

**AMPEX**

# TBC-1

Digital Time Base Corrector





## The Spotlight is on Performance

# TBC-1

Designed to Let You Use Your Imagination

Over the last decade, the extremely rapid advancements in video technology created some peculiar side-effects. One of them was the problem of choosing a time base corrector. As the number and variety of TBC's increased so did the confusion that grew from the expanding glossary of technical terms and the varying capabilities of different products. The buyer was almost always faced with a dilemma when attempting to satisfy current and projected requirements. In short, you could find a TBC to fill some of your needs, but not all of them. Until now.

Ampex introduces TBC-1. The digital time base corrector that quite simply outperforms anything else available. TBC-1 combines all of the most wanted features of stand-alone time base correctors with the unmatched signal performance of the TBC-800. The result is a revolutionary design that takes the "worry" out of time base correction. It narrows the field to a single, stand alone unit that corrects the signal from any non-segmented helical-scan VTR.

TBC-1. Think of it as the "1" for all.

**Engineered for ENG—a true second-generation TBC for electronic news gathering.**

- Dynamic Correction\* system—incorporates both "averaging" and line-by-line processing techniques in a single TBC.
- Widest correction window in the field—greater than 6 horizontal lines in NTSC, more than 10 for PAL/SECAM.
- Best over-range characteristics of any TBC available.
- True single-wire design and built-in VTR interface.

\*Trade Mark—Ampex Corporation

**Compatible with ALL non-segmented helicals—including Ampex VPR-1.**

- The only TBC compatible with the AST (automatic scan tracking) features of VPR-1.
- Easiest maintenance, most complete diagnostics ever offered.
- "Rack case" permits portability and rack mounting.
- Complete options offer widest flexibility, broadest range of applications.

The product of our wildest imagination gives you the freedom to use yours.





## Our Star Performer Makes the News

Keeping up with the rapid advancements in electronic journalism is a full-time commitment. Ampex has a reputation to live up to—we like to be first. The new TBC-1 gets its revolutionary spirit from the company that introduced time base correction.

Ampex puts the "News" in ENG with Dynamic Correction\*—a brand new dimension in the state-of-the-art. And only TBC-1 has it. Advanced circuitry combines both averaging and line-by-line processing techniques to give the best possible picture under all conditions. When initially locking up and during severe error overloads, the TBC-1 uses an averaging correction technique. This permits even severely degraded video (missing or double sync, etc.) to properly pass through the system. Then, TBC-1 automatically switches to line-by-line correction—the technique universally used in quad recorders—for superior broadcast quality output.

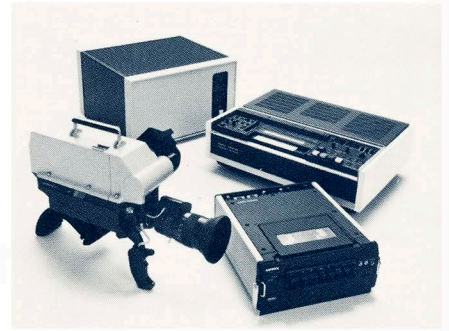
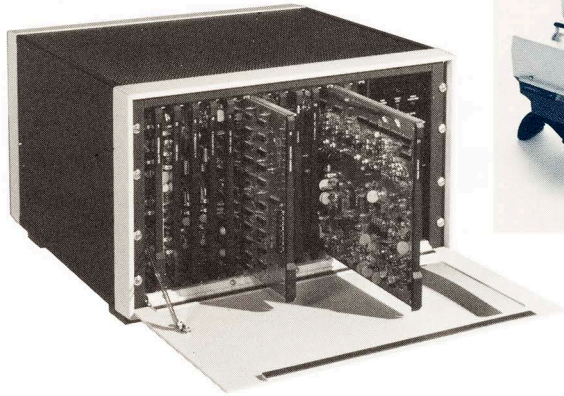
This bright new idea has immediate importance for all videotape users, especially electronic journalists. Now ENG gets the full treatment.

Glance at the specs; then look at the features and full range of options. Things like knowing the needs of broadcasters and attention to detail are part of the Ampex tradition. The best of Ampex is in the TBC-1. It's designed to let you get around.

### TBC-1 Helps You Live with ENG

TBC-1 was developed with the special demands of electronic news gathering and microwave transmission in mind. With the heterodyne option installed you get the ultimate in flexibility. "Color under" or direct color recovery can be selected with the flick of a switch. A standard "rack case" makes the TBC-1 the all-around studio accessory—rack mount it or take it with you.

