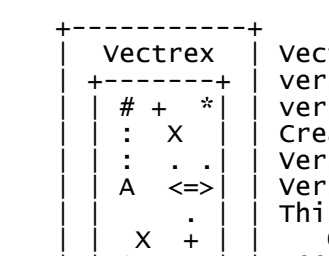
Vectrex FAQ 6.0



Last update: January 1, 2006

Revision History:

Version 6.00:

After a long period of silence, the Vectrex FAQ has been revived and is now maintained by Martijn Wenting of www.vectrexnews.com.

The FAQ is somewhat restructered to present all the information a bit more organised, and numerous additions have been made.

Here is a small list of changes:
- Reorganised FAQ, added index
- System: Added information about the system variations
- System: Added information about the Bandai Kousokusen
- System: Added information about the system prototypes
- System: Added information about the various accessories
- System: Updated misc.vectrex items section
- Games: Added european/canadian/japanese game releases
- Games: Added modern game releases
- 3DImager: Added information about the new 3D-Imager
- Emulation: Added list of emulators
- Hardware: Added new hardware section
- Links: Added new links, Removed dead links.

Also, an HTML version of the FAQ is now online at:
http://www.vectrexnews.com/faq

Index:

1.0) The System

1.1) What is Vectrex?

Here it is in layman's terms:

Vectrex is one of the most inspired video game machines ever produced (but similar things were said about the Edsel and Titanic). Its point of distinction is the fact that it uses vector "line" graphics (as opposed to raster "pixel" graphics). This is the same type of screen used in such arcade classics as Space Wars, Asteroids, Battlezone and Tempest. The machine has a 9 x 11 inch black and white screen and comes with a built-in Asteroids clone called Minestorm. The games come with plastic overlays that slide over the screen to cut down on flicker and give some illusion of color. It uses one of the most advanced 8 bit processors, the 68A09 (6809 with 1.5MHz clock speed), and a popular and excellent sound chip, General Instruments AY-3-8912, which can produce a wide range of noises. Also included is a 1.5 inch, self-centering, joystick with 4 buttons on the right. It uses an analog/potentiometer system allowing differing degrees of directional input.

The machine's footprint takes up a little less than a square foot on a desk (in fact, it quite resembles a jet black Macintosh SE sans mouse

and keyboard), and can be operated easily in that area. The joystick is connected via a springy telephone-like cord and can be folded into the base of the machine for portability. The machine is moderately transportable and very well constructed but, alas, very much extinct. It made its debut late in 1982 and was quite scarce by the end of 1984 due to the Great Video Game Depression of '82 which forced Milton Bradley (who bought the rights to the Vectrex from General Consumer Electronics (GCE)) to discontinue production due to to poor sales. After this, the rights to the Vectrex and all related materials were returned to the original developers, Smith Engineering. Smith Engineering has graciously condoned the not-for-profit circulation of any duplicatable materials including games and manuals and is happy to see it is still 'alive' in certain circles.

Here are some more detailed snippets from the service manual:

As a general description, the HP3OOO is a self-contained video game system intended for home use. The system includes its own 9" B&W monitor screen and 3" permanent magnet speaker. Plug-in ROM type cartridges are available offering arcade type video and sound game play. No external TV receiver hookup is needed or provided for. A front panel storable controller allows control over the game via joystick and push button action switches. For two player operation a second controller identical to the single player controller is available as an accessory product. Both controllers attach to the main game console through nine wire coiled telephone style cables. There is a consumer power switch/volume control on the front panel as well as a game reset button. A consumer adjustable brightness control is located on the main console rear housing.

For the technical description which follows, the reader is encouraged to refer to the block diagram and schematic [not included here].

The HP3OOO is a microprocessor based, vector scan system using a standard 9" black & white CRT as its video display device. The microprocessor (MPU) is the Motorola 68A09 device. The MPU operates at 1.5 MHz from a 6 MHz external Xtal. An internal divide by 4 circuit generates the MPU 1.5 MHz "E" clock signal used in the system. Program memory is stored in the 8K x 8 bit 2363 type ROM. This ROM contains common subroutines, the "executive" or assembler instructions plus one complete game.

Two 1K x 4 bit 2114 type static RAMs provide storage locations for data indicative of locations of objects, game status, and various other information needed by the microprocessor during game operation. Peripheral Interface Adapter (PIA) Chip, has two 8 bit peripheral ports which interfaces the MPU with peripheral devices and external signals. One of the PIA ports interfaces the General Instrument AY-3-8912 sound-I.O. chip with the MPU and also drives the digital to analog converter chip MC1408. The other PIA port is used as control lines for the sound chip, selector control for the multiplex chip and as a means to read the A/D comparator that's used in the joystick successive approximation circuitry. Sound is either MPU generated directly or by use of the AY-3-8912 sound chip.

