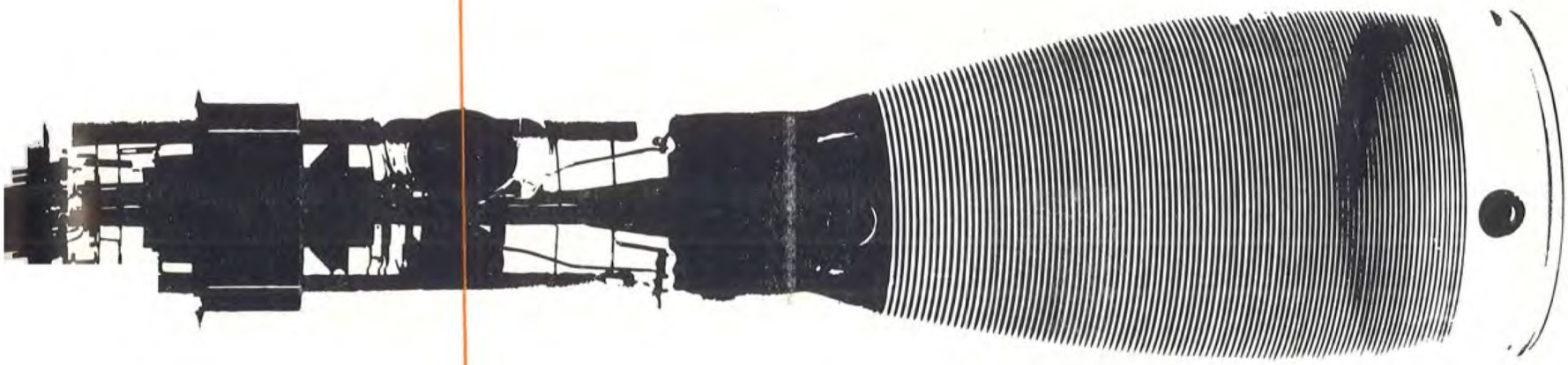
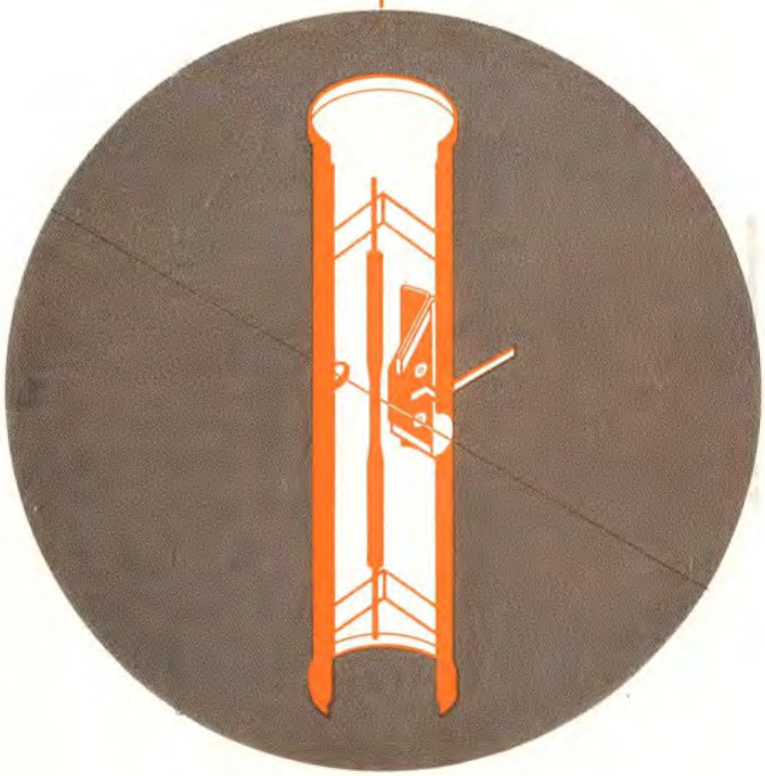
February 1963

MICROWAVES





New CRT Has 0.13 Nsec Rise Time... p 28

COVER FEATURE

Coaxial-Deflection CRT Has 3-Gc Bandwidth

The coaxial construction of Tektronix's new CRT is high-lighted on this month's cover. The simplicity of the coaxial structure and the path of the tube's electron stream is suggested by the inset on our cover.

A NOVEL coaxial vertical deflection system is the key element in a cathode-ray tube featuring a rise time of 0.13 nsec, equivalent to a 3-Gc bandwidth.