The economic advantages of ENG are making big news. But today's go-anywhere cameras and teleproduction equipment are often subjected to harsh conditions, causing picture interruptions and distortion of all kinds. Even the best 3/4" U-Standard portable can place enormous demands on a time base corrector, with time base errors which can exceed 30 television lines due to gyroscopic errors. TBC-1 was built to take them. It has the broadest correction window and smoothest over-range characteristics available. Tapes from portable VTRs lock up to station sync even when exaggerated inertial errors are present. When these errors exceed the correction range, the TBC-1 "moving



window" gives the picture a gentle, ultra-smooth vertical shift, allowing the signal to remain fully broadcastable.

Good manners are just part of the story. TBC-1 has a habit of keeping you out of trouble, too. You'll never have to worry about meeting broadcasting standards because TBC-1 gives you a picture consistently better than the tightest specs. With its "total transparency" you can do edits and multiple-generation dubbing without degrading video quality.

This new time base corrector is the ideal accessory for electronic field production, too. When used with tapes recorded on the new Ampex VPR-10 portable, you can rely on consistent quality from field to studio.

TBC-1 is the editor's choice for getting broadcastable pictures on the air fast.

### Enhanced Flexibility for Any Purpose

As an all-around video accessory, you can't do better than the Ampex TBC-1, no matter what the application:

**PRODUCTION.** TBC-1 lets you get professional results even when using relatively inexpensive VTRs. Using fades and wipes from a special effects generator, you can integrate live camera and VTR sources without the need for elaborate studio systems.

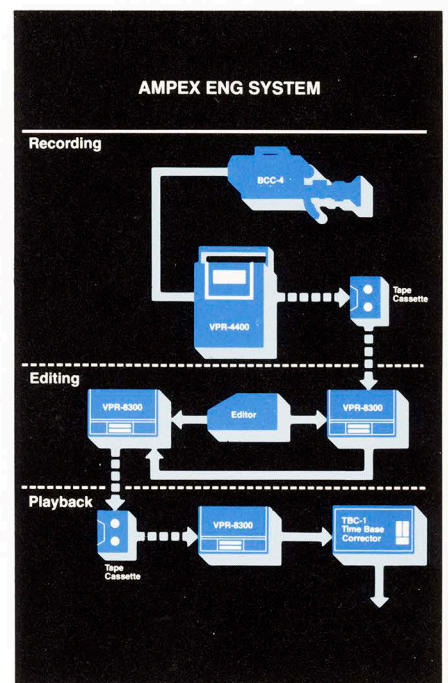
**POST PRODUCTION.** Whether you use the TBC-1 with a full-editing U-Standard cassette recorder like the Ampex VPR-8300, or interface directly with a one-inch VTR, such as the VPR-1, you'll chop hours off editing chores. Because of the unmatched transparency of TBC-1's processing circuitry, you can prevent the accumulation of signal errors in successive-generation dubs without sacrificing image integrity.

Users of the TBC-1 will particularly appreciate its sophisticated capabilities during editing sessions. It even corrects

improper field sequence edits—automatically. Now, even VTRs with the simplest editing controls can produce a signal satisfying broadcast specifications.

**CCTV, PAY TV, CATV, INDUSTRIAL.** Training and educational programs that may have been recorded on non-capstan servoed recorders can be duplicated or dubbed up to other formats with our special option installed. A single TBC-1 can be used with several VTRs, making it the economy-choice for users with these requirements. Problem tapes can be corrected at the front end of a cable broadcasting system, and TBC-1's rapid lock-up permits switching from variable sources.

Now, top-level productions are within easy reach of users of advanced video technologies who demand the same quality needed in a network studio.



\*Trade Mark—Ampex Corporation



## 5th Generation State-of-the-Art

TBC-1 performance places it in a class by itself. In addition to its unique Dynamic Correction system, TBC-1 offers an unusually large correction window of more than 6 full lines (10 full lines in PAL/SECAM). This range allows it to handle severe overloads, and to



do so with no distortion of color or luminance. Unlike other time base correctors, the TBC-1 handles *extreme* overloads (up to 1% frequency change) with no hue changes.