The AY-3-8912 sound chip is a programmable sound generator containing 3 tone generators and wave shaping circuitry. This chip also has a single 8 bit I.O. port used to read the status of each of the hand controller's 4 action switches.

The standard TTL device types 74LSOO and 74LS32 are used as control line decoders to allow the MPU to select the appropriate circuit element to be addressed at any particular time.

The analog processing section includes digital to analog converter (DAC) chip type MC1408, dual 4 channel multiplexer/demultiplexer chip type CD4052, and dual channel op-amps types LF353 and LF347.

DAC chip MC1408 receives an 8 bit word at data terminals DO-D7. DAC output (pin 4) is current source. One section of IC LF353 is used to change this current to a voltage representative of the 8 bit digital word received by the DAC chip. The LF353 voltage is applied to an input of the dual 4 channel multiplexer (MUX) chip CD4052. This same voltage (designated "DAC" on the schematic) is the X-axis drive signal.

The CD4052 MUX chip serves two purposes: it selectively couples, under

MPU control, the output of the DAC current/voltage converter to one of 4 places and is used to selectively couple the inputs from the joystick pots to the voltage comparator IC LF353.

Back to top

1.2) The history of the Vectrex

A. Thanks a lot to Stefan Herr (steve@lioness.okapi.sub.org) for the following information he dug up while researching an article for a European gaming magazine. If you have any additions or corrections, please contact both of us. Thanks also to Chris King who sent me personal email to fill some gaps.

VECTREX TIMETABLE

End 1980/Spring 1981: The development of Vectrex starts with an idea from staffers (probably Mike Purvis and John Ross) after brainstorming about how to use cheap CRTs that were found in a small liquidators' surplus store. The idea took flight and form under the skilled cultivation of Jay Smith, head of Western Technologies/Smith Engineering, guiding his talented staff. The small, vector scan table top game was originally known by its working title of "Mini Arcade" but was later officially renamed when the time came to begin making marketing decisions. A brainstorming session yielded a short list of final choices and among those was "Vector-X" suggested by Tom Sloper. This was felt to be too 50's B sci-fi by GCE so it was contracted to the catchy name we all know and love.

Spring 1981: The Mini Arcade idea is optioned to Kenner (known for their "Star Wars", "Care Bears", "Batman" and "Batman Returns" figures). At that time it was planned to have a 5" black and white tube.

06/1981: Paul A. Newell is hired by Western Technologies to join the "Atari reverse engineering project" group (aim: be able to write games for the VCS 2600) which at that point consisted of Mark Indictor and John Hall.

07/1981: Kenner declines to pursue the Mini Arcade.

08 or 09/1981: The Mini Arcade concept is licensed by GCE (General Consumer Electronics). GCE's president Ed Krakauer had the vision to see the great potential of the system. To enhance its appeal, GCE asks that the screen be increased to 9-inches.

Autumn 1981: The Atari project is canceled and the three Atari people (M.I., P.N., J.H.) start work on the Vectrex project. John Ross designs the hardware, Gerry Karr works together with John Hall on the system ROM (called "The Executive"). In the beginning it is planned to use a 6502 processor which turns out to be too slow. For this reason the 6809 was finally used.

Jan 1982: Bill Hawkins and Chris King join the Western Tech. They were both students at Georgia Tech at the time and are hired by Ed Smith as "Cooperative Education" students. They are supposed to work for three months and then go back to school. Duncan Muirhead joins a week or two afterwards. He had just dropped out of a Physics PHD program at UCLA.

??: A strict timetable demands that the first 12 games and the hardware should be ready in June 1982. The Vectrex name is subsequently chosen, as already described.

??: John Hall later exclusively works on "Mine Storm" while Gerry Karr works on The Executive alone. Gerry starts over from scratch and changes the name to the RUM (Run Time Monitor). In the end, a number of people contribute to the RUM, most notably Duncan Muirhead who handled most of the heavy trig stuff.

04/1982: Paul Newell finishes "Scramble". Mine Storm, Berzerk, Scramble, Rip Off, and Star Trek were all completed at the same time.

06/1982: The Vectrex is introduced to the public at the Summer CES in Chicago.

