

AMPEX

VR-1200B high-band color/monochrome videotape recorder

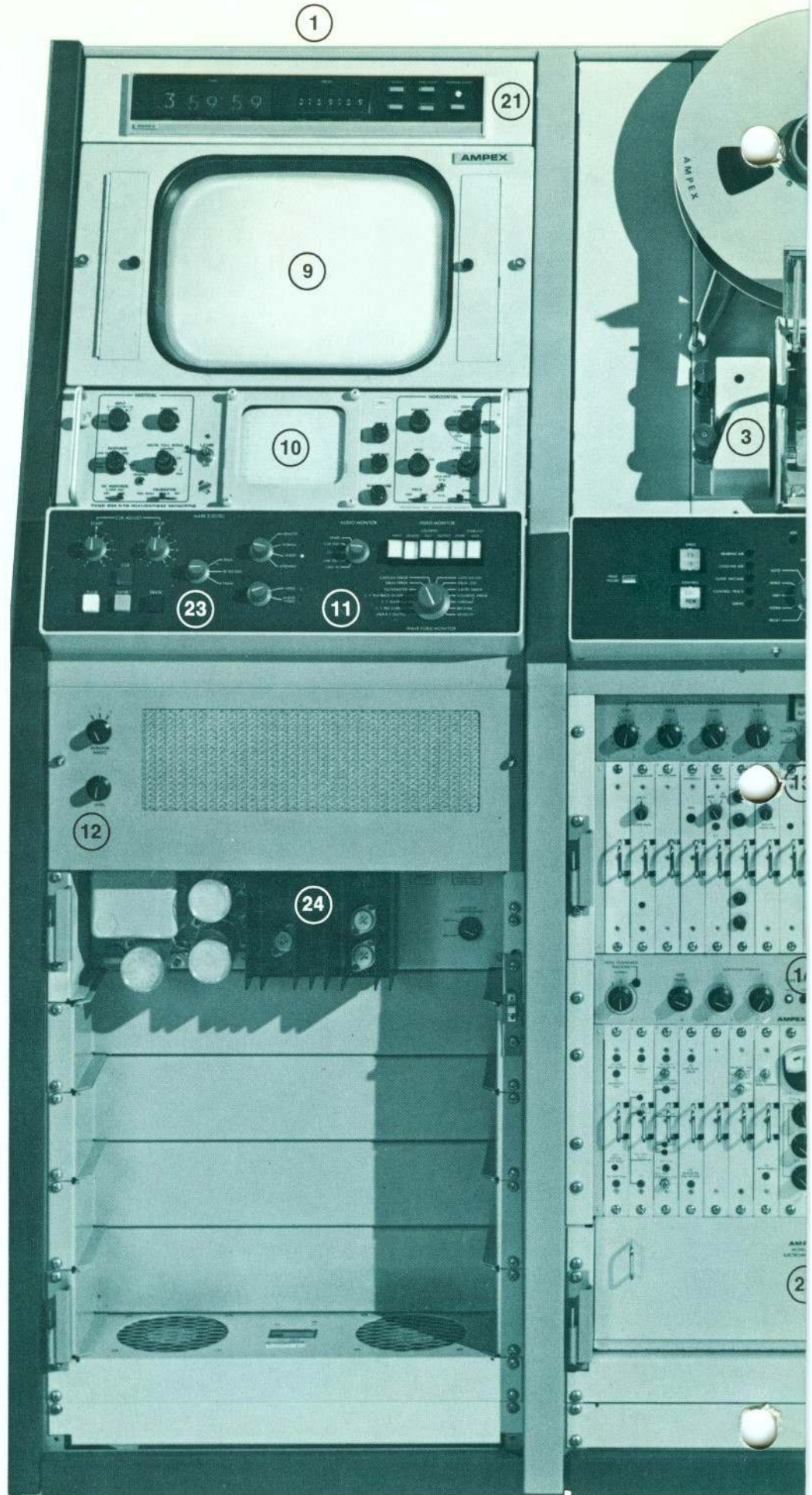


VR-1200B offers superior high-band color with full production capability

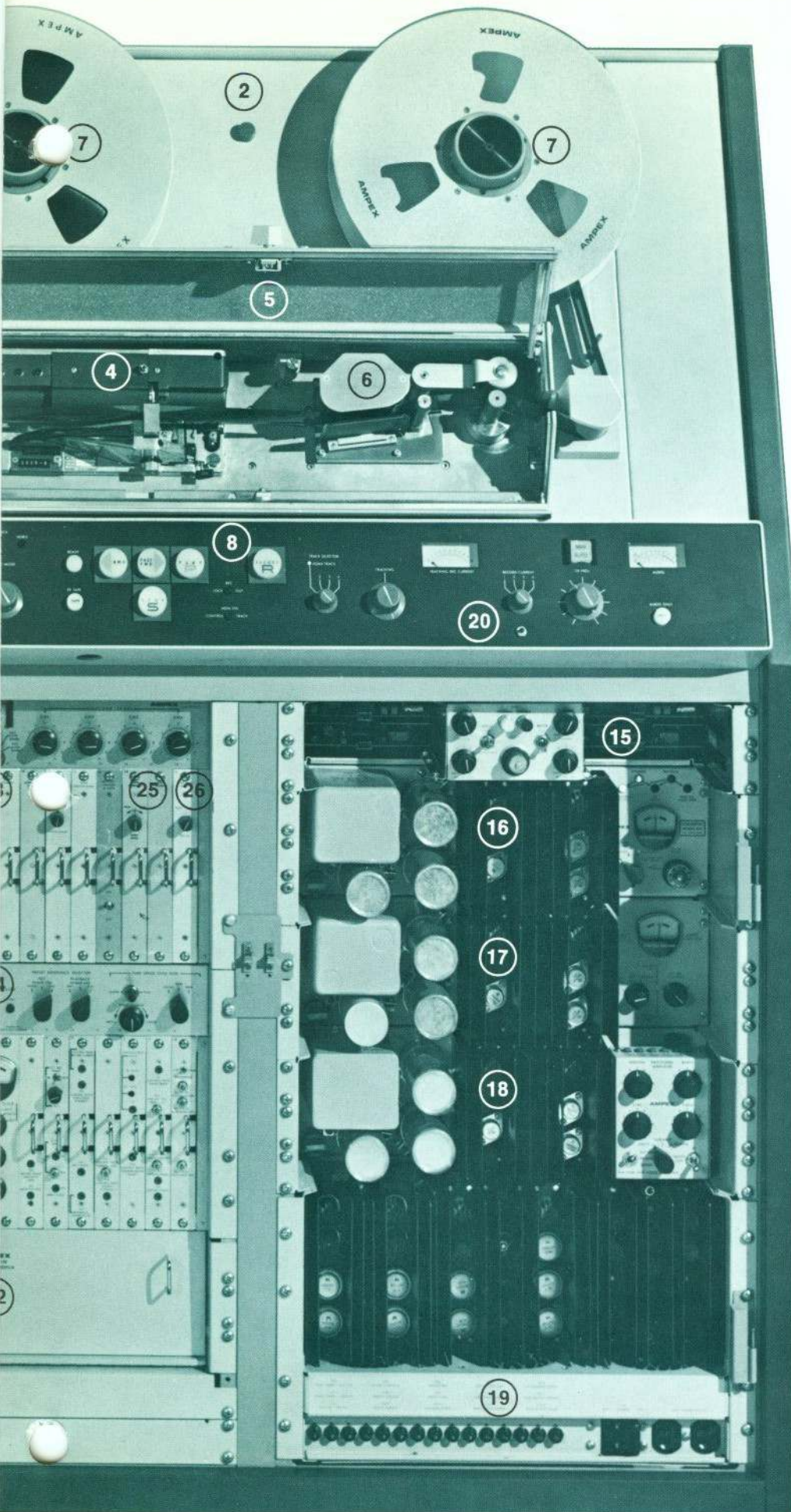
The Ampex VR-1200B provides the top color/monochrome performance available today — exceeded only by the VR-2000 Series. It offers complete television production capability, including multiple generation copies (four or more generations) and electronic editing in color or monochrome.