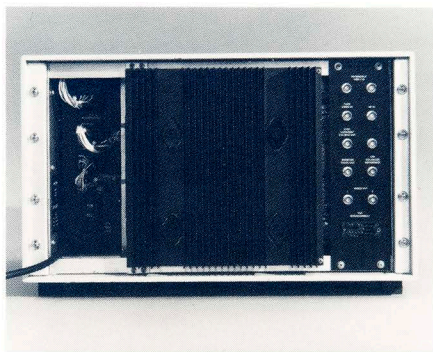
With any TBC, the signal-to-noise ratio is largely determined by the A/D converter. The TBC-1 uses the same A/D converter found in all of the best Ampex VTRs and time base correctors. The result is unexcelled signal-to-noise performance.

For those who insist on top-of-the-line helical production, TBC-1 is the only time base corrector compatible with the automatic scan tracking (AST) features of the revolutionary Ampex VPR-1 video production recorder. The TBC-1 is available in NTSC, PAL-M, and PAL/SECAM versions.

### Added Attractions

VTR interfacing is built into the TBC-1—modifications are not necessary for most VTRs. Operation is true "single-wire," with no "conversational" signals back to the VTR. It will accept either a TTL or RF signal from the VTR for the optional dropout compensator. This permits a direct microwave feed from news site to the station in ENG applications. The TBC-1 also provides adjustable advance sync to the recorder and has a 3.58 MHz (NTSC) coherent subcarrier for users requiring it.

Low power consumption (under 200 watts) is another advantage of the TBC-1. Convection-type cooling is used; no fans required. A universal power supply is standard, and the heat sink swings out from the back, providing easy access to the backplane.



### Maintenance

**We took the worry out from front to back.**

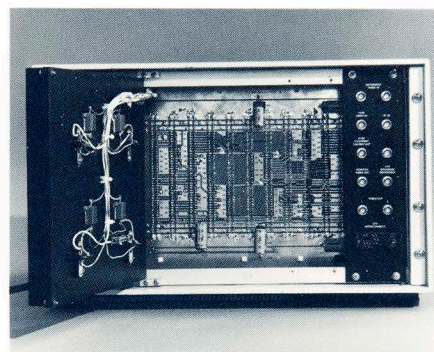
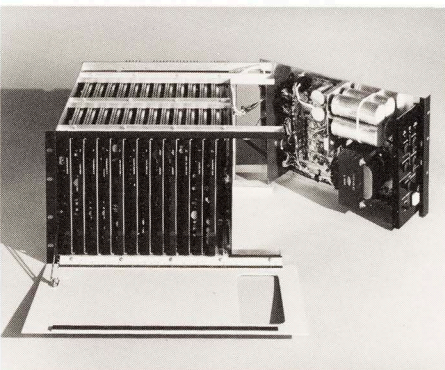
State-of-the-art backplane-type circuitry enhances reliability and facilitates easy maintenance. All printed wiring assemblies (PWAs) can be pulled from the front, and the power supply swings out from the side.

TBC-1 gives you the brightest ideas yet in serviceability with the most advanced array of diagnostic aids and test points to date. In addition to the Gen Lock and Video High/Low LED indicators on the front panel, there are other LED function indicators on the PWAs. All relevant test points are accessible at the front of the PWAs, and an extender card is provided as standard equipment.

### Options

Plug-in option modules permit flexibility and let you tailor the TBC-1 to your exact requirements. Our superior line-by-line Velocity Compensator is available to enhance performance and improve the quality of multiple-generation dubs.

Also available is a high-quality Dropout Compensator. Unlike other dropout compensators which simply replace an adjacent line when a dropout occurs, the TBC-1 DOC replaces only the actual dropout, using information from the previous correctly-phased line of video. Two other options expand the TBC-1's capabilities even further. One is a



heterodyne color processor which, when installed, is switchable with the standard direct-color recovery system. This option allows you the utmost versatility and permits the finest possible signal performance with all popular heterodyne recorders, including 1/4", 1/2", 3/4" and 1" machines.

Another option allows the TBC-1 to be used with non-capstan-servoed VTRs. These two accessories make the outstanding performance of the TBC-1 available to virtually all helical VTRs, from the lowest priced models to the ultra-sophisticated Ampex VPR-1.

### The World's Most Advanced TBC Is Also the Easiest to Use

TBC-1's sophisticated circuitry was designed to give you the advantage. For simplicity of operation it stands alone. Take it out of the box, plug it in, and forget about all the "tweaking" that other TBCs require. But when you do have to go inside, you'll find we made it easy for you there, too. Accessibility is one of TBC-1's most outstanding features.