Summer 1982: Mark Indictor, John Hall and others are directly hired by GCE to write more games. Paul Newell and Duncan Muirhead leave Western Technologies to join Simutrek, a company developing arcade laser disc games ("Cube Quest"). Chris King leaves 6 months later. Noah Anglin (former vice president of Atari) was hired by GCE as a consultant to watch over the development of Vectrex. It was a good deal for him since he recruited the core of the software guys for his new company, Simutrek, from Western Technologies. Unfortunately, this wasn't enough. Simutrek died on the vine.

??: Mark Indictor and his family move about two hours out of Los Angeles and he writes games in the seclusion of a pine forest at 5,000 feet. He even has an NBC news crew come up and interview him for a news show on weird computer hackers and their life styles.

Late summer 82: Start of mass production.

11/1982: Vectrex is available in the USA for $199. Very positive reviews in the magazines. Paul Newell's "Scramble" gets the "Arcade Award" of the "Electronic Games" magazine for the best "Mini-Arcade game" (a category which is founded exclusively for the Vectrex).

Spring 1983: GCE is acquired by Milton Bradley (MB).

03/1983: Vectrex is announced in the German "Telematch" magazine for the first time in Germany.

Summer 1983: Distribution begins in Germany and many other west European countries by Milton Bradley (German office located in Fuerth).

Summer/Fall 1983: Jeff Corsiglia, having left WT to join Datascan, produces some additional games for GCE, including 3-D Narrow Escape, programmed by Richard Moszkowski. (Not all of the Vectrex games were produced by WT).

1983: Several efforts fail in developing a color Vectrex. One obvious project is to use a color TV tube; however, this is always too expensive. Another is to use a projection TV with three vector scan tubes. It works well but is commercially impractical. Yet another effort is to use two layers of color phosphor on a black and white type TV tube. By varying the high voltage level, the electron beam would excite the bottom layer or the top layer. However the high voltage cannot be changed rapidly enough to keep up with the scan.

02/1984: "Artmaster Lightpen", "Star Castle", "Polar Rescue", "Animaction" and "Pole Position" presented on the "Nuernberger Spielwarenmesse" (Germany's most important show for the toy industry).

around 02/84: 3-D Imager is presented at the Winter-CES in Las Vegas.

31/03/1984: End of Vectrex in Germany: MB in Fuerth announces stop of sales on this date.

Rest of 1984: Vectrex is phased out as Hasbro buys Milton Bradley and video game fever comes crashing down (probable causes: home computer fever, too many mediocre and downright terrible games flooding the market, fallout from the arcade videogame crash of about a year earlier). Rummage sales in Germany (mainly in stores of the METRO-chain, which had bought the rest of MB's stock) close out Vectrex equipment at bargain prices.

1988: Western Technologies/Smith Engineering tries to resurrect Vectrex as a handheld unit. It is to be based on the Sinclair flat TV tube, which has fast static deflection at low power consumption and low cost. However, the impending introduction of GameBoy (1989) eventually causes the idea to be scrapped.

10/1993: A feature about the 10th anniversary of the Vectrex is published in the German "Video Games" magazine. Contains technical descriptions, pictures of Jay Smith and Mark Indictor, a Vectrex history and a list of games and accessories. The article is based on information collected by the author (Stefan Herr) from the Usenet Vectrex newsgroup, various FTP archives, many Emails from several former Vectrex developers and a historical overview about the development by Jay Smith.

There is not very much evidence of the existence of a computer keyboard with a BASIC cartridge (or something similar) for the Vectrex. The only known hints are from an article in an old issue of "Creative Computing" magazine (in the first couple of pages they do a ranking of computers' speed based on some simple benchmark. There is an entry for the Vectrex in it using Vectrex basic) and an article about new computers starting on page 114 of the October, 1983 issue of Popular Science. A chart in the article indicates that the keyboard was to include 16K of RAM, expandable to 64K. The article goes in to great detail about the computer add-on. Thanks to Joshua See who can be reached at SMTC474@uoft02.utoledo.edu.

It is the issue that reviewed the original Macintosh (1984?).

The Popular Science and Creative Computing articles can now be read at: http://www.classicgaming.com/vectrex/po_veccomp.htm [6/99]

Back to top

1.3) The System variations

The Vectrex has been released in several countries by different manufacturers. Find below a list of all known system variations:

Country:	Manufacturer:
United States	GCE
Canada	MB-Canada
Japan	Bandai
United Kingdom	MB-Europe
The Netherlands	MB-Europe
Germany	MB-Europe
France	MB-Europe
Spain	MB-Europe

The system manuals for all of these systems have been released in their native language. While the US/Canadian and Japanese version had seperate manual for minestorm, the european version have the minestorm instruction incoorperated in the system manual. (*)

*) It is rumoured that a swedish version of the minestorm manual exists.