Fully solid-state design contributes greatly to the VR-1200B's modest size, increased reliability and low power consumption. It incorporates many of the same features as the VR-2000 Series VTR's: switchable high/low-band, color/monochrome operation; zoned operating controls; meaningful tally lights; new Video Head Optimizer (optional); new non-scratch video erase head; Mark Ten rotary transformer video head; complete built-in picture, audio and waveform monitoring.

- Built and tested as a complete color/monochrome system . . . with integral Amtec* and Colortec* unit
- Improved K-Factor, signal-to-noise, bandwidth, differential phase and gain . . . reduced moire
- New monitor console configurations allow more convenience . . . provide additional space for optional equipment
- Optional new Video Head Optimizer permitting video head optimization in 5 to 15 seconds.
- Improved signal system offers extended bandwidth, plus additional adjustment capability
- Accepts all Ampex accessories on a "plug-in" basis, including Electronic Editor, Mark II Editec*, Velocity Compensator, Auto-Chroma and One-Line Delay
- Optional Electronic Timer gives accurate elapsed-time or remaining-time reading on illuminated display
- Other new features: non-scratch video erase head, easily removed head cover, front access power supply with reset-type circuit breakers, precision centering reel hold-down knobs



VR-1200B... performance features



The standard VR-1200B is built and tested as a complete color/monochrome system. It incorporates a Colortec direct color recovery unit, Intersync* servo and Amtec time element compensator. High-band or low-band, color or monochrome operations are instantly switchable.

On high-band, extended bandwidth provides more room for color and an adequate guard band. This dramatically increases signal-to-noise ratio and reduces moire. Overall performance is expressed as K-Factor—a measurement of an electronic transmission system's performance in terms of frequency, phase and transient response. On the VR-1200B, an extremely good K-Factor of *better than 1.5%* is typical.

To meet a broad range of user performance requirements the VR-1200B is offered in many different configurations, all the way from a simple monochrome unit to a complete international color system for PAL and SECAM standards. It is compatible with all previous 4-head recorders.

① monitor configurations

For added flexibility, the new VR-1200B is offered in two different physical configurations: in an overhead assembly or in a side-mounted console. The monitor package can be positioned in a "sidecar console" on either right or left side of the recorder—or, in an independent console separate from the recorder. The photo at the left shows a "sidecar" configuration.

② proven video transport

Proven reliable, the VR-1200B transport is the ultimate refinement of a basic design in use in over 3000 Ampex videotape recorders throughout the world.

③ new non-scratch video erase head

An entirely new kind of video erase head has been designed for the VR-1200B—to eliminate the problem of tape-scratch caused by head-to-oxide erase methods. This novel erase assembly eliminates all possibility of scratch lines because it contacts tape on the non-oxide (base film) side *only*. It erases through the base film with no loss of erase efficiency. This new head retains the selective erase capability required by the optional Electronic Editor system.

4 Mark Ten video head

All VR-1200B's are equipped with the rotary transformer, transistor preamp Mark Ten Video Head. This outstanding video head is equipped with air bearings, and is interchangeable with all other Mark Ten transverse head assemblies in Ampex VTR's (simply by changing plug-in preamp modules). The transistorized preamp used in the VR-1200B does not require an FM test facility for alignment.

Rotary transformers in the Mark Ten assembly provide long-life, trouble-free and low-noise coupling to built-in transducers. Unitized transducers permit close matching of individual "dimes" on any head drum — for similarity of electrical and mechanical characteristics. Transducers utilize long-life AlFeSi pole tip material, plus special "high efficiency" construction to provide high output. This, coupled with the transistor preamp, results in extremely good signal-to-noise and low differential noise.

5 new, removable video head cover

The video head cover on the new VR-1200B is held down by only *one* captive thumbscrew. When this screw is removed, the cover easily lifts off to allow complete access to components mounted on the transport main deck.

