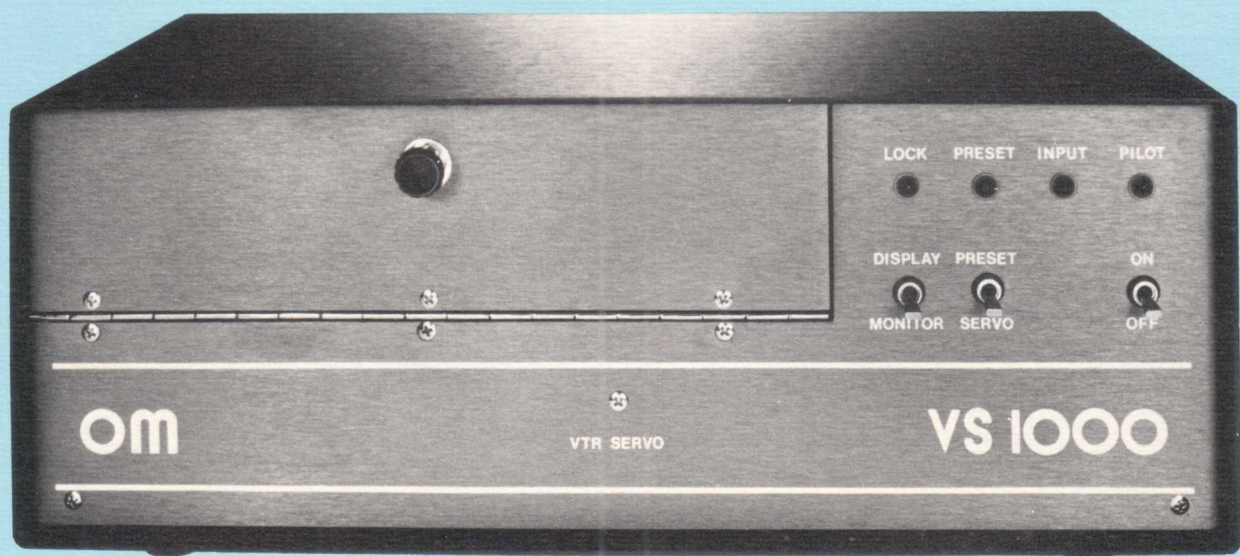


A NEW CONCEPT IN HELICAL VIDEO SYSTEMS UPGRADING



OREGON MAGNETICS VS-1000 MULTI-PURPOSE VTR SERVO

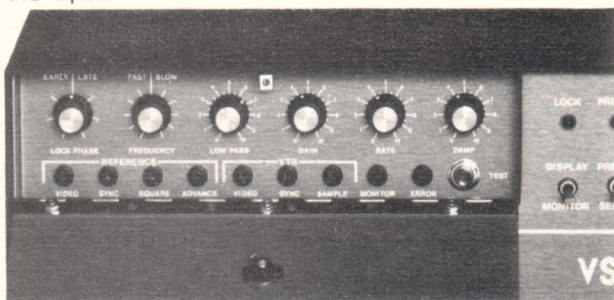
- UPGRADES LINE-LOCKED VTR TO TRUE VERTICAL LOCK
- AUTOMATICALLY CORRECTS OFF SPEED TAPES
- IDEAL COMPANION TO ANY TBC
- ELIMINATES COLOR SUBCARRIER MOIRÉ
- CONVERTS MOST RANDOM EDIT VTRs TO VERTICAL INTERVAL
CAPSTAN SERVO EDITING *
- PERMITS USE OF VTR ON OFF-FREQUENCY POWER PLANTS

* WITH VTR MODIFICATION KIT

GENERAL DESCRIPTION

The VS-1000 is an accessory especially designed for 1/2 inch video tape (VTR) and 3/4 inch video cassette recorders (VCR). Requiring no modification to the recorder, it will vertical lock (V-lock) virtually any machine now on the market, with the exception of a few models using DC motor drives.