Back to top

1.4) The Bandai Kousokusen

The Bandai Vectrex (also known as the Kousokusen) was released in July of 1983 by Bandai. The system was sold for at the price of 54,800 Yen. Today, the Bandai Vectrex is very hard to find, in fact there are approx only about 5 systems to date that people know about that have made it to the west, and approx. 15 more in Japan.

Only 12 games were released for the Bandai Vectrex, they are numbered and listed in the next chapter.

At the moment, the only known accessories for the Japanese vectrex are a Japanese carrying bag, and a controller cover

Back to top

1.5) System Prototypes

The Color Vectrex

Back in 1982, GCE was going to continue with the Vectrex line by adding a color version of it (and they even planned a handheld using a flat-type like in the Sony Watchman TVs, but that never went past the idea stage). A prototype color Vectrex was built, but Milton Bradley decided it was time to give up on it, and it was never put into production. The color prototype is actually a normal Vectrex with a few modifications (the obvious of course being the CRT itself).

Rather than going with the expensive 3-gun type of color display (like in color vector arcade games), they devised a way to get color out a single-gun tube without a shadow mask (yeah, this may be a bit technical if you don't understand how CRTs work, just trust me that this was an inexpensive alternative, and one never used before...). Basically, there are two different layers of phosphor on the screen of the tube (one red and one green), and the electron beam will light up one or the other by making a fine adjustment in the voltage supplied to the electron gun. A third color could be generated by applying just the right voltage to make both layers of phosphor light up.
A small project board on the table contains two logic chips that are used to tell the CPU what color to display on the screen. There was also a second board which is basically a home-brew transformer to power the rectifier for the CRT.

Really an ingenious design, it's too bad it never went into production.

(Based upon an article by RiK)

The Minicade:

The Minicade is a table-top arcade system that was built in 1982 by a society named ESI in the Boston area in the US. There are two systems known to exist. These two systems were found in the Massachusetts state. The Mini-cade is interesting for the Vectrex collectors because it's built around a vectrex system. It's like if the Vectrex system was taken back to its original roots: after all, the Vectrex was made to bring home the arcade excitement.

Before the Mini-cade was discovered, it was rumored to exist as several people reminded an arcade cabinet in the public areas playing Minestorm.

(Based upon an article by: Sap1)

The Vectrex computer module:

Vectrex showed a prototype of its proposed computer add-on at the CES trade show in 1983. Hope Neiman, a company official, said the device would probably be available by 1984.

"The add-on will use a standard keyboard with programmable keys and their function depends on the software you're using. It will also have a HELP key: Press it, and you get information about specific programs and procedures. Price? Between $100 and $200", says Neiman.

External storage will be available on an optional wafer-tape drive for saving up to 128k bytes.

Specifications:
RAM: 16k, RAM maximum: 64k
Display Size: 2000-4000 vector drawn characters
Data storage: Wafer-tape
Modem connection: serial
Built in programs: BASIC

Back to top

1.6) The Accessories

The vectrex had little 'officially released' accessories. The ones that were released, were released towards the end of the system. Therefore, these accessories are hard to come by nowadays. Find below a list of available accessories for the the system:

The 3D Imager (VT 3630):

The 3D-Imager is working a little bit like the new LCD-Shutter Glasses, one eye will be darken and the other can see the picture on the screen. Then the other eye will be daken... But the 3D-Imager darken the eyes with a mechanical round plastic disc with holes in it. This disc is simultaneously a colordisc. This discs are delivered with the 3D-games.

The 3D-Imager was only sold in the USA and in a small amount.
Today the Vectrex 3D Imager is presumably for collectors the most searched item in the genre of videogames.

More on the 3D Imager, see section 3.

The Lightpen (VT 3600):

The lightpen released for the Vectrex allowed you to draw on the screen and came packaged with Art Master, a drawing program. Two other innovative titles were released for the light pen - Melody Master (a music program that allowed you to write notes on the screen and have them played) and Animaction (an animation program). The lightmen was only sold in the US.

Additional controller:
An additional controller for the Vectrex was sold seperately.
The additional controller was sold in the US (GCE) and Europe (MB).

Carrying case:

A carrying case was released in the US by GCE and in Europe by MB.
You could only order the carrying case through the vectrex fan club.

