

# The Sanyo V-Cord Video System

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In 1974, Japanese companies Sanyo Electronic and Toshiba joined forces to release the V-Cord Video System, one of the early home video systems to become available, as explained on the website Mr. Betamax's article on the subject of V-Cord, "Sanyo and Toshiba were two of the first companies to make an attempt to interest the public in a home video recording system"<sup>1</sup>. The V-Cord survived for a few years but quickly became overshadowed by the significantly more successful Betamax and VHS formats. However, the V-Cord offered some innovations that would influence those later, as noted once again on Mr. Betamax when they write "Two Things here are of note, one is the lamp that

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<sup>1</sup> Mr. Betamax, V-Cord Beta VCR. October 2015  
<<http://www.mrbetamax.com/V-CordVCRText.htm>>.

sends the light to the photocell. V-Cord Cassettes used a clear leader at both ends of the tape. When the photocell was activated by the light it would stop forward and reverse movement, this method would be used later in VHS machines.”<sup>2</sup>, more successful formats, and would allow Sanyo and Toshiba to transition successfully and easily into the manufacturing of later video formats.

Iue Toshio founded Sanyo Electric Co. LTD, now a subsidiary of Panasonic Corporation, in 1950, after leaving the employ of Matsushita<sup>3</sup>.

After achieving some measure of success in Japan, Sanyo sought to bring its products over the Pacific Ocean to the United States of America.

Over time it would introduce everything from it's car radios to personal computers to the American marketplace, with the V-Cord Video System being a small footnote in the history of the company.

Post-World War Two there was a great deal of chaos in the world of Japanese corporations and business became complicated. Japanese companies had to work extremely hard to become successful. However, they

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<sup>2</sup>Mr. Betamax, V-Cord Beta VCR. October 2015  
<<http://www.mrbetamax.com/V-CordVCRText.htm>>.

<sup>3</sup><http://panasonic.net/sanyo/corporate/profile/outline.html>

also existed in a business vacuum, allowing companies, especially technology companies, to gain massive amounts of power and space by buying up spaces formerly used by then destroyed Japanese businesses and former military compounds and resources. The history of Postwar Japan is well documented in the book Postwar Japan as History(1993) by Andrew Gordon.

This explosion of the Japanese technological industries led to a great deal of innovation in many different fields, two of the most relevant being computers and media technologies. In this expansion there was room for Japanese companies to try out new systems and market them internally, to a country recovering from a massive loss but accumulating money. Japanese companies could essentially test products within Japanese borders, before trying to sell them in foreign markets. By the time the 70s had arrived, many Japanese companies had amassed the capital to start enormous product introductions into the American market, though they had not yet achieved the level of success they would in the 1980s.

Sanyo and Toshiba had started V-Cord as a joint venture, each offering different amounts of work to the final product. In the end, the evidence points to Sanyo having done most of the work and having its name featured most prominently on and around the machines.

Toshiba created the KV-4000, 4100, and 4200. However, there appears to be little to no documentation on the existence or operation of those machines. Meanwhile, although the documentation is sparse, there is a certain amount of information on several different machines produced by Sanyo as a part of the effort to push V-Cord as the video technology of the future. The push ultimately proved unsuccessful, with too many products on the market and too late onto the market to make a dent in the dominance of VHS and Betamax.

The V-Cord would have two iterations throughout its lifespan. The initial V-Cord was limited to Black and White. They varied in length between twenty-minute cassettes and hourcassettes. However, this generation had variable speed playback, offering clean slow motion and even scrolling "slow

motion and still frame. "The VCR systems are advanced for their time. This is a four head recorder which offered the first "clean" still frames and variable speed slow motion. There is also a knob which allows the operator to scroll forwards and backwards through the video still frames."<sup>4</sup> This description, by Labguy, clearly states what set V-Cord apart from its competitors.