The VS-1000 finds a variety of uses where excellent picture quality or greater versatility is desired. Its unique design permits connection to any VTR/VCR in just seconds, enabling one servo to be used with a wide variety of different recorders. It provides the only way to V-lock non-standard or obsolete tapes for direct broadcast (with a TBC) or cablecast. In many cases, VTR interchange problems can be avoided by broadcasting directly from the machine that made the tape.



Limited access controls add versatility to the VS-1000. Frequency and lock phase are pull-on type and reset when door is closed.

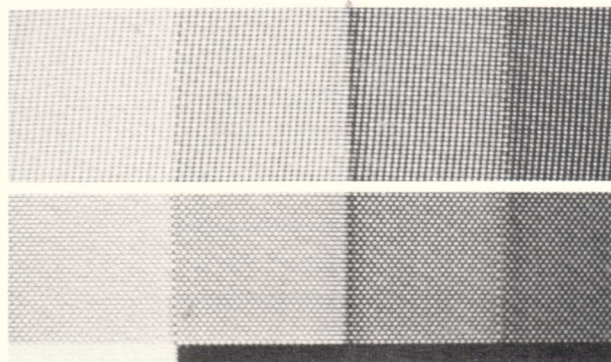
The VS-1000 has many unique features, including:

- V-lock indicator light gives positive indication when lock-up is achieved within ± 1.5 horizontal lines.
- Input fault light indicates an input video or reference sync deficiency.
- Preset switch selects either servo action or "free run" modes.
- Excellent immunity to dropouts and other video transients.
- Faster, more accurate lock-up allows use of tapes with little black or pre-roll at the start.
- Limited access controls allow adjustment of lock phase, VTR/VCR speed and servo loop response.
- Wide speed adjustment range allows lock-up of tapes up to 5% off speed.
- Immunity to power line frequency changes allows perfect performance in areas served by gasoline generators or inverters.
- Monitor output allows the selection of a stability display mode to allow viewing of VTR/VCR lock-up and stability.
- Front panel test points provide several useful wave-forms: oscilloscope trigger before vertical blanking, stripped sync from both video inputs and loop error voltage.

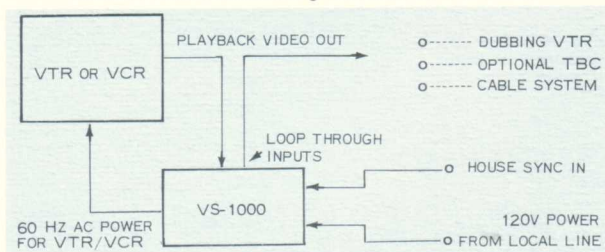
ADVANTAGES OF V-LOCKING YOUR VTR/VCR WITH THE VS-1000

Even without a TBC the VS-1000 will substantially improve your VTR/VCR playback.

- Eliminates annoying color subcarrier moiré (wavy, vertical lines in bright colors) without a time base corrector. This effect disappears when the VS-1000 puts heterodyne color recordings back "on speed".
- Automatically corrects off-speed tapes, eliminating the need to constantly readjust the horizontal hold on TV monitor or receiver.
- Allows use of previously recorded material as a video source for direct switching, without rolling or break-up.
- V-locks almost any video tape recorder or player, including 3/4 inch cassette and 1/2 inch cartridge models, with no modifications to the machine.
- Provides the only way to V-lock many older format tapes.
- Upgrades most random edit VCRs to break-up free, vertical interval editing (with VCR modification kit).

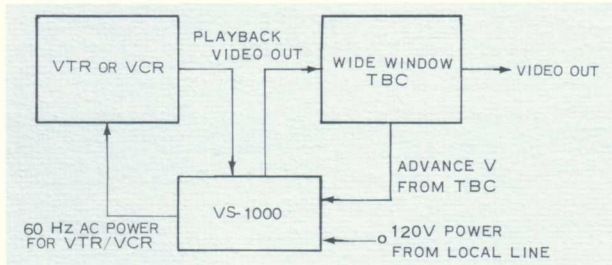


Upper Photo: Color bars showing subcarrier moiré.
Lower Photo: Interlacing function of VS-1000.