Dust cover:

Like the carrying case, the dust cover could also only be ordered through the vectrex fan club. It is believed to be only released in the US.

Unreleased Accessories:

- Touch-Sensitive Screen (prototype known to exist)
- Computer Adapter with BASIC (prototypes rumored to exist)
- Computer Keyboard
- Printer
- Disk Driver/Wafer Tape Drive
- Modem
- Computer Software:
  - Create Your Own Video Game
  - Music Maestro
  - Art Program in LOGO
  - Basic Science
  - Solar System
  - Word Processing

A company called Roy Abel & Associates also commercially exploited the Vectrex by using it as a text terminal (which is about the worst thing it can do) to perform the "Luscher Color Test" after you put a quarter into a coin device which activated the unit. You would pick colors in the order that they appealed to you (again, why did they use a black and white display for this job?), and it would tell you about your personality. Actually, no matter what you picked it would tell you something that you could identify with; all of the statements were pretty vague. The guy that programmed it did not understand the hardware; the text scrolled up the screen, but lines popped on at the bottom and disappeared near the top instead of scrolling on and off from offscreen. Roy had GCE's permission and blessing to do the project. In fact, some former WT personnel (Sidleys and others) as well as Lee Chaden (big guy at GCE) were at Abel & Associates at the time.

Back to top

1.7) What miscellaneous Vectrex items might my collection be missing?

Here is a list of most of the extra stuff that isn't a cart, overlay, box or regular manual...

Accessories:
* Dutch Vectrex Store Display Cabinet (Bulb)
* Vectrex Store Display Cabinet [6/99]
* GCE carrying case for the Vectrex

* GCE protective dust cover for the Vectrex
* Vectrex technician case/hard case
* MB carrying case for the Vectrex

Carts:
* Any of the Prototype carts
* Minestorm/II Cart
* Test Cart

Manuals:
* Manual for the Control Panel (Joystick)
* White 5.5"x3" manuals for the Light Pen and 3-D Glasses
* Service Manual

Catalogues:
* A catalog of games (same size as regular manuals) from "Triton"
* A catalog of games (same size as regular manuals) called "Passport"
* A 7.5"x3.5" pamphlet listing HW and games called "High Performance Machine"

Other Paperwork/sheets:
* The first (and only?) issue of the Owner's Club magazine "Passport"
* A Bandai/Vectrex press kit
* Orange 5"x3.75" sheet notifying us of GCE's change of address
* "IMPORTANT SAFETY INSTRUCTIONS" addendum to Owner's Manual
 (No. 98722-072). This listed 17 things you shouldn't do
* Canadian addendum to Owner's Manual for warranty info (pg. 11/12)
* White 3"x4" 3-D Imager addendum describing how to work the color disk latch
* White 3.5"x4.5" 3-D Crazy Coaster addendum telling how to survive underpasses
* White 4"x6" Minestorm addendum (P/N 140028-1) describing wave 13 bug
* White 2.5"x2.5" addendum to the Star Trek manual describing self-play bug
* Vectrex unit warranty registration card (and Owner's Club form)
* Electronic Games Magazine subscription form (44% off for Vectrex players)

Back to top

2.0) The Games

2.1) Officially released GCE/US Games

Title:	Prod.nr.:	Notes:
Animaction (lightpen) (1983)	VT 3604	Uses 2Kb of external RAM
Armor Attack (1982)	VT 3301	Cinematronic arcade port
Art Master (lightpen) (1982)	VT 3601	Pack-in game with lightpen
Bedlam (1982)	VT 3305	Inside-out Tempest derivative
Berzerk (1982)	VT 3302	Stern arcade port
Blitz! (1982)	VT 3202	
Clean Sweep (1982)	VT 3303	Pac-man clone
Cosmic Chasm (1982)	VT 3101	1st home game ported to arcade
Crazy Coaster 3D (1983)	VT 3634	
Fortress of Narzod (1982)	VT 3304	Great shooter
Heads-Up Action Soccer (1983)	VT 3203	AKA Soccer Football in Europe
Hyper Chase (1982)	VT 3201	
Melody Master(lightpen) (1983)	VT 3602	
Minestorm (1982)	VT 3000	Built-in game
Minestorm 3D (1984)	VT 3632	Pack-in game with 3D-Imager
Minestorm II (1983)	VT 3000	Bugfree version in cart form
Minestorm II, ver.2 (1983)	VT 3000	
Mr.Boston Clean Sweep (1982)	VT ????	
Narrow Escape 3D (1983)	VT 3633	
Polar Rescue (1983)	VT 3308	
Pole Position (1983)	VT 3206	Atari/Namco arcade port
Rip Off (1982)	VT 3102	Cinematronics arcade port
Scramble (1982)	VT 3103	Konami arcade port
Solar Quest (1982)	VT 3104	Cinematronics arcade port
Space Wars (1982)	VT 3105	Cinematronics arcade port
Spike (1983)	VT 3306	Uses digital sound
Spinball (1983)	VT 3204	Flipper Pinball in Europe
Star Castle (1983)	VT 3109	Cinematronics arcade port
Star Hawk (1982)	VT 3106	Cinematronics arcade port
Star Trek (1982)	VT 3107	AKA Star Ship in Europe
Web Wars (1983)	VT 3108	AKA Web Warp in Europe