This changed with the V-Cord II (Wikipedia V-Cord <https://en.wikipedia.org/wiki/V-Cord>). The V-Cord II was capable of recording in color, could record two hours of material on the cassette, and introduced multiple speed recording to the marketplace. The V-Cord II could play at two speeds, a feature that other Video Systems would quickly adopt. "Sanyo's V-Cord (B&W) and V-Cord II (Colour) used cartridges ... while V-Cord II had bigger aspirations. This was the first video format to offer two speeds (('quality' and 'economy')) as well as freeze-frame and slow-motion. The V-Cords (failed) because of mechanical unreliability and lack of interest from other manufacturers."<sup>5</sup>.

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<sup>4</sup> Labguy Extinct Video Cassette Recorders  
"http://www.labguysworld.com/Museum013.htm."

<sup>5</sup>Dead Media. Dead Media Notes. October 2015  
<<http://www.n3krozoft.com/dead/09.4.html>>.

V-Cord cassettes had clear leader tape that was cut to 12.6 millimeters wide and 4 to 200 microns thick<sup>6</sup>. “The drop-out after used 50 times is reduced to about 1/3.”<sup>7</sup>, though it is possible that this technology was never part of the V-Cord Systems shipped and sold, rather, was just used to test another piece of otherwise disconnected technology.

V-Cord technology also may have been using techniques innovated by Walter Bruch in his system for reproducing television signals, as explained in his patent application, “The present invention relates to a system for transmitting recording and reproducing color television signals.”<sup>8</sup>. This technology was used in the V-Cord Video System in order to make it functional as a commercial item with what would come to be known as “time-shifting” technology. Time Shifting allowed systems like V-Cord, Betamax, and VHS to serve as both mediums to record live events for playback and television programs for home

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<sup>6</sup>(Fujiyama and Masaaki (Odawara)

<sup>7</sup>Fujiyama and JP) Masaaki (Odawara. United States Patent: 4532172. US: Patent 4,532,172. 2 August 1978

<sup>8</sup> “Bruch, Walter. SYSTEM FOR TRANSMITTING A NARROW-BAND LINE AND FOR SIMULTANEOUS REPRODUCTION OF SUCH SIGNAL. USA: Patent US3560635 A . 28 March 1967.

viewing at later dates. Time Shifting granted the consumer control over their schedule and how and when they consumed the media they were interacting with.

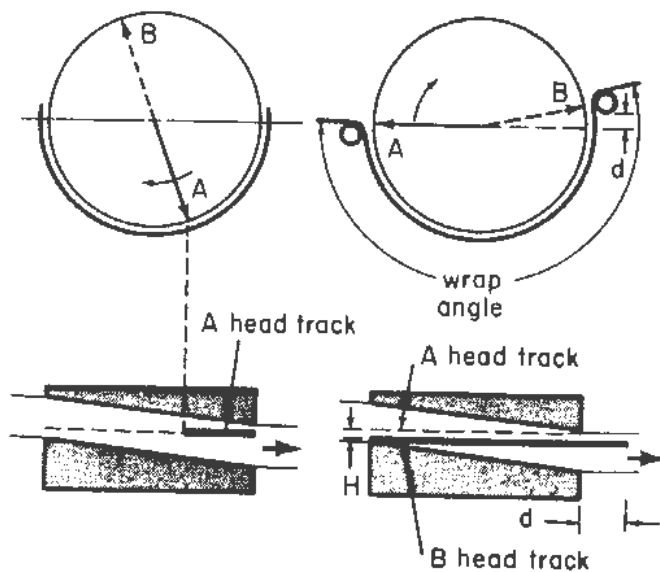
V-Cord Systems also used several other patents that would inform the design and type of technologies used by other videocassette systems. Sanyo patented a positioning and ejection device for their machine<sup>9</sup>. This technology patent explains for the reader how the V-Cord cartridges would have interacted with the machine they were built for. Though it is based on technologies already in use by U-Matic and other video systems, the Sanyo system was an important step on the path that Betamax and VHS would continue down, using similar mechanisms to read the videotape from inside the cassette. This patent cites Patent 3996618 and 3987486. These patents further explain the technology of the tape player and how it interacted with the V-Cord cassette.

