

VCR Hookups With Cable Boxes

VCR connection arrangements most user manuals fail to address

By Cass R. Lewart

The modern videocassette recorder is a marvelous entertainment appliance. But most operating manuals that accompany VCRs fail to give extended information on how to connect them into a system, especially ones with cable boxes that have built-in decoders for premium pay-TV channels.

We will address this deficiency here by presenting a few basic VCR hookups that may solve your cable/VCR/TV receiver dilemma. Each hookup arrangement introduced is explained in detail, including its relative merits and disadvantages. If you follow the instructions given here, there should be no reason why you can't take full advantage of your VCR's capabilities. Our emphasis here is on using your VCR with a cable box that has pay-TV decoding capabilities, rather than on complex

video systems that contain a multiplicity of signal sources and more than one TV receiver or VCR.

VCR Basics

To better understand the hookups detailed here, you should be familiar with some VCR basics. Figure 1 illustrates the simplified block diagram of the typical videocassette recorder. The built-in vhf/uhf tuner and channel-selecting mechanism duplicate those in your TV receiver. This section is followed by a video/audio system of circuits that terminate in the video tape unit. The latter is the electromechanical tape transport that actually moves the tape and "reads" the program information from it via its tape heads.

In the play mode, the tape unit feeds a signal to the r-f modulator. In other modes (record, search, etc.) the video/audio strip directly feeds the incoming signal to the r-f modu-

lator. The output signal from the r-f modulator is preset by the user to TV channel 3 or 4. The specific channel assignment to which the modulator is set depends on the TV broadcast channels available in a given locality. For example, if in your locality a signal is being broadcast on channel 4, you would set the VCR's output switch to channel 3 to obviate interference with the channel 4 signal, and vice-versa.

If you closely examine Fig. 1, you will note that the typical VCR has all the circuitry a typical TV receiver has with the exception of the final video stages and the picture tube. Consequently, the VCR is completely independent of the TV receiver in terms of its recording capabilities. This means that you do not have to have your TV receiver on to be able to record a program.

One important operating control on all VCRs is the TV/VCR switch.

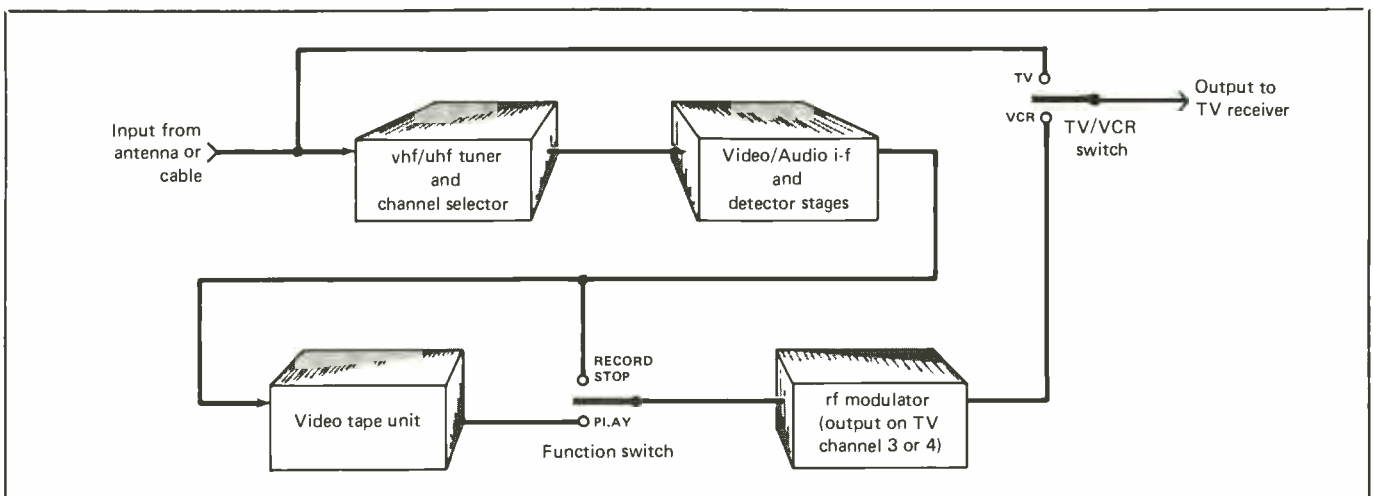


Fig. 1. Simplified block diagram of the typical videocassette recorder.