The liquor company, Mr. Boston, gave out a limited number of

customized cartridges of Clean Sweep. The box had a Mr. Boston sticker on it. The overlay was basically the regular Clean Sweep overlay with the Mr. Boston name, logo, and % proof/copyright info running up either side. The game itself had custom text, and the player controlled a top hat rather than a vacume. [6/99]

Newport Cigarettes at one point commisioned a customized version of Web Wars. It just featured "Newport Cigarettes Presents" on the title screen and trophy room screen. Bill Hawkins finished the coding which was sent to Newport, but it isn't known whatever happened with that, if anything. [10/00]

Back to top

2.2) Officially released MB/European Games

Title:	Prod.nr.:	Notes:
Armor Attack (1982)		
Bedlam (1982)		
Berzerk (1982)		
Blitz (1982)		
Clean Sweep		
Cosmic Chasm		
Flipper Pinball		AKA Spinball in the US
Fortress of Narzod (1982)		
Hyper Chase (1982)		
Minestorm (1982)		Built-in game
Minestorm II (1983)		Bugfree version in cart form
Polar Rescue (1983)		
Rip Off (1982)		
Scramble (1982)		
Soccer Football (1983)		AKA Heads-Up A.S. in the US
Solar Quest (1982)		
Space Wars (1982)		
Spike (1983)		
Star Castle (1983)		
Star Hawk (1982)		
Star Ship (1982)		AKA Star Trek in the US
Web Warp (1983)		AKA Web Wars in the US

Back to top

2.3) Officially released MB/Canadian Games

Title:	Prod.nr.:	Notes:
Armor Attack (1982)	-	
Bedlam (1982)	-	
Berzerk (1982)	-	
Blitz (1982)	-	
Clean Sweep	-	
Cosmic Chasm	-	
Fortress of Narzod (1982)	-	
Heads-Up Action Soccer (1983)	-	
Hyper Chase (1982)	-	
Minestorm (1982)	-	Built-in game
Minestorm II (1983)	-	Bugfree version in cart form
Polar Rescue (1983)	-	
Rip Off (1982)	-	
Scramble (1982)	-	
Solar Quest (1982)	-	
Space Wars (1982)	-	
Spike (1983)	-	
Spinball	-	
Star Castle (1983)	-	
Star Hawk (1982)	-	
Star Trek (1982)	-	
Web Wars (1983)	-	

Back to top

2.4) Officially released Bandai/Japanese Games

Title:	Prod.nr.:	Notes:
00 - Minestorm	-	Built-in game
01 - Harmagedon	-	AKA Star Trek / Star Ship
02 - Scramble Wars	-	AKA Scramble
03 - Armor Attack	-	
04 - Berzerk	-	
05 - Clean Sweep	-	
06 - Cosmic Chasm	-	
07 - Hyperchase	-	
08 - Rip Off	-	
09 - Solar Quest	-	
10 - Space Wars	-	
11 - Star Hawk	-	

Back to top

2.5) Official Prototypes/Unreleased Games

Title:	Prod.nr.:	Notes:
Cube Quest (1983)	-	Released at CGE
Dark Tower (1983)	-	Only 1 prototype exists
Engine Analyzer (1983)	-	
Mail Plane (1983)	-	100% completed, never released
Pitcher's Duel (1983)	-	prototype exists
Polar Rescue Prototype (1983)	-	Re-released by Mark Shaker
Pole Position 3D proto (1983)	-	unfinished prototype exists
Sledge 3D demo (1983)	-	
Spectrum I+ Stress Tester(1984)	-	
Test Cartridge rev.4 (1982)	-	issued to repair centers only
Tour de France (1983)	-	Re-released by Mark Shaker

Back to top

2.6) Unreleased/Rumoured Games

The following games and accessories were planned but never released:
Cartridges:

- Art Master II
- Art Master III
- Art Master IV
- Basic Science
- Create-A-Game/Maze
- Exploring the Solar System
- Flipout
- Hangman (game developed for use with Touch Screen)
- Imagine
- Pitcher's Duel
- Pole Position (for 3-D Imager)
- Power Trip
- Sock It

Back to top

2.7) Bugfixes/Hacked Games

The following bugfixed/hacked games are available:

Armor Attack (1982) - Spinner Hack
Bedlam (1983) - Spinner Hack
Bezerk (1982) - Bugfixed
Dark Tower (1983) - Fred Taft Hack
Mine Storm (1982) - Fred Taft Hack
Mine Storm (1982) - Karrsoft Hack
Minestorm (1982) - RLB Lives & Bullets Hack
Minestorm (1982) - RLB Lives Hack
Minestorm (1982) - RLB Bullets Hack
Minestorm II (1983) - Fred Taft Hack
Minestorm II (1983) - Spinner Hack
Narrow Escape 2D (19??)
Pole Position (1982) - Spinner Hack

Solar Quest (1982) - Spinner Hack
Star Castle (1983) - Spinner Hack
Star Trek (1982) - Debugged / Controller Hack
Verzerk (2002) - Vecvoice enhanched version of Berzerk

Back to top

2.8) Released Modern/Homebrewn games

Title:	Author:	Note:
Debris (2005) - Limited edition	Revival Studios	Limited [80 copies]
Debris (2005) - Exclusive	Revival Studios	20 copies+overlay
Nebula Commander (2005)	Craig Aker	
Thrust (2004)	Ville Krumlinde	
Revector (2004)	Craig Aker	
I, Cyborg (2004)	Fury Unlimited	
I, Cyborg (2005) - Edition X	Fury Unlimited	Limited [10 copies]
I, Cyborg (2004) - Omegaedition	Fury Unlimited	1 copy only
Protector & YASI (2003)	Alex Herbert	
Protector L.E. (2003)	Alex Herbert	Limited [100 copies]
War of the Robots (2003)	Fury Unlimited	Limited [100 copies]
War of the Robots (2003)-CGE2K3	Fury Unlimited	1 copy only
War of the Robots (2003)-Omega	Fury Unlimited	1 copy only
VecSports Boxing (2002)	Manu	
Tsunami/Vix (2002)	Christopher Tumber	
Tsunami/Vix (2002) - Deluxe	Christopher Tumber	
Gravitex (2002)	John Dondzila	
Vectrex Frogger (2001)	Christopher Salomon	
Spike's Water Balloons (2001)	John Dondzila	
VecCaves/Spike's Spree (2001?)	Mark de Smet	
Vectopia (2001)	John Dondzila	
Ronen's Game Cart (2001)	Ronen Habot	
Rounders (2000)	Ronen Habot	
All Good Things (2000)	John Dondzila	
Moon Lander (1999)	Clay Cowgill	
Vecmania (1999)	John Dondzila	
Omega Chase (1998)	Christopher Tumber	
Omega Chase (1998) - Deluxe	Christopher Tumber	
Spike Hoppin' (1997)	John Dondzila	
Patriots (1996)	John Dondzila	
Rockaroids Remix (1996)	John Dondzila	
Vector Vaders (1996)	John Dondzila	

A lot of these games don't work as well on the emulator as they do on cart.
Please support homebrew development on the Vectrex and buy these games cart.

Back to top

2.9) How do I play [game X]?

Simple, read the manual. WHAT; you don't have a manual? OK then, read the screen overlay (it lists the functions of all the buttons). You don't have the screen overlay either? In that case most (maybe all by now) of the manuals have been transcribed into text files and made available via ftp. YOU DON'T HAVE FTP EITHER? OK, I'll tell you what; in the spirit of Smith Engineering's generosity, I will volunteer my services as Vectrex copy shop.

The following sites contain instructions in .txt form:
http://www.vectrexnews.com
http://www.classicgaming.com/vectrex
http://www.classicgamecreations.com/
ftp://ftp.csus.edu/pub/vectrex
[6/99]

Back to top

2.10) Are there tricks or cheats for any Vectrex games?