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<sup>9</sup>(Sami, Tape cartridge positioning and ejection device)

Sanyo additionally patented an automatic stopping mechanism for the V-Cord to use to stop the movement of the reels when it had run out<sup>10</sup>. This mechanism made the tape stop playing when the reel had ended without tearing the tape. This mechanism is vital to the entire operation of cassette based video systems, and allows the machines to function without destroying the tapes.

V-Cord came in three different styles of cartridges. The V-Cord I was limited to one type of cartridge, the Sanyo VT-20C. This cartridge had a white case and contained an hour's worth of videotape, though it was limited to



black and white. When the V-Cord II was released there were two options for cartridges available.

[http://www.amazon.com/dp/0786412208#reader\\_0786412208](http://www.amazon.com/dp/0786412208#reader_0786412208)

<sup>10</sup>(Sami, Automatic tape stopping detective device in a magnetic recording and reproducing apparatus )



The Sanyo V-60 and the Sanyo V-120. Both of these cartridges had black cases. The V-60 could record an hour of material, while the V-120 was housed two hours worth of tape at Long Play speed, and sixty minutes at the more standard speed, more precisely explained by Greentree Audio “1974, Sanyo released the first Vcord format; it is a Composit Black & White format using two video heads in a skip field format. The VT-20C video cassette tapes use 1/2-inch wide tape at a speed of 5.82ips in the VTC7100 machine. Sanyo video cassette tape VT-20C (tan color housing) has large diameter twin reels with standard thickness ½-inch wide video tape and are 20 minutes when used in the VTC-7100 machine.”<sup>11</sup>.

The V-Cord I operated by using two heads, using a skip field format <sup>12</sup>.

In this format the video signal would be recorded onto the tape through only one of the rotating video heads. As a result, every other field would be missed as the tape passed over the non-functional part of the head. Both heads would be used to scan the tape, with the B head serving to scan the same material as the A head, providing the illusion of two complete frames,

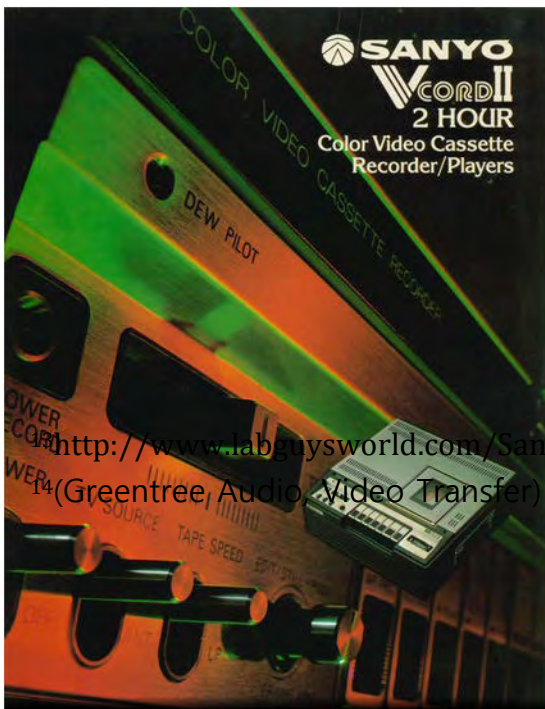
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<sup>11</sup>(Greentree Audio, Video Transfer)

<sup>12</sup>(Greentree Audio, Video Transfer)

when in actuality it is one frame displayed twice<sup>13</sup>. The V-Cord I tape would travel through a standard VTC 7100 at 5.82ips travelling from one of the two large reels in the cartridge to the other. Yet again, Greentree Audio remains a useful resource in the research of this topic.