A clear and detailed operating/maintenance manual gives you the information you'll want to stay on top of the situation and play it safe. And TBC-1 is available now. So you can stop worrying.

### TBC-1 Lets You Relax

Take your favorite buzz-words—VITS & VIRS, large correction window, diagnostics, VelComp, gyroscopic error correction, DOC, averaging or line-by-line—then forget about them. Because they're all inside the TBC-1. It's the only time base corrector fully compatible with *all* non-segmented helical VTRs and the first to give you the benefits of the Dynamic Correction system. No matter how unstable your VTR is, TBC-1 automatically gives you the best picture possible, with crisp, correct color—always. Top performance combined with ease of operation.

TBC-1 takes the worry out of time base correction.



# TBC-1 Specifications

GENERAL	NTSC	PAL/SECAM
SIZE: Standard 11" High Rack Case	19" W x 11" H x 18" D	483 mm W x 279 mm H x 457 mm D
WEIGHT:	80 lbs.	36.29 kg
POWER REQUIREMENTS:	less than 200 watts	less than 200 watts
AMBIENT OPERATING CONDITIONS:	100/120 VAC $\pm$ 10% 60 Hz	220/240 VAC $\pm$ 10% 50 Hz
Temperature:	0° to 45° C	0° to 45° C
Humidity:	10% to 90% RH (Non Condensing)	10% to 90% RH (Non Condensing)

## VIDEO

BANDWIDTH:	Flat to 4.2 MHz tolerance $\pm$ 0.5 dB 3 dB Down @ 5.5 MHz	Flat to 5.5 MHz Tolerance $\pm$ 0.3 dB
K-FACTOR (2T PULSE & BAR):	1%	1%
DIFFERENTIAL PHASE:	2° (See Note 1)	3° (See Note 1)
DIFFERENTIAL GAIN:	2% (See Note 1)	3% (See Note 1)
SIGNAL-TO-NOISE RATIO:	60 dB (See Note 2)	-56 dB (See Note 2)
CORRECTION RANGE:	Greater than six Horizontal Lines	Greater than ten Horizontal Lines
OUTPUT JITTER:		<b>PAL</b> <b>SECAM</b>
Monochrome:	$\pm$ 10 nsec	$\pm$ 20 nsec
Color:	$\pm$ 2.5 nsec	$\pm$ 3 nsec (See Note 3)              N/A
VTR-Interface:	Requires an unprocessed video signal from any non-segmented helical VTR	Requires an unprocessed video signal from any non-segmented helical VTR
Input Signals:		<b>PAL</b> <b>SECAM</b>
Reference:	1.0 composite video or color black (75 ohms)	1.0V composite video or color black (75 ohms) (Required for normal PAL operation)              1.0V composite video or color black (75 ohms) (Required for normal SECAM operation)
Video:	1.0V, $\pm$ 2 dB, composite video (75 ohms)	1.0V composite video (75 ohms)              1.0V composite video (75 ohms)
Dropout Compensator:	Dropout pulse either TTL or RF envelope (Dropout=low)	Dropout pulse at TTL Level: Dropout=low (See Note 4).
Output Signals:		
Video (3):	(a) 1.0V composite video (75 ohms) (b) 1.0V composite or non composite video (75 ohms) (c) 1.0V composite video (75 ohms) monitor output switchable normal/bypass	(a) 1.0V composite video (75 ohms) (b) 1.0V composite or non composite video (75 ohms) (c) 1.0V composite video (75 ohms) monitor output switchable normal/bypass

NOTE 1: Defined as the degradation to the differential phase and differential gain of the input video signal. Measured with ramp and subcarrier amplitude equal to that of the color burst.

NOTE 2: VTR-TBC system signal-to-noise ratio is determined primarily by VTR performance, e.g.,  
-42 dB VTR S/N=41.3 dB System S/N              -46 dB VTR S/N=45.0 dB System S/N.  
This gives an equivalent TBC S/N ratio of -56 dB.

NOTE 3: In order to meet this specification, the VTR Signal-to-Noise ratio must be 48 dB or better.

NOTE 4: In SECAM, the entire line containing the dropout is replaced by the previous line.

AmpeX Corporation reserves the right to change specifications without notice and without obligation. These specifications supersede all previous specifications, stated or implied.

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