- * VS-1000 Keeps VTR/VCR playback on frequency
- * Color subcarrier is loosely interlaced
- * Video out may be connected to any TBC for skew and jitter correction

USE WITH A WIDE WINDOW TIME BASE CORRECTOR



- * VS-1000 V-locks VTR/VCR
- * TBC removes skew and jitter
- * Color subcarrier is phased/interlaced
- * TBC's vert phase no longer need to be adjusted for different tapes

The VS-1000 is an ideal companion to any wide window TBC. While many wide window TBCs will work with a non-servo VTR, they cannot deliver full performance without a servo. Specifically, they will remove skew error ("flag-waving") and side to side motion in the picture but they **cannot correct off-speed tapes and cannot provide phased, interlaced color**. This means that some viewers will have to adjust their horizontal hold, and most will see annoying color subcarrier moiré due to the non-phased color.

The VS-1000 servo will guarantee that the vertical frequency is correct. Therefore, assuming 2:1 or EIA sync, the horizontal frequency and color will be correct at the output of the TBC. The result is stable video of the correct frequency; with phased, interlaced color which meets FCC specs for broadcast.

VIDEO DUBBING

Video dubs exhibit a variety of problems. Many of these are reduced or eliminated by the VS-1000. Small speed errors can accumulate through several generations, and reach the point where the recording VTR will refuse to lock at all. The VS-1000 will put these tapes back on speed and completely eliminate the problem. Another off-speed symptom is excessive color streaking, or complete loss of color. The VS-1000 will prevent the loss of color lock, and minimize the color streaking problems.

Head rolling* and jitter are two common dubbing problems the VS-1000 can help cure with a simple VTR modification. Head rolling is often caused by

The VS-1000 offers several advantages over VTR/VCRs with built-in servos.

- Most editing VTRs do not V-lock directly. They lock the head tach, not tape vertical sync (V), to the advance V* from the TBC. This necessitates occasional adjustments in order to establish the correct advance timing. The VS-1000 always locks tape V directly to the advance V for any tape on any VTR/VCR. There is never a need to adjust or set up the vertical phase of the VTR, or TBC.
- The VS-1000 will normally V-lock in 1/2 to 2/3 the time of an internal servo. This allows the use of tapes that have little "run down" at their start.
- The VS-1000 can be adjusted (with the simple controls behind the front panel door) to trade-off tape jitter for better ability to stay within a given TBC window. The improvement is often enough to play an otherwise uncorrectable tape.
- The expense of one servo can usually be spread among several different VTR/VCRs. One VS-1000 can be used with your 3/4" VCR, your 1/2" VTR, your 1/2" VCR, or even non-standard recorders. Only seconds are required to change the VS-1000 between recorders.

video dropouts in combination with the poor noise immunity of VTR servos. Jitter is a cumulative effect that is due to the poorly damped servos found in most VTRs.

The simple addition of an external sync input to your VTR will allow it to lock to house sync, while the VS-1000 also locks the playback VTR to the same sync. The VS-1000 then assumes the major lock-up responsibility with its excellent immunity to head rolling, and capability to be adjusted for proper dampening.

* Head rolling is caused by the VTR's head servo losing lock with the incoming video. It is recognized by the horizontal tearing effect that travels through the picture, and is often accompanied by mistracking noise.

EDITING WITH THE VS-1000 AND YOUR VIDEO CASSETTE RECORDER

Where it is necessary to edit on 3/4 inch cassette recorders, there are several alternatives: You can spend a lot of money on a semi-automatic imported system, send your VCR out for extensive and expensive modifications, or have your technician or local dealer install a simple modification kit in your random editing recorder, and use the VS-1000.

The Oregon Magnetics editing kit can be installed in less than two hours. It provides the necessary circuit-

ry to make vertical interval assembly edits, without audio pop or video disturbance*. There is no audio lag or overlap (one channel only). The editing kit also provides immunity to those occasional head rolls when dubbing, and is useful for that purpose alone. The VS-1000 provides the necessary servo function to insure full quality, capstan-servo performance.

* Heavily saturated color (e.g. NTSC color bars) sometimes show a slight, momentary color interference, but seldom on a normal picture.