“1976, Sanyo released new VcordII format which is not compatible with the earlier Vcord-I format. Vcord-II records in Composite Black & White and Color, it uses tapes V-60 and V-120 video cassettes (black color). The recorder was the first have two recording speeds, freeze frame, and slow motion. The Sanyo V-CORD-II video cassette has small twin reels with thin ½-inch wide video tape. Sanyo Vcord II V-60 cassettes hold 60 minutes and V-120 hold 120 minutes at LP tape speed and half as much at the standard STD tape speed. The thin tape used in Sanyo V-Cord II (black case) tapes may have serious damage if used in Vcord machine VTC-7100. The Sanyo Vcord format is Extinct. V-Cord II STD recording uses two heads to record both fields of an interlaced video frame with helical scan technique; LP mode uses one field of each interlaced video frame thus allowing twice as much video on the tape at lesser quality and played back with each field being read twice on playback in the "skip field" technique. Vcord II format has a tape speed of 2.91 ips in STD mode and 1.45 ips in LP mode.”<sup>14</sup>.”



V-Cord II was different. It operated on a helical, two head rotary system, with the tape travelling at 2.91 ips for

[http://www.labguysworld.com/Sanyo\\_VTC-8200\\_Adv\\_001\\_006.jpg](http://www.labguysworld.com/Sanyo_VTC-8200_Adv_001_006.jpg)

<sup>14</sup>(Greentree Audio Video Transfer)

one hour of recording. It had 250 lines of color resolution and could switch over to a skip field system, only capturing every other field with one of the heads, to extend the recording time to two hours (Abramson). It had two small reels in the cartridge that the tape would be spun off of and on to, respective of its movement.

The V-Cord Video system was heavily marketed based on its capacity for recording, especially when the V-Cord II was released. The option of recording two hours of material was featured prominently on the marketing materials published in trade journals of the time, and set the V-Cord apart from its early competition, as explained in an issue of *New Scientist* from the

time “The call for a videocassette tape time of longer than

[http://www.labguysworld.com/V-CORD\\_II\\_AD 1](http://www.labguysworld.com/V-CORD_II_AD_1)

an hour is met by the Sanyo V-Cord Domestic Color

System”<sup>15</sup>.

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<sup>15</sup> “The call for a videocassette tape time of longer than an hour is met by the Sanyo V-Cord Domestic Color System” Peterson, A.D.C. “Technology.” *New Scientist* 25 November 1976: 455.

The V-Cord System was advertised in journals with pictures such as this. The ability to record two hours of footage, in color, and playback the material at a time of one's choosing was thought to be a major draw<sup>16</sup>. Proudly featured on the advertisements is the fact that it was the world's first machine capable of recording two hours of programs in color.

And it would prove to be precisely that, simply not for Sanyo or the V-Cord. Betamax and VHS would become the dominant powers within the video market, and all their predecessors and competitors would come and go very quickly in the face of their success.

Another feature of the V-Cord that was heavily pushed was it's affordable cassette tapes. V-Cord advertised itself as giving you the ability to build up your own video library through the use of the machine<sup>17</sup>. One would theoretically be able to record enough stuff of the television channels to

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<sup>16</sup>(Labguy [http://www.labguysworld.com/V-CORD\\_II\\_ADV\\_001.htm](http://www.labguysworld.com/V-CORD_II_ADV_001.htm))

<sup>17</sup>(Labguy [http://www.labguysworld.com/Sanyo\\_VTC-8200\\_001.htm](http://www.labguysworld.com/Sanyo_VTC-8200_001.htm))

watch at ones own leisure, this being the spiritual precursor to the time shifting technology that defines so much of modern television viewing.

The advertisement boasts of the V-Cord's ability to be set to a channel and automatically record at a set time, when bought with an optional digital clock apparatus. This system allowed the V-Cord to work as a primitive form of TiVo or Slingbox, or some other system of watching select television shows at a later time.

