

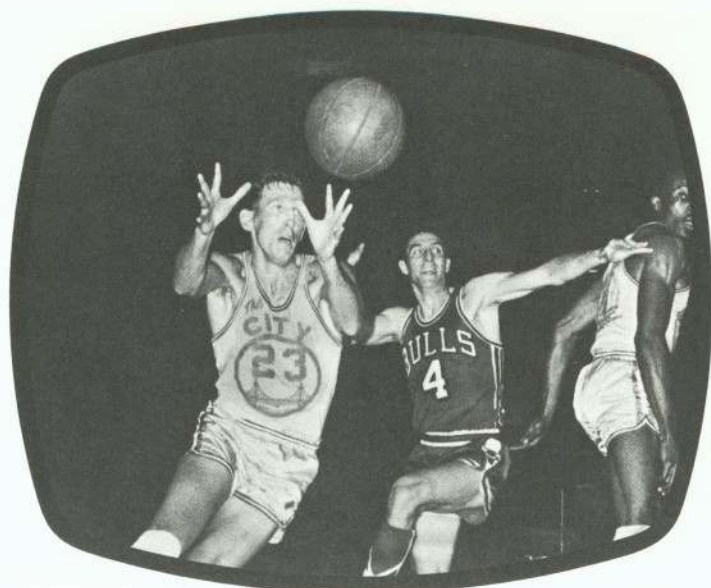
**AMPEX**

HS-100 color  
slow-motion sports  
recorder/reproducer



# replay the action in high-b

provides instant normal or slow-motion replay, forward or reverse, freeze



## features:

- The only commercially available slow-motion recorder compatible with all existing or proposed world color standards
- The only slow-motion recorder/reproducer that offers continuously variable slow motion, in both forward and reverse
- Has a longer recording time in any mode than any other slow motion recorder (30 seconds in normal mode and 60 seconds in alternate field mode)
- Provides unmatched high-band color quality in slow motion, stop action, freeze action, and fast action
- Locks into any local sync source allowing mixing with live programming without breakup
- Features cueing indicator time clock and fast search that permits easy location of any recorded passage in four seconds
- Can be converted to more versatile HS-200 teleproduction system

The HS-100 delivers better color and greater flexibility than any other instant replay recorder. Since its introduction in early 1967, the HS-100 has set the world standard for color replay of sports events. It is in use now or on order by many of the world's major networks and production houses.

The HS-100 continuously records and stores the last 30 seconds of action for instant replay on command. Replay can be at any speed continuously variable from freeze frame to 30 frames per second normal speed, in both forward and reverse. The operator can stop the action, back it up, move it ahead, gradually slow it down, even speed it up to twice normal speed. The most dramatic color action can be replayed for all it's worth.

By using this unit's exclusive fast search capability the operator can find and get on the air with any recorded segment in four seconds.

The HS-100—fully compatible with standard NTSC, PAL and SECAM color or monochrome video signals—is designed to complement rather than replace videotaping equipment currently in the field. It is for use in situations where fast access time and variable playback speeds are more important than long playing time.

### A Four-Unit System

The HS-100 total system is made up of four separate units (Disc Servo Unit, Output Processing Unit, Electronics Unit and table-top Control Unit) and their interconnecting cables. The units are packaged for portability and easy use on remote broadcasts.

### Operation

The HS-100 stores up to 1800 fields. These fields are magnetically recorded as concentric tracks on the four surfaces of two rotating metal discs. Except in the REPRODUCE or

# band color with the HS-100

freeze frame or frame-by-frame of any action in NTSC, PAL or SECAM color



FAST SEARCH modes, the HS-100 records continuously without interruption. As soon as a rotating disc reaches its storage capacity, the unit progressively erases the old and replaces it with new material.

The recorder's Output Processing Unit contains a standard Amtec\*, Colortec\* and processing amplifier. And all of the major electronics—packaged in the form of plug-in printed circuit modules—are housed in card racks mounted in the air-cooled Electronics and Disc Servo Units.

The compact table-top Control Unit is the nerve center of this highly versatile replay device. Its fingertip pushbutton controls are within easy reach at all times. There are three slow motion modes. All operate in forward or reverse. POSITION NO. 1 provides a 2:1 speed reduction, NO. 2 a 5:1 speed reduction, and NO. 3 activates the variable speed control lever that lets one vary the speed continually from NORMAL to FREEZE. The operator can switch from forward to reverse slow motion at will.

In the FREEZE mode a single frame is continuously repeated. While in FREEZE the operator can push the FRAME ADVANCE button and move along one frame at a time, forward or backward.