ADDITIONAL USES

The VS-1000 can provide a precise 60 Hz. output from a widely varying power line frequency, allowing the use of VTRs or other frequency sensitive equipment on inverters, gasoline generators or unstable local power lines. In this one application the VS-1000 will operate any VTR which is within its power rating.

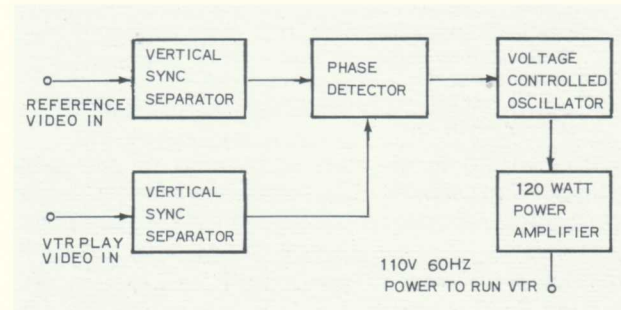
The VS-1000 is a valuable diagnostic tool for any VTR service shop. Its ability to lock up most VTRs and display their stability, makes it very useful for diagnosing mechanical stability problems.

The VS-1000 has a manually adjustable output frequency which allows it to be used as a speed controller for audio tape and disc machines; to vary their pitch, correct off-speed tapes, or establish synchronization.

It is also possible to lock audio tape recorders to VTRs or even to sprocketed film duplicators or projectors.

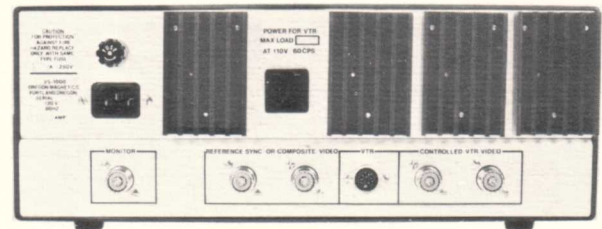
PRINCIPLE OF OPERATION

An internal vertical phase detector compares the off-tape vertical with that of the reference video. A motor drive waveform is derived from the comparator, varying the instantaneous frequency of the 60 Hz. power supplied to the VTR. The drive motor is then electrically steered to match the supplied reference vertical, yielding true vertical lock.



VTR INTERFACE

A large number of existing VTPs may be employed. The VS-1000 will V-lock any helical VTR rated at less than 135 watts @ 120V, using a synchronous drive motor for the capstan and electromagnetic brake for the head servo. This includes most Sony, JVC, Concord and Panasonic VTRs. It will not V-lock machines using D.C. capstan motors or, of course, those that already have a built-in capstan servo.



SPECIFICATIONS

Power output	110V 120 volt-amps continuous, 60Hz. nominal
Power Source	110 to 130V, 55-65Hz. 3 Amp.
Video Inputs	0.3-5V P-P composite sync or video, high-Z loop through
Range of manual frequency control	± 3 Hz. (5%) from 60Hz.
Range of manual lock phase control	± 1.5 horizontal lines
Video Connectors	UHF, easily adapted to BNC if desired
Inherent jitter	Less than $\pm 5 \mu s$
Lock-up time	Varies among VTR models and settings of response times selected by the user. Typical times to be expected with normal settings: $\frac{3}{4}$ inch cassette recorders 6 sec. $\frac{1}{2}$ inch open reel recorders 4 sec.
TBC interface	Permits use of V-lock mode on any wide window TBC.

Accuracy of V-lock	Tape V will average within $\pm 15 \mu s$ of reference V for all normal conditions. VTR jitter may exceed this limit depending upon model and state of upkeep. Good condition machines (regardless of interchange) will typically exhibit the following maximum peak-to-peak jitter:
	JVC CR 6000 $\pm 20 \mu s$
	Panasonic NV-2120 $\pm 20 \mu s$
	Panasonic NV-3020/ 3120 $\pm 15 \mu s$
	Sony CV-2000 $\pm 25 \mu s$
	Sony AV-3600 $\pm 20 \mu s$
Cabinet finish	All anodized aluminum, including front panel lettering.
Size	14.2 in (36 cm) wide, 5.5 in (14cm) high 8.5 in (21, 6cm) deep
Weight	15.9 lb (7.2kg)