When initially introduced, there was a mixture of interest and disappointment in the V-Cord II and it's functionality. People commented on its recording length and color flexibility, with Black and White options as well as color(Abramoff). However, it would not come to the US until 1977, by which time it would be too late for it to make a dent in the United States Home Video market.

One thing that made V-Cord II difficult to adopt was it's coming too late in the cycle. Many people had bought either a Betamax or VHS player, and people were not willing to adopt a new system. The website Labguy

described the situation thusly, "*TOO LATE!* Betamax and VHS were already the dominant formats and consumers were not even going to consider another one."<sup>18</sup>. People considered it an "oddball" format, as it was incompatible with any of the other machines that had gained popularity in the United States. It cost roughly the same amount as a Betamax machine, as papers from the time show. "Sanyo's Electric Player, the V-Cord II, is said to be in the same price range, and it's cassette, said to be able to play either one hour or two, costs \$19.99"<sup>19</sup>, and in addition it had few technical differences so distinct and important that it could overtake the better established brands of VHS and Betamax.

Another aspect of it that made it more difficult to grasp was the reversal of the play and reverse button's location on the machine, making it slightly more inaccessible to American audiences just getting used to the VHS and Betamax setup.

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<sup>18</sup>(Labguy <http://www.labguysworld.com/Museum013.htm>)

<sup>19</sup> "Sanyo's Electric Player, the V-Cord II, is said to be in the same price range, and it's cassette, said to be able to play either one hour or two, costs \$19.99"(Kiplinger Washington Editors)

In 1977, the year the V-Cord II became widely available, after beginning its rollout the previous year in late 1976. However a number of other, irregular and incompatible video systems were becoming available in the United States. The JVC, the Quasar, and the V-Cord, competing with Betamax and VHS. This large number of formats competing created a highly competitive marketplace for the V-Cord II to enter.

It wouldn't last much longer however, as mention of V-Cord ceases in the late 1970's. The last time it is mentioned in a piece of documentation is in a patent application from 1980, and one piece of anecdotal evidence from Labguy that in 1983 some V-Cord machines were being serviced and in need of repair.

This sudden disappearance of the technology has no specific cause. One can't point to any vicious battle between formats such as the one between Betamax and VHS, or Blu-ray and HDDVD. Rather, V-Cord, despite having a few features to set itself apart, could not distinguish itself to an extent that required the buying public to take notice, and even if it had, it's

innovations were quickly reproduced by its competitors, rendering it obsolete and irrelevant.

Sanyo and Toshiba transitioned into the manufacture of Betamax, and when that format died, VHS. V-Cord shared enough physical similarities with V-Cord that the transition was simple, and Sanyo would continue to be a successful company until being bought by Panasonic. Panasonic does not produce any products that may be useful in restoring or reviving the V-Cord Video System, and, like with most companies with failed video systems in their background, doesn't really acknowledge it as a part of the history of the company.

It is unclear how many V-Cord cassettes are still in existence, and how many of them have media recorded onto them. The preservation of this media may prove difficult, given the fact that the format is extinct and there are virtually no machines left, let alone machines with all their parts and people to fix them should they break. The future is bleak for the preservation and study of this lost and obsolete format.



## **Bibliography**

Abramoff, Alex. "3 Home Video Systems share JES Spotlight." Billboard 13 November 1976: 40, 46.

This paper was a reporting body at the time, focusing on tech reportage. In the article there are a few references to Sanyo, the V-Cord II, and it's reception at the

tech event it is being displayed at. This is a more objective piece of reporting than the reviews I have mentioned, but it is roughly weighted the same in terms of reliability, as it is also a primary document from the time, reporting on a real world reaction to the technology. This article tells me that the V-Cord was looked at as having promise initially, even if other articles suggest that people quickly moved past the V-Cord, as it came too late.

Abramson, Albert. The History of Television: 1943 to 2000. Jefferson: McFarland & Company, Inc., 2003.