6 new audio head assembly

The new audio head assembly on the VR-1200B offers improved audio performance, and has a convenient flip-down shield to facilitate head cleaning.

7 new reel hold-down knobs

New design of VR-1200B reel hold-down knobs permits rapid tape loading and unloading. They are precision-centering with positive lock action — and prevent distortion when using plastic reels.

8 functionally grouped controls

Functionally grouped operating controls and tally lights on the VR-1200B are designed for smooth, convenient, safe and error-free operation. There are no controls in illogical sequence, in awkward corners or recesses. Meaningful tally lights indicate either CAUTION (yellow), OK (green) or WARNING (red). Other fail-safe features include: complete front panel servo control, safety-interlocked operating controls, and front panel control/metering of all four tracking modes.

9 built-in picture monitor

The VR-1200B in a "sidecar console" configuration has a built-in Conrac 14-inch picture monitor with expanded pulse cross display and dual 525-625 standard. The overhead monitor assembly contains a Conrac General Purpose 14-inch monitor.

10 built-in waveform monitor

Complete waveform monitoring is available on the new VR-1200B, via the built-in Tektronix RM529 Waveform Monitor.

11 new monitoring switch panel

This new panel (and associated circuitry) offers complete monitoring capability of pictures, audio and important internal

VTR functions. It includes a built-in video distribution amplifier to drive external picture monitors. Unit shown has combined monitoring/editing panel.

12 audio monitor controls

13 signal system controls

Signal system adjustments are conveniently located (and protected from inadvertent handling) behind a flip-down panel in the cover door. They permit compensation for improperly recorded tapes.

14 improved Intersync servo

15 audio cue track controls

16 Colortec direct recovery unit

17 Amtec compensator

18 Ampex processing amplifier

19 new system power supply

This new power supply has easily reached, reset-type circuit breakers and convenience outlets that are available from the front of the recorder.

capability-extending options

20 new video head optimizer

Now available as an option is the new Ampex Video Head Optimizer. This unique pushbutton device is so fast and easy to use that it is now practical, for the first time, to optimize video heads before each recording. Optimization with the VHO takes a mere 5-15 seconds, as compared to 15 minutes or more required by previous methods. Use of the convenient new VHO guarantees peak performance on EVERY VR-1200B video tape.

21 electronic timer

A new, sophisticated Electronic Timer is now available as an option on the VR-1200B. The all-electronic unit replaces mechanical timers. It provides accurate, easily read ELAPSED TIME or TIME REMAINING on its illuminated readout and allows VTR control of other station/studio equipment. The new timer reads correct time for all line standards and both tape speeds; it automatically switches itself to give correct time at whatever standard or speed is selected. It also has an easy-to-use ZERO RESET. Preset provisions permit automatic "turn-on" or "turn-off" of other VTR's, film chains, slides, cue lights, etc. Its illuminated readout can be remoted to up to four locations — allowing station-wide cueing and timing from tape.

22 Mark III Electronic Editor

23 Mark II Editec program unit

Any VR-1200B can be factory or field equipped with the optional Ampex Electronic Editor and Editec system. The Electronic Editor permits electronic splicing of program material, color or monochrome. Scenes can be assembled or substituted at will — without discontinu-

ity of video, audio or sync. Editing is accomplished with pushbutton ease at either 7½ or 15 ips.

Addition of the Mark II Editec system to the VR-1200B allows assembly or substitution of material. It offers precise editing control. Simultaneously, it can activate other equipment or cue performers "on camera."

24 automatic velocity compensator

VTR velocity errors may result from differences in head tip velocities that are caused by variances in female guide height and recording radii. Velocity errors appear as color hue banding in pictures. This banding is effectively nullified by adding the optional Ampex Velocity Compensator to the VR-1200B. Operating in conjunction with the Amtec compensator and Colortec unit, the Velocity Compensator is designed for fully automatic, unattended operation. It is a particularly vital option for color production and duplication.