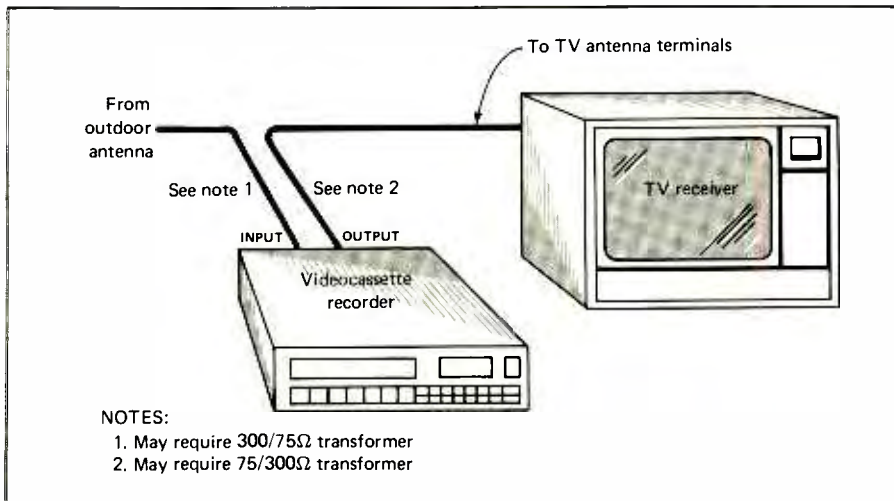


Fig. 2. Simplest VCR hookup is to an outside antenna, which allows you to record and view different channels simultaneously but not to decode premium scrambled cable channels.

This usually lights up in the VCR position. When it is in the TV position, the VCR's output is directly connected to its input such that the outside antenna or cable box that feeds the TV signal into the video system bypasses the VCR's circuits altogether.

With the TV/VCR switch in the VCR position, the VCR's output is connected to the internal r-f modulator. When this is done, your TV receiver must be on and be tuned to the selected modulator output channel for the program to be viewed.

In every mode but play, the TV/VCR switch is automatically set to

the TV position. It is also automatically set to the TV position whenever the VCR is switched off so that you can view your TV programs in the normal manner as though there is no VCR in the system. Finally, you can manually switch between TV and VCR whenever the VCR is powered up, allowing you to view one channel while recording another.

Components Needed

To be able to make the connections suggested here, you need short (about 2-ft.) coaxial cables with F-type plugs on both ends. Also re-

quired are signal splitters to distribute the r-f signals as needed and A/B switches (like those used with video games and home computers) to selectively route the signals to either of two destinations. These items are commonly available from local electronics parts distributors like Radio Shack and video equipment stores.

When shopping for components for VCR installation, avoid the bargain-basement variety. Particularly avoid cables that have thin inner conductors that tend to bend and break off very easily.

From here on, we will assume that your TV receiver and VCR are "cable ready," allowing you to receive all nonscrambled channels without requiring the decoder box supplied by the cable company. If this is not the case in your particular setup, simply change all references to "all nonpremium channels" to "channels 2 through 13."

The Hookups

Let's now examine specific VCR hookups, using splitters and A/B switches and assuming either an outside antenna or a cable feed that can deliver both premium scrambled and nonpremium channels.