This book on the history of television briefly touches on the Sanyo and Toshiba V-Cord, and offers some technical details for the audience to compare with Betamax and VHS. The book appears reliable, as it is sourced and overall researched well. It is commercially available, which doesn't mean it is totally accurate, but there is less of a chance that it is completely false.

Bruch, Walter. SYSTEM FOR TRANSMITTING A NARROW-BAND LINE AND FOR SIMULTANEOUS REPRODUCTION OF SUCH SIGNAL. USA: Patent US3560635 A . 28 March 1967.

This is an early patent for video reproduction of the television signal. Although V-Cord was not widely used it was capable of recording media, and as such used this very system as part of its own mechanisms. This is a very trustworthy source, given that it is an official record of technological systems.

Dead Media. Dead Media Notes. October 2015  
<<http://www.n3krozoft.com/dead/09.4.html>>.

This website contains an extremely brief summary of the differences between the two generations of V-Cord and the diversity of the technology. However, it is unsourced and limited, so reliability is suspect. Nevertheless, given that the information is corroborated on other sites, I trust the information contained on the page.

Free, John. "How Good Are They? New Long Play Video-Cassette Recorders." Popular Science November 1977: 178.

This periodical comes from later in the lifespan of V-Cord and reflects the disinterest in V-Cord present in much of the press at the time. This article is reliable, coming from a primary source and offering a perspective from the time of V-Cord's use.

Fujiyama and JP) Masaaki (Odawara. United States Patent: 4532172. US: Patent 4,532,172. 2 August 1978.

This is a patent claim on a piece of tape used as leader tape in V-Cord Cassettes. As an official piece of technology patent information, it is highly trustworthy. However, the timeline doesn't add up completely, so it is possible this technology was not widely implemented in V-Cord cassettes, and was only tested in them.

Greentree Audio, Video Transfer. [Transfer Vcord and Vcord-II Video Cassette to DVD or Video Files](http://greentreeav.com/vcord). <<http://greentreeav.com/vcord>>.

This website summarizes some technological facts about the V-Cord system, and differentiates the V-Cord I and the V-Cord II in simple and accessible ways. I trust the source, as it is current and appears to be well versed in the technologies discussed on it's website. However, it is a commercial site interested in selling it's services as much or more than it may be in educating visitors and researchers in how the technology functions. So there may be some information being left off the page.

Kiplinger Washington Editors. "New Tricks Your TV Can Do." [Changing Times](#) October 1976: 20.

This is a consumer finance magazine that happens to give an overview of prices for various home video systems circulating at the time of publishing, offering readers advice on the most cost effective choice. There is no specific advice about the V-Cord, but we can glean that there wasn't much to recommend buying the V-Cord, as it cost the same amount as the more established Betamax. This article gave me a more ground level understanding of the place V-Cord had in the market, and placed it's failure in better context. It is a primary source from the time, reporting on market realities, so it's information can be treated as somewhat reliable.

Labguy. [Labguy's World: 1976 Sanyo VTC-7100 V-Cord 1 B/W Portapack VCR](http://www.labguysworld.com/Sanyo_VTC-7100.htm). October 2015 <[http://www.labguysworld.com/Sanyo\\_VTC-7100.htm](http://www.labguysworld.com/Sanyo_VTC-7100.htm)>.

This entry is a series of scans of an actual advertising brochure from the Sanyo V-Cord. It offers a huge amount of information on the machine, and how the machine was sold. It mostly confirms stuff I already know, but in a way that I know to be reliable.

—. [LabGuy's World: Sanyo VTC-8200 Two Hour V-Cord II VCR Advertising Brochure](http://www.labguysworld.com/Sanyo_VTC-8200_001.htm). October 2015 <[http://www.labguysworld.com/Sanyo\\_VTC-8200\\_001.htm](http://www.labguysworld.com/Sanyo_VTC-8200_001.htm)>.