25 auto-chroma

Color videotape operation presents a greater tape interchangeability problem than monochrome. Addition of the optional Ampex Auto-Chroma to the VR-1200B greatly minimizes these problems. It provides fast, continuous and automatic control of color saturation from each of the four video heads — without the need for head readjustment. For playback of tapes made on other machines, Auto-Chroma assures tighter, faster control of chroma, reduced head banding and minimal need for operator attention.

26 one-line delay

The optional One-Line Delay can be used with the VR-1200B to compensate for video tape dropouts. When a dropout is sensed by the unit, the previous good line (stored in the One-Line Delay) is substituted for the bad line.

*TM AMPEX

VR-1200B specifications†

PHYSICAL

Dimensions

Height: 60½" (SCM) 76" (OHM)
 Width: 63" (SCM) 42½" (OHM)
 Depth: 30" (SCM) 30" (OHM)
 Weight: under 1000 pounds

Temperature and Humidity

Temperature: 0°C to 45°C
 Humidity: 10% to 90% R.H.

Power Requirements

Input Power: 117V ±10%, 60Hz, 25A (taps at 105-115-125V), or 230V ±5%, 50Hz, 12.5A (taps at 210-220-230-240-250V)

Convenience Outlets: four 115V outlets fused for 16A total

Signal Requirements

Video Composite Signal: 0.5 to 1.5V p-p composite, sync negative, EIA-FCC standard or 625 line standard 75 ohm unbalanced

Sync Input: 2 to 8V p-p, 75 ohm

Video Output Signals

Composite Program Line Output: resistive 75 ohms impedance ±1%, unbalanced; switchable for 1.0V or 1.4V p-p

Non-composite Program Line Output: resistive 75 ohms impedance ±1%, unbalanced; switchable for 0.7V or 1.0V p-p

Utility Sync Output: 75 ohms impedance ±5%, unbalanced at a fixed level of 4.0V p-p

Audio Input

Program Line: high impedance balanced

bridge for 500/600 ohm line at -10 dBm level min., or, high impedance unbalanced (15K)

Cue Line: high impedance balanced bridge (15K) at -10dBm min. with built-in microphone

Audio Output Signals

Balanced or Unbalanced: 600 ohms at +8dBm (0V) level; maximum output level +16dBm

Unbalanced Monitor: high impedance to feed external monitoring amplifier 1.0V rms

Cue Output Signal: 600 ohms balanced or unbalanced at +8dBm nominal level

OPERATING

Tape Speed

- 7½ or 15 ips (60Hz operation)
- 19.85 or 39.7 cm/sec (50Hz operation)

Recording Time 14" (35.6 cm), 7200' Reel

15 ips: 96 minutes

7½ ips: 192 minutes

NOTE: Normally supplied with 12½" (31.75 cm) reels

Picture and Sound Separation

15 ips: 18½ frame sound leads

7½ ips: 37 frame sound leads

Stability

Jitter (disturbance greater than 1Hz): ±0.075 μsec

Drift (disturbance less than 1Hz): ±0.1 μsec

Geometric: less than ±0.15 μsec during replay of a recording on the tracks selected to produce maximum error

Standards

Six position switch provides 525 low-band monochrome, 525 low-band color, 525 high-band monochrome/color, 625 low-band and 625 high-band monochrome/color. Sixth position is provided for test purposes.

AUDIO

Bandwidth

15 ips: ±2dB, 50Hz to 12kHz

7½ ips: ±2dB, 50Hz to 10kHz

Signal-to-Noise Ratio

53dB below 3% distortion at 400Hz

Flutter and Wow

15 ips: 0.10% rms

7½ ips: 0.15% rms

NOTE: Measuring components from 0.6 to 250Hz

CUE TRACK

Bandwidth

15 ips: ±2dB, 60Hz to 5kHz

7½ ips: ±2dB, 60Hz to 4kHz

NOTE: Response has a 16dB notch at 240Hz on 60Hz systems; 16dB notch at 250Hz on 50Hz systems

Flutter and Wow

Same specifications as audio channel

VIDEO RESPONSE (VR-1200B/3)

†Subject to change without notice.