This unit has a time indicator clock, with cue pointer, and is calibrated from 0 to 30 seconds. The white time pointer gives the relative position of the record heads on the video disc—and it permits the operator to find any recorded passage in the 30 second segment recorded on the disc. A red cue pointer, which normally rotates with the time pointer, is released when the cue button is pressed. It marks a specific event. Pressing the cue button a second time causes the red cue pointer to return to its normal position under the white time pointer.

\*T. M. AMPEX CORPORATION

## Can Be Converted To HS-200 System

The HS-100 "instant color replay" unit used by network broadcasters for sports coverage can be expanded into the sophisticated HS-200 teleproduction system. Many HS-100 owners have already ordered this conversion.

The new HS-200 is a computer-controlled disc system that permits frame-by-frame color animation. It gives a tape editor the same freedom to produce special effects he would have with film, but at much greater speed and lower cost.

The HS-200 console editing system is a natural outgrowth of the color disc technology pioneered by Ampex with the HS-100. Like the HS-100, the HS-200 plays back recorded material at normal, fast and slow speeds—even to stop action—in both forward and reverse modes. In addition, the HS-200 permits single-frame color animation without the possibility of phase shift from frame to frame.

When pre-programmed, the HS-200 operates and edits automatically or on a series of cues. The system can be locked to studio sync so material from any studio source can be incorporated in finished commercials without break-up. Single-frame animation can be accomplished in less than one-tenth the time it takes by any other means.





## HS-100 specifications\*

### PHYSICAL CHARACTERISTICS

	Dimensions			
	Control Unit	Disc Servo Unit	Electronics Unit	Output Proc. Unit
Height	11"	21"	21"	21"
Width	8"	22"	22"	22"
Depth	16"	23"	23"	23"
Weight	15 lb.	185 lb.	175 lb.	160 lb.

**Temperature and Humidity** Temperature: 0°C to 45°C  
Humidity: 10% to 90% relative humidity

### OPERATING CHARACTERISTICS

**Disc Rotation:** 60 r/s  
50 r/s (PAL and SECAM systems only)

**Storage Capacity:** 1800 fields (30 seconds)  
1800 fields (36 seconds) (PAL and SECAM only)

**Playback Speeds:** Normal, 1/2 speed, 1/3 speed, variable speed, freeze, frame advance; forward or reverse.

**Search Speed:** 4.5 × normal speed.

### Power Requirements

**Input Power:** 117V ± 10%, 50/60 Hz, 20A  
(taps at 105, 115, 125V).  
(230V, 50/60Hz, 10A for PAL and SECAM systems.)

### Signal Requirements

**Video Composite Signal:** 0.5 to 1.5V p-p (1.0V nominal) composite, sync negative, 75Ω unbalanced.

**Sync Output:** 2 to 8V p-p (4V nominal) negative-going pulses, 75Ω unbalanced.

**Subcarrier Reference:** 3.58 MHz (4.43 MHz, PAL or SECAM systems), 0.5 to 4.0V p-p, 75Ω unbalanced.

**Line Identification:** 7.8 kHz, 2 to 8V p-p, square wave, 75Ω unbalanced. (PAL and SECAM systems only)

### Stability (before time-base correction)

**Jitter** (i.e., disturbance rates greater than 1 Hz): ±0.075 μs.  
**Drift** (i.e., disturbance rates less than 1 Hz): ±0.1 μs.

### Standards

**Standards Available:** 525 line, 60 fields/second, monochrome  
525 line, 60 fields/second, NTSC color  
625 line, 50 fields/second, monochrome  
625 line, 50 fields/second, PAL color  
625 line, 50 fields/second, SECAM color

### NOMINAL VIDEO RESPONSE CHARACTERISTICS (for normal-speed playback)

Monochrome Systems	525 Line	625 Line	Color Systems	525 Line	625 Line
Bandwidth	Flat to 3.8 MHz; -3 dB at 4.2 MHz; tolerance ±1.5 dB	Flat to 4.2 MHz; -3 dB at 6.0 MHz; tolerance ±1.5 dB	Signal-to-Noise Ratio	40 dB, p-p video to rms noise	37 dB, p-p video to rms noise
Signal-to-Noise Ratio	40 dB, p-p video to rms noise	40 dB, p-p video to rms noise	Differential Gain	Less than 10% Blanking to White	Less than 10% Blanking to White
Transient Response (Utilizing 2T Sine <sup>2</sup> Pulse)	Maximum K-factor 3%	Maximum K-factor 3%	Differential Phase	Less than 5° at 3.58 MHz	Less than 5° at 4.2 MHz
Low Frequency Linearity	2%, Blanking to White (maximum)	2%, Blanking to White (maximum)	Moiré (color bars 75% amplitude)	-37 dB maximum	-28 dB maximum
Rise Time (0.02 μs or less rise time on Input Pulse)	0.12 μs maximum	0.10 μs maximum			

\*Specifications and characteristics are subject to change without notice.

# AMPEX

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