● **Outside Antenna, No Cable.** This simplest of hookups is illustrat-

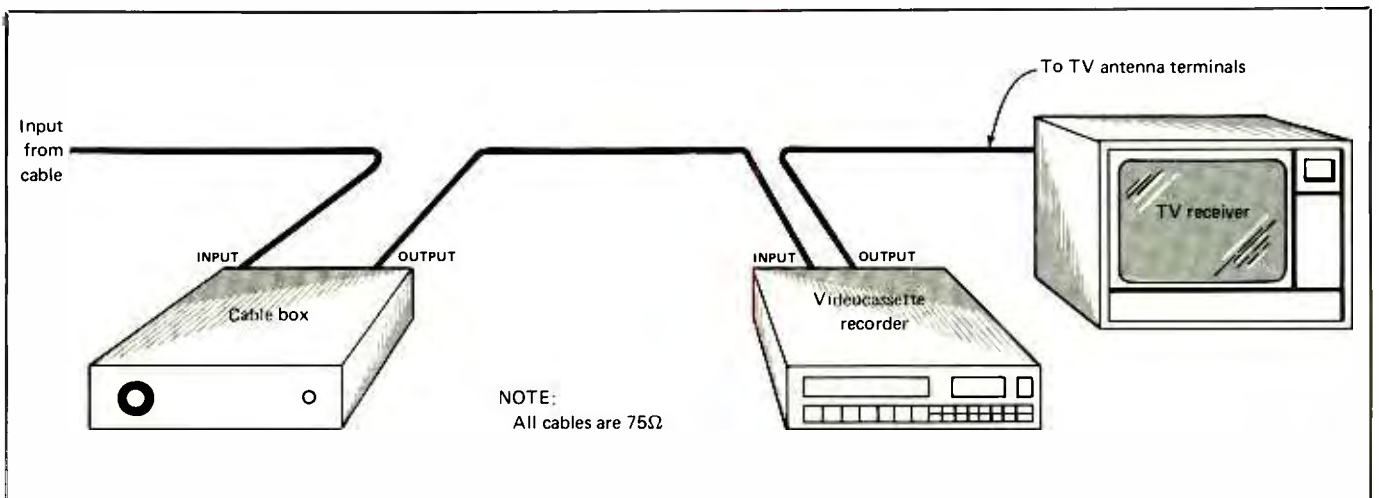


Fig. 3. This simple VCR/TV-cable hookup's channel selection is governed by the cable box's channel selector.

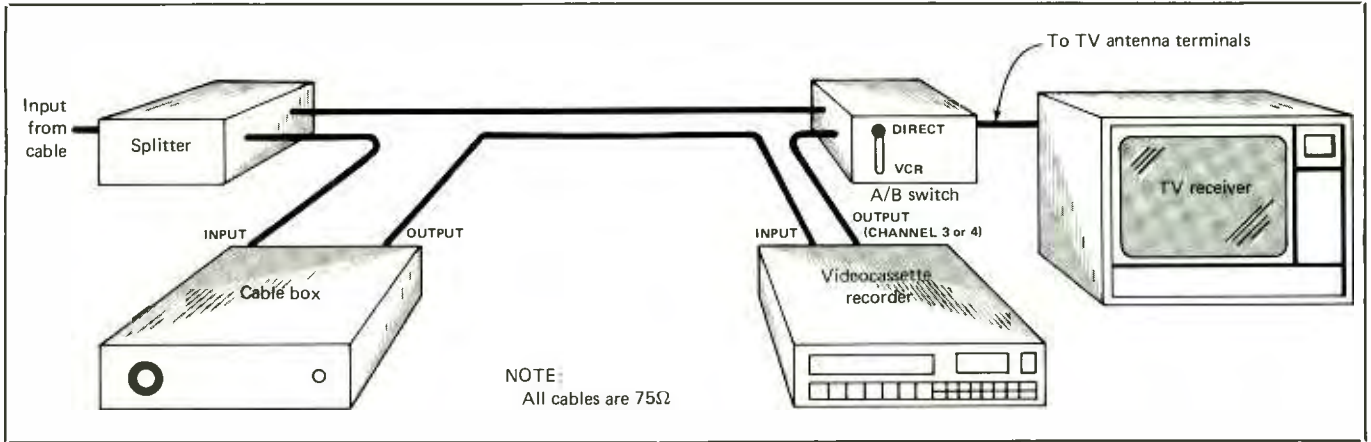


Fig. 4. This more elaborate arrangement has a signal splitter and an A/B switch that permit recording on one channel while viewing another. Recording channel selection is made with the cable box's channel selector.

ed in Fig. 2. With this arrangement, you select the channel to be recorded with the VCR's channel selector. You can then view the same channel as that being recorded or, by setting the VCR's TV/VCR switch to TV and your TV receiver's channel selector as needed, any other TV channel can be viewed. In the playback mode, your TV receiver must be tuned to the selected r-f modulator's output channel.

Throughout this article, TV receiver and VCR channel selection can be accomplished with the individual unit's remote controller if it has this capability. When using the VCR's remote controller, the TV/VCR switch can be in the VCR position and the TV receiver can be tuned to

the output channel to which the VCR's modulator is set so that you can view the same channel as that being recorded by the VCR.

All connections in all hookup arrangements illustrated in this article must be made with 75-ohm coaxial cables with F-type connectors on both ends. If your TV receiver or outside antenna use standard 300-ohm twin-lead you will also need 75/300-ohm transformers to match impedance and to make the required connections.

● *Cable With Premium Channels.* The cable company supplies its subscribers with a channel selector box that contains the decoder circuitry required to unscramble the pay-TV channels. The output of this box

is usually on TV channel 3. Both your TV receiver and your VCR must be tuned to channel 3 when connected to the output of the cable box. However, if your VCR or TV receiver are connected directly to the cable ahead of the box, you should be able to view and record all nonpremium channels by selecting them with your VCR or receiver channel selector (or via their respective remote controllers).

All methods that allow you to view one channel while recording another simultaneously are based on the concept that the VCR or TV receiver are connected directly to the cable ahead of the cable box.

