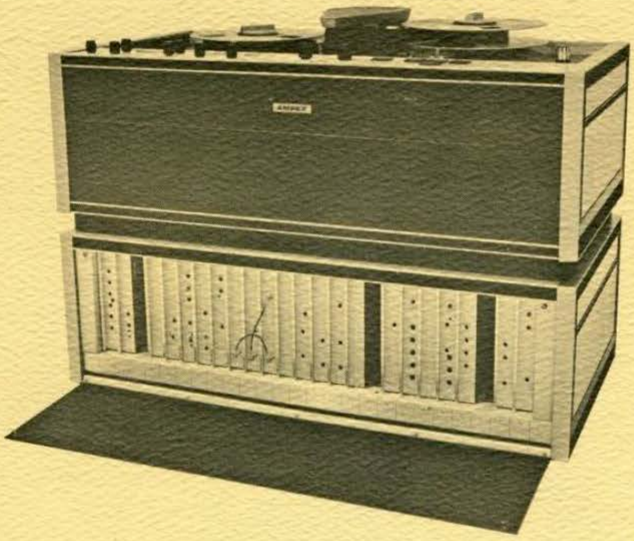
AMPEX

TBC-790
Time Base Correction System for the Ampex VPR-7900



Announcing the TBC-790 Time Base Corrector — and the most stable video signal ever produced by a helical-scan video recorder.

The new TBC-790 revolutionizes helical-scan video recording in both monochrome and color. Used in conjunction with the Ampex VPR-7900 Video Production Recorder, it corrects the total timing error introduced into the recording process by the electromechanical components of the recorder. The resulting signal can be mixed, distributed, and used like a camera signal — fades, lap dissolves, special effects, dubs to quadruplex recorders, dubs to half-inch recorders, transfers to film — all take place cleanly. And the high quality of the video signal makes the VPR-7900 unusually effective for multi-generation dubbing.

These options are available:

- A direct NTSC color system
- A color dropout compensator
- An automatic velocity compensator

A New Digital Approach to Time Base Correction

Ampex engineers left current technology behind and advanced the state of the art to produce the unmatched time base correction of the TBC-790. They have used six digitally-switched delay lines of discrete lengths in a coarse correction system, then added a very short electronically-variable delay line as a vernier corrector — to give the VPR-7900 the tightest stability specifications of any helical-scan video recorder. Monochrome output jitter: ±30 nanoseconds; color output jitter: ±2.5 nanoseconds.

The Basic Unit

The TBC-790 is essentially a sophisticated time base correction system that includes a processing amplifier. Plug-in modules make it available in 525-line or 625-line standards. It functions in the following way:

A sync feedback system keeps the ±1.5 microsecond correction range of the TBC-790 centered precisely in the

recorder's output error signal. Then, in the coarse correction stage, sync information from the recorder's output signal is compared with station sync; a voltage proportional to the error is generated. Delay lines of appropriate lengths are switched into the signal path to correct the error.

The vernier uses a very short electronically-variable delay line to improve correction made by the coarse corrector. It reduces error through the basic system to ±30 nanoseconds.

The primary purpose of the processing amplifier is to provide a composite video output that meets recognized transmission standards. It provides control of video level, sync level, pedestal level, burst phase, and chroma phase.

Options

The capability of the TBC-790 can be enhanced by the addition of any or all of the following optional units:

- **Direct NTSC Color System**

  The color sensing modules processes the burst information in the recorder's output signal so that it can be compared to the station subcarrier reference by the basic unit.

  The burst phase error is then sent to the vernier corrector. This reduces the error through the total system to ±2.5 nanoseconds – yielding a signal stable enough to meet FCC broadcast requirements, and to be routed and switched like a camera signal. Plug-in modules for PAL and SECAM standards are available.

- **Dropout Compensator Module**

  The Dropout Compensator (DOC) was designed to eliminate or greatly reduce the effects of dropouts in taped color video signals. Dropouts – brief reductions in RF carrier amplitudes caused by imperfections or foreign matter on the tape or head during recording – are compensated for in this way: The recorder's video output is normally delayed by one line. So long as there are no dropouts, the recorder output is the one-line-delayed video. When a dropout occurs, video and chroma information from the delayed signal is rerouted through the system replacing the missing line, with saturation and hue correctly matched to the line in which the dropouts occur.

  The DOC functions with monochrome as well as color output signals.

- **Velocity Compensator Module**

  This is the first automatic velocity compensator ever made available with a helical-scan recorder, and it gives the VPR-7900 several unique advantages. It adds still another level of error-sensing and correction to the recorder's output.

  Minute differences in mechanical tolerance between recorders can result in playback errors. The Velocity Compensator compares the burst phase of each video line on the tape with the burst phase of the next line, then sends a correction signal back to the vernier corrector. It eliminates line-by-line color-hue banding caused by mechanical variations occurring during each line; it greatly improves tape interchangeability by yielding a much better color playback of tapes made on other recorders; and it gives color dubs of excellent quality even through several generations.

SPECIFICATIONS

Monochrome and Color unless otherwise noted

Bandwidth		±0.25 dB to 4.43 MHz ±0.4 dB to 6.0 MHz
K Factor (2T pulse)		1%
Differential phase		2°
Differential gain		2%
Signal-to-noise ratio		–60 dB
Correction range		±1.5 μsec
Output jitter:	**Monochrome**	±30 nsec
	Color	±2.5 nsec
Mounting		Portable case similar to VPR-7900
Dimensions:	**Length**	38-1/8"
	Width	18-5/16"
	Height	12-1/4" (TBC only) 25-1/4" (with VPR-7900)
Weight		120 lbs
Input power		105-125V or 210-250V, 50-60 Hz

VPR-7900 with TBC-790 (below in typical configuration)

Descriptions and specifications subject to change without notice.

AMPEX

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