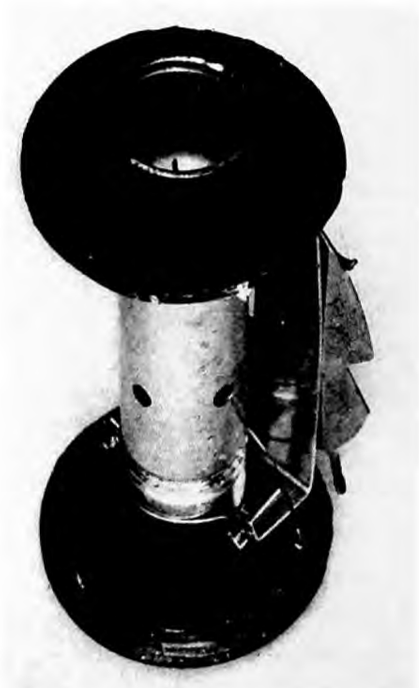
The tube, developed and produced by the Cathode-Ray Tube Div. of Tektronix, Inc., Portland, Ore., as type T519C, was designed for use with the company's type 519 oscilloscope. (See this month's product survey on microwave oscilloscopes.)

The vertical deflection system is essentially a 125-ohm coaxial line feeding through the neck of the tube accross its longitudinal axis.

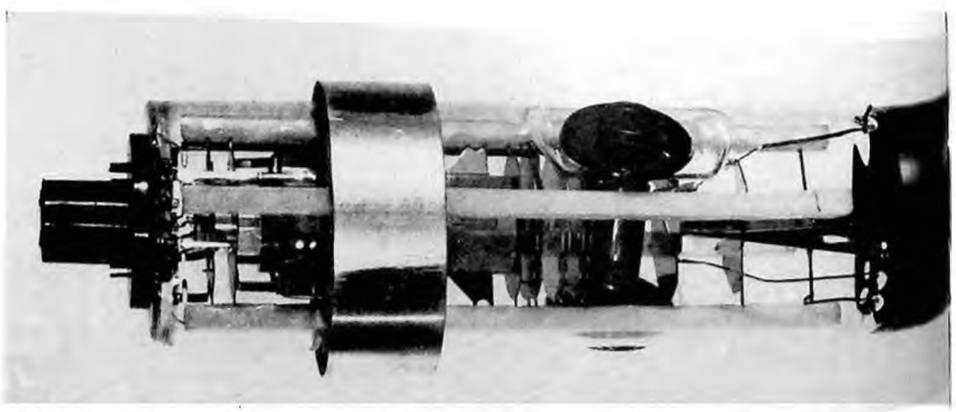
It is designed coaxially so that electrically it will appear to be part of the 125-ohm transmission line which carries the signal to and from the tube. In the deflection area, the coaxial line is modified to form a short transit-time parallel-plate deflector.

An isoceles trapezoidal-shaped fin is mounted within the outer conductor to provide the proper beam configuration. This fin is capacitively coupled to the outer conductor and has its shorter side parallel to the center conductor.

The electron beam from the tube's gun passes between the fin and the center conductor, where it is deflected in accordance with the signal's electric field. A dc bias is applied to the fin to position the trace on the phosphor screen.



The electron beam from the tube's gun enters the coaxial deflection system through a hole in the outer conductor. A similar opening, diametrically opposite, permits the beam to continue to the phosphor screen. A short wire strip seen entering the outer conductor carries a dc bias which is applied to the parallel-plate deflector to position the beam on the crt screen. A ceramic disk, at each end of the structure, supports the system within the tube neck and seals the envelope at the juncture. The coaxial line is connected at the ends of the structure.



The location and position of the coaxial deflection system in the CRT's neck can be seen here. The film-spool like structure is the outer conductor. The large disk visible at one is the ceramic support for the structure which also serves as a seal. The tube's envelope has been removed.

The T519C was designed as a replacement for the traveling-wave CRT presently carried by the type 519 oscilloscope. This new tube has a rise time of 0.13 nsec and a deflection factor of about 180 v/cm. A 2 x 4 viewing area is provided and the sensitivity of the horizontal deflection plates has been increased by a factor of two. A 24-Kv accelerating potential is used in conjunction with a P 11 phosphor for maximum beam intensity.

Conversion Kit for Scope

The T519C Coaxial CRT is available to owners of the Tektronix type 519 oscilloscope as part of a conversion kit which includes all components required to adapt the 519 for use with the T519C. The kit is available on 90 days delivery at $1500. No major change of the 519's circuitry is necessary. The 519C oscilloscope, which is the type 519 with the new tube, can be purchased for $4400. The 519C also is available on 90-day delivery.

For further information regarding the T519C Coaxial CRT, the conversion kit and the type 519C oscilloscope, turn to the Reader-Service card and circle number 150.

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