This source provides some of the best summary of the Skip Field format of video technology, and as a result allows me to understand how the V-Cord I actually operated. Many researchers in this field have recommended LabGuy, and so I feel comfortable getting my information on video systems from this page. This greater understanding of the technology helped put in context some patents that I had seen, as the explanation was much more clear on Labguy than it was in patent applications.

—. [LabGuy's World: Sony CV-2xxx Skip Field Format](http://www.labguysworld.com/Format_CV2K.htm). October 2015 <[http://www.labguysworld.com/Format\\_CV2K.htm](http://www.labguysworld.com/Format_CV2K.htm)>.

This Labguy entry is about as reliable as the others, summarizing the machine itself as well as commenting on why it failed.

—. LabGuy's World:1976 Sanyo VTC-8200 V-Cord I/II Color Dual Speed VCR.

October 2015 <[http://www.labguysworld.com/Sanyo\\_VTC-8200.htm](http://www.labguysworld.com/Sanyo_VTC-8200.htm)>.

Labguy, much like MrBetamax, offered a good summation of basic technical details on various pieces of technology. On Labguy one can find information on different products, even within a larger product umbrella, and research the differences between products. The website has proven very reliable, though the information it offers is not as in depth as would be ideal. This is almost certainly due to the difficulty in finding a great deal of information on obscure pieces of technology like the Sanyo and Toshiba V-Cord.

Mr. Betamax. VCord Beta VCR. October 2015

<<http://www.mrbetamax.com/VCordVCRTText.htm>>.

Mr. Betamax offers a brief overview of what the V-Cord was, when it came out, and what differentiated it from other video playback devices. It offers a good deal of information on the physical qualities of a V-Cord cassette. Qualities that I myself have confirmed in my examination of a cassette. The source seems reliable and goes into greater detail than many other sources that I have encountered. It is not academic, rather it is clearly written as a piece of practical advice for identifying the machine and its constituent parts, but nevertheless it is a very helpful source. My one quibble would be the pseudonym that the website is written under, but the issue of contacting the owner of the site shouldn't prove too difficult.

Peterson, A.D.C. "Technology." New Scientist 25 November 1976: 455.

This trade journal from the time of V-Cord II's release mentions it positively, albeit briefly, due to its recording capacity. This source is trustworthy as a primary document from the time, reflecting the desires of those within the tech community and what they were looking for in a new video system. This opinion would not be universal, as other periodicals and articles will show, but it was interesting to confirm what it was that set V-Cord apart from other video systems.

Sami, Yasuo. Automatic tape stopping detective device in a magnetic recording and reproducing apparatus . Patent 4018404. 4 June 1975.

This Patent explains how the machine would automatically stop running when the tape had reached its end, so that it wouldn't tear the tape up from the other reel, and make each cassette infinitely more complicated to use. The same technique was used in preceding and following video cassette formats.

Sami, Yasuo. Tape cartridge positioning and ejection device. United States of America: Patent 4071859. 13 August 1976.

This patent explains the technological basis for how the cartridge interacts with the docking mechanism, allowing it to be played on the system it was designed for. This helps me put the V-Cord on the same technological continuum as other home video systems and cartridges.

Wikipedia. Sanyo - Wikipedia, The Free Encyclopedia. October 2015  
<<https://en.wikipedia.org/wiki/Sanyo>>.

Wikipedia remains a good resource for general topics and this entry was similar. Wikipedia's wide array of topics allows it to be an accessible source of information on a variety of topics. I feel that it is trustworthy and useful for my paper.

—. V-Cord - Wikipedia, The Free Encyclopedia. October 2015  
<<https://en.wikipedia.org/wiki/V-Cord>>.

My feelings on Wikipedia have already been explained. This article gives a good overview of the history of the technology and some technical details mentioned elsewhere. The article contains some pieces of information that are not sourced, but I trust Wikipedia's summary of the technology, and this entry gave me the grounding to search for more specific entries on the system.