	Domestic		International	
	525/60 Low-Band	525/60 High-Band	625/50 Low-Band	625/50 High-Band
Bandwidth*	Flat to 4.1MHz; -3dB at 4.5MHz; Tolerance ±1dB	Flat to 4.1MHz; -3dB at 4.5MHz; Tolerance ±0.5dB	Flat to 5.5MHz; -3dB at 6.0MHz; Tolerance ±1dB	Flat to 5.5MHz; -3dB at 6.0MHz; Tolerance ±0.5dB
Signal-to-Noise Ratio:	45dB peak-to-peak video to rms noise on interchange basis (Monochrome)	46dB peak-to-peak video to rms noise on interchange basis (Monochrome and Color)	42dB peak-to-peak video to rms noise on interchange basis (Monochrome)	43dB peak-to-peak video to rms noise on interchange basis (Monochrome and Color)
Transient Response:	Maximum K-Factor 2% (Utilizing 2T sine ² pulse)	Maximum K-Factor 1.5%	Maximum K-Factor 1.5% (Utilizing 2T sine ² pulse)	Maximum K-Factor 1.5%
Low Frequency Linearity:	2% Blanking to White (max.)	2% Blanking to White (max.)	2% Blanking to White (max.)	2% Blanking to White (max.)
Rise Time:	0.13 μsec maximum (.02 μsec or less rise time on input pulse)	0.12 μsec maximum	0.12 μsec maximum (.02 μsec or less rise time on input pulse)	0.10 μsec maximum

	525/60 Low-Band	525/60 High-Band	625/50 Low-Band	625/50 High-Band
Signal-to-Noise Ratio:	40dB peak-to-peak video to rms noise on interchange basis	46dB peak-to-peak video to rms noise on interchange basis	—	43dB peak-to-peak video to rms noise on interchange basis
Differential Gain:	Less than 4% Blanking to White	Less than 4% Blanking to White	—	Less than 4% Blanking to White
Differential Phase:	Less than 4° at 3.58MHz off tape	Less than 4° at 3.58MHz off tape	—	Less than 4° at 4.43MHz off tape
Maximum Color Phase Error (due to Differential Phase):	2° maximum (75% Color Bars, 3.58MHz Subcarrier)	2° maximum (75% Color Bars, 3.58MHz Subcarrier)	— (75% Color Bars, 4.43MHz Subcarrier)	2° maximum (75% Color Bars, 4.43MHz Subcarrier)
Moire:	— (Color Bars 75% amplitude, 3.58MHz)	-40dB maximum	— (Color Bars 75% amplitude, 4.43MHz Subcarrier)	-28dB maximum

* Bandwidth determined by corresponding Bode filter.

VR-1200B

zoned controls
for convenient, safe,
error-free operation

SET-UP AND TEST MONITORING ZONE

The uppermost zone of the VR-1200B's front panel contains all transport and test monitoring functions — functions that are most often required before, after or between "live" operational periods with the VTR. Once a tape has been loaded on the transport, and key functions checked, the operator is free to leave this zone and concentrate on primary and secondary controls.

