

AMPEX

Sync Lock Accessory for AG-440 series and MM-1100 series Recorder/Reproducers

Features:

- locks recorder to film, video, or other audio recorders
- generates control track from composite video sync or other reference sources
- variable speed $\pm 10\%$ of nominal
- control track indicator lamp
- phase comparison
- 50 or 60 Hz operation



New and expanded recording capabilities are now within reach with the Sync Lock accessory from Ampex. This enhancement can be used in conjunction with all AG-440 series recorders equipped with capstan servo, and with all MM-1100 series multichannel recorders. With Sync Lock, the professional recording engineer can lock the recorder to film or video or create special effects.

Sync Lock offers unique capabilities not found in the normal 60 Hz resolver. It formats the control track to be recorded from a variety of sources, including composite video sync, the servo crystal oscillator, ac line, or other external reference. During playback, the control track is locked to any of the original (record) signal sources mentioned above. No extra circuitry is required to resolve the required 60 Hz signal from composite video sync.

In film or video applications, variable speed can be employed to

achieve lip sync. In other applications, the variable speed range of $\pm 10\%$ of nominal gives the recording engineer wide latitude in creating special effects.

Sync Lock also includes provision for a separate optional preamplifier, permitting direct connection of a pilot tone head to the unit. This feature eliminates the need for a separate set of electronics when the recorder is used to resolve a neo-pilot tone track (from 1/4-inch tape, for example).

An indicator lamp on the front panel of the unit shows when a 60 Hz control track signal is present. Loss of the control track initiates an automatic switchover to the crystal oscillator reference signal, which permits the system to continue operating until the control track is restored.

The system employs phase comparison, comparing each cycle. This feature eliminates the possibility of any long-term cumulative error in synchronization.



AMPEX

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Capstan Servo Kit for AG-440 series Recorder/Reproducers

Features:

- four speeds
- direct drive — absolute reference
- high-frequency crystal reference
- accepts external reference signal for variable speed control or coupling to accessories
- external reference conditioning capability
- overspeed monitor circuit
- easily installed as retrofit

Unprecedented flexibility and tape speed accuracy are two immediate benefits of the capstan servo accessory for Ampex AG-440 series recorder/reproducers. The servo is available either as an option on new machines, or in kit form for easy field installation on existing recorders.

The dc capstan motor is isolated from line power and its associated frequency fluctuations because a high-frequency crystal reference is provided. In place of a belt drive system, a single shaft is used to mount the dc motor, tachometer, and tape drive capstan, permitting precise speed control without belt slippage. This combination of isolation from ac line voltage and frequency plus direct drive provides tape speed accuracy of $\pm 0.08\%$.

With the servo installed, the operator has a choice of four

speeds. By means of jumpers, he can select any pair from the standard speeds of $3\frac{3}{4}$, $7\frac{1}{2}$, 15, and 30 in/s. In addition, the servo will accept an external reference signal for variable speed control, a feature which opens up other sophisticated recording possibilities for the AG-440. (See other side for more information on variable speed control under description of Sync Lock Accessory.) Normal equalization switching is not inhibited during variable speed operation. The servo also provides external reference conditioning: that is, it will accept a nominal 9600 Hz sine wave signal and condition it to a square wave.

An overspeed monitor circuit precludes loss of the tach signal due to the use of external reference frequencies above the normal range of the system, which is from 3 to 45 in/s.



SPECIFICATIONS

Tape Speeds	3.75, 7.5, 15, and 30 in/s in speed pairs		
Start-up Time	0.1 second to operating speed		
Flutter	Weighted DIN	Unweighted NAB	
	30 in/s	0.06%	0.05%
	15 in/s	0.06%	0.06%
	7.5 in/s	0.08%	0.08%
3.75 in/s	0.1%	0.1%	
Tape Speed Accuracy	$\pm 0.08\%$ from beginning to end of reel		
Power	115 vac 50 or 60 Hz		
Nominal External Reference	9600 Hz sine wave or square wave in range of 3 to 30 volts peak-to-peak		