

In the reverse mode, the motor wiring connections are reversed.

In the stop mode, the motor wiring connections are shorted and disconnected from the servo amplifiers. The short circuit provides dynamic braking to stop the motors instantly (Fig. 3).

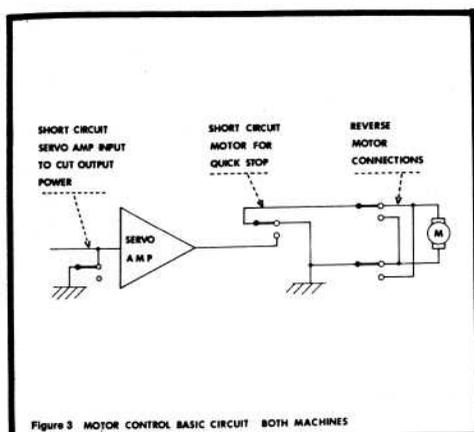


Figure 3 MOTOR CONTROL BASIC CIRCUIT BOTH MACHINES

As an additional safety precaution, the inputs to the motor servo amplifiers are shorted to prevent them operating at full power during the switching cycle.

The schematic (Fig. 4) shows the common switching circuit in the relay-operated control box.

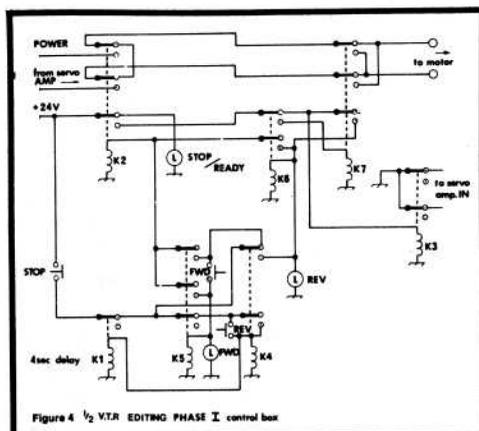


Figure 4 1/2 VTR EDITING PHASE I control box

K2 and K7 perform the motor switching operations.

K3 short circuits the servo amplifier inputs.

K1 is a delay relay that operates the drive motors in the reverse mode and stops the tape after four seconds.

The associated forward/reverse operations are controlled by other relays and they are interlocked to prevent a change in direction without first selecting the "stop" position. This allows the machine to come to rest each time to avoid damaging the tape.

The AV 3650 recorder was not originally designed to operate in the reverse mode. When the drive motor is modified to operate in reverse, the supply reel will not take up tape because it does not have a mechanically driven pulley.

The push-button and relay control box was designed to include an automatic stop at the end of the reverse mode, to allow the operator to give all his attention to the "tricky" business of reverse winding both supply reels at the same time.

Improvements to the sound editing operation during the Phase 1 modifications consisted only of eliminating the Sony delay circuits and permitting double recording at the edit point. Further studies of the inherent delay problems were required; solutions were found during the experimental stages, and were then incorporated into Phase 2 modifications.

## Phase 2

After some practical experience with the Phase 1 system, the possibilities of improving the editing system became apparent, and they are tabulated as follows:

- 1 Devise a means to mechanically operate the supply reel in the take-up mode when running in reverse.
- 2 If the length of the short run in reverse of both machines could be controlled by a time-delay circuit, it should also be possible to incorporate a method of switching the record function at the appropriate time and hence automate the editing routine.
- 3 If the switching of the record function can be made to operate automatically, it follows that it should also be possible to make the cut in the vertical interval.
- 4 If the bias to the video erase head, the audio erase head and the audio record head were controlled by time-delay circuits, then a clean sound cut could be obtained at the same time as the picture cut to produce an almost perfect editing sequence.

## Credits

*Concept Initiation:* Robert Forget  
*Concept Development:* Youssef Hasrouni  
*Mechanical Development:* Lester Dupuis and Anthony Zsiros  
*Drawings:* René St-Germain  
*Photography:* Jean Trudel  
*Author and Technical Coordinator:* Leo O'Donnell  
*Project Directed by:* Leonard A. Green