PRIMARY CONTROL ZONE

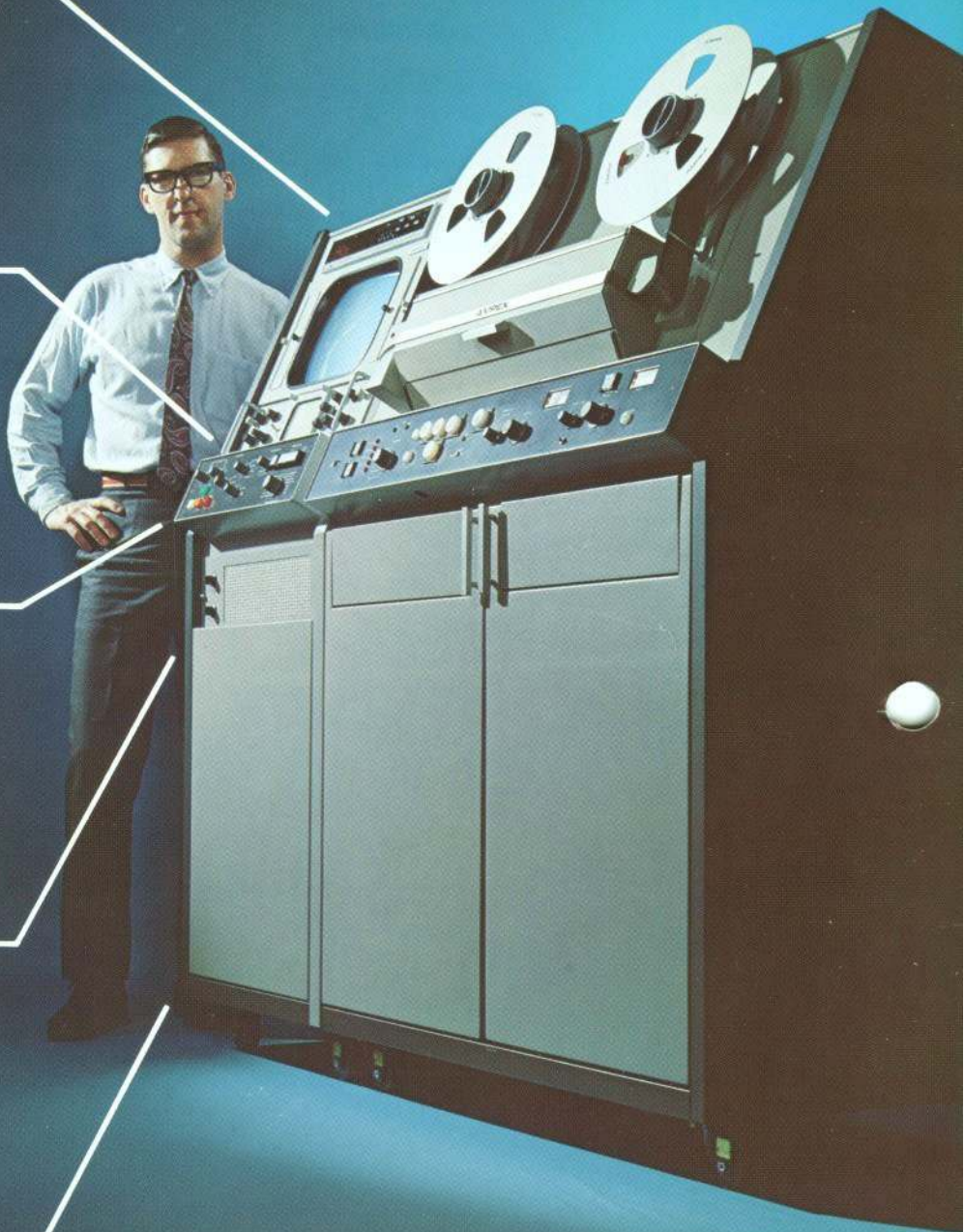
All frequently used operating controls are clustered in the highly accessible primary zone of the VR-1200B. Unless there is a deficiency in the tape, the operator never has to leave this zone. Primary controls are arranged in a logical sequence so minimal operator training is required. They incorporate safeguard interlocks, meaningful tally lights, monitor switching and controls needed for electronic editing.

SECONDARY CONTROL ZONE

Immediately below the zone of most frequently used controls, a secondary zone contains controls needed only when adjustment is required to play an improperly recorded tape — or for cueing and dubbing. Video signal system and audio cue controls in this zone are located behind flip-down panels to discourage inadvertent knob "twiddling." Audio monitor adjustments are accessible from the front panel.

MAINTENANCE ZONE

The bottom section of the VR-1200B, behind hinged doors, contains all adjustments needed for VTR alignment, periodic maintenance or emergencies. Test points and set-up adjustments are easily reached; unitized, printed circuit construction permits use of small extender boards to save floor space. Normally, this zone is never entered by operating personnel. The only entry that might be needed would be to make corrections for non-standard tapes.



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