When a program is recorded through the cable box, the choice of

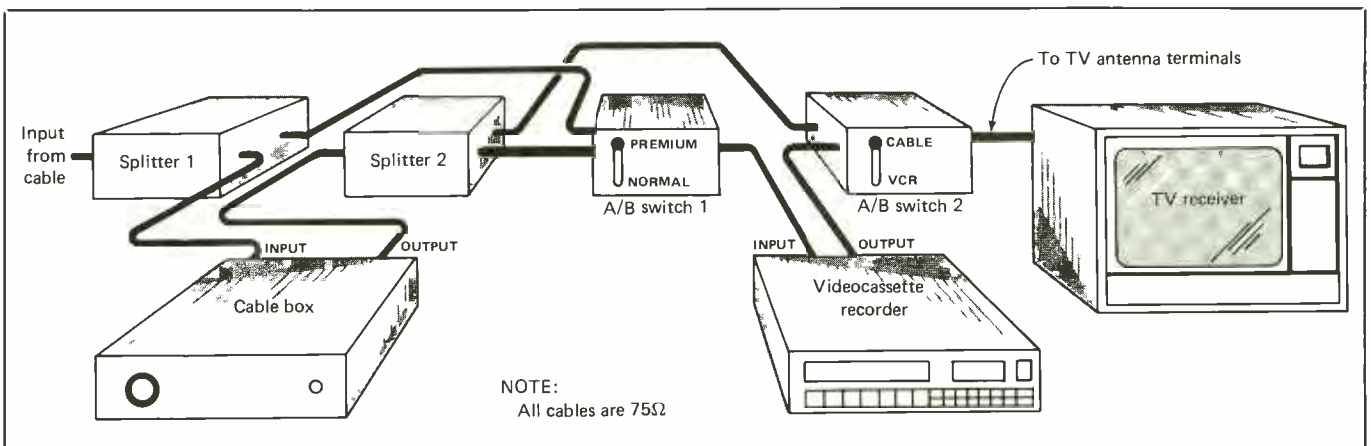


Fig. 5. This full-feature VCR/TV-cable hookup arrangement gives substantial flexibility. Its only real disadvantage is that when recording a premium scrambled channel, only that channel can be viewed.

channel is determined by the box's channel selector, not by the VCR's or TV receiver's channel selector. As a result, you will not be able to preset the VCR to successively record programs on more than one channel, though you can set it to record two or more programs on the *same* channel. If you do preset your VCR to record a desired program, there is the danger that someone may come along and change the selected channel on the cable box, leaving you with a program you did not want to record. The obvious solution to this problem is to record from the cable ahead of the cable box.

Shown in Figs. 3, 4 and 5 are increasingly complex hookup arrangements that yield increasingly greater flexibility. Of course, there are other possible hookup arrangements you can use. However, the ones illustrated here are relatively simple and inexpensive to implement.

With the arrangement shown in Fig. 3, the VCR and TV receiver must always be set to channel 3. You select the channel to be recorded or viewed with the channel selector on the cable box. The major advantage of this arrangement is its simplicity. Its disadvantages are: when recording you can view only the channel being recorded; and you cannot preset the VCR to record two or more different channels during your absence.

With the slightly more sophisticated arrangement shown in Fig. 4, an A/B switch and a signal splitter increase your options. The advantages of this arrangement are its relative simplicity and the ability while recording to view the same channel or any other nonpremium channel. Disadvantages are twofold: the channel to be recorded must be set with the cable box's channel selector, which eliminates the possibility of presetting the VCR to record different channels during your absence; and you cannot view a premium channel while another is being recorded.

While the hookup arrangement

detailed in Fig. 5 may look complicated, it is really relatively simple. Even so, it provides adequate flexibility and is not too prone to errors. With A/B switch No. 1 set to NORMAL, the VCR is independent of the cable box's setting, allowing you to view any channel selectable with the cable box's decoder. Only when you record a premium scrambled channel, with A/B switch No. 1 set to PREMIUM, are you restricted to viewing the same channel as you are recording. A/B switch No. 2 allows you to select between viewing a cable program or the prerecorded output from the VCR.

Substantial flexibility is the major advantage of the Fig. 5 hookup arrangement. The major disadvantage

of this scheme, of course, is that when recording a premium channel, only that channel can be viewed.

If your video system has sources of video signals other than an outside antenna and/or cable—such as a videodisc player, electronic game console or a home computer—all sharing the same TV receiver, splitters and A/B switches are no longer practical. In such a case, use of a video selector box with inputs and switching for multiple sources is the only practical way to go. The only real disadvantage to this arrangement—as compared to the alternative “jungle” of cables, splitters and A/B switches—is an occasional “ghost” caused by impedance mismatch. **ME**



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