YES! (Vectrex had cheats back when they were still known as bugs):

ARMOR ATTACK: If you crank the brightness all the way up, you are able

to see the helicopter's position as soon as you hear it (even though it is off the screen). [Also, there are certain corners where you can hide with little or no chance of being hit, especially if one player parks himself on top of the other player, each one covering a different direction. 6/00]

BEDLAM: You can see a special author title screen that proclaims, "PROGRAMMED BY WILLIAM HAWKINS GT 1982" if you follow the instructions found in the "STAR CASTLE" entry below. I discovered this by trying the "original" Star Castle trick on other games that I knew Bill wrote. This screen is different from all the similar ones in that it plays music too! You are treated to the chorus line of "Dixie" (Bill hails from the South). The screen ends when the tune finishes and releasing buttons has no effect.

BERZERK: The hunt for this egg began thanks to Pete Rittwage (bushwick@netcom.com) who first reported it but could not reproduce it. Even after confirming the trick with Chris King, the programmer of the game, nobody was able to find it because Chris had forgotten exactly what was required to activate it! Then along came net.hero Fred Taft (fred@hpcvusc.cv.hp.com) with the answer after disassembling the object code. Before your man stops flashing when you kill your last man, press and hold down only the 1, 3, and 4 buttons on the player 1 control panel. When the "GOT YOU HUMANOID" summary screen appears with your score, there will be the programmer's initials in the lower right corner ("CMK"). This screen will stay for about 90 seconds before going back to the game select screen and you cannot get out of it by pressing buttons.

BLITZ!: If you get a 1st and inches (1 and 0 to go), as long as you stay on the 0 yard line, you keep getting first downs. Thanks to Adam Fox (adamfox@super.org) for this one.

BLITZ!: On player 1, game 1, get the kickoff around the 15 yard line then run the ball back down the middle of the field, and wait for a while and let the blockers hold the other team. Then go to the far right of the field (almost out of bounds) and there is a small gap between that final free defensive player and the out of bounds. You run down screen, thru that small gap, and you can return the ball from kickoff to about the opponent's 20 yard line. It's pretty cool because you can do it over and over, because in the one player game, the computer's team always kicks off to you. Thanks to Craig (cbariou@eng.clemson.edu) for this one.

COSMIC CHASM: You can see a special programmer title screen that proclaims, "PROGRAMMED BY WILLIAM HAWKINS GT 1982" if you follow the instructions found in the "STAR CASTLE" entry below. I discovered this by trying the "original" Star Castle trick on other games that I knew Bill wrote.

FORTRESS OF NARZOD: If you can somehow manage to kill the "Mystic Hurler" (you know, the BossAtTheEndOfTheWave guy that looks like a gorilla) at the same time he kills you, your lives remaining will turn into the infinity sign (oo) and you will have 255 lives. It is not known for sure if your lives in reserve value has to be zero for this to work (probably so since this bug is most likely due to an accidental underflow from 0 to -1 which presumably would trigger the software to be in virtual infinite play mode to aid play/beta testing). The author takes credit for this one!

MINESTORM: The brightness trick allows you to see the "invisible" mines.

RIPOFF: You can see a special programmer title screen that proclaims, "PROGRAMMED BY WILLIAM HAWKINS GT 1982" if you follow the instructions found in the "STAR CASTLE" entry below. I discovered this by trying the "original" Star Castle trick on other games that I knew Bill wrote.

SPACE WARS: Either ship is invincible after being hit, while pieces are in the air. This may not sound like much, or maybe this was intentional, but I've played against people who make this their entire strategy. They skim the edge of the Star in the middle, just to knock off a tail section or something, and then while they are invincible, they fly right into you. Not nice, but it works very well. The time window is surprisingly long.

SCRAMBLE: A quote from Paul Allen Newell, developer of the game: "I

remember going thru long discussions with management about giving the programmers credit on the games. Western Technologies and/or GCE didn't approve it and most of the programmers hide their names somewhere in the games. My 'Easter Egg' can be located in 'Scramble' by doing the following. If you have two controllers with joystick and buttons, put them both in; otherwise, use the single one in the usual position. While 'Scramble' is displaying its 'game # player #' section, move the joystick so it is 'down'. When 'Scramble' starts, keep it in this down position so your plane crashes on the floor BEFORE THE MOUNTAINS START. Do this for all your ships; DO NOT PUSH ANY BUTTONS TO FIRE BOMBS OR BULLETS. When it is over, the display 'end' will come up. WITHOUT TOUCHING ANY BUTTONS, unplug the main controller and move it to the 'player two' plug (if you have two controllers, this step is not necessary). Then, with the 'player two' controller, PUSH ALL FOUR BUTTONS SIMULTANEOUSLY. They must all go down at the same time. Repeat until you get all four down at the same time. You'll know when you see the word 'end' change into something else. This is the first time I have documented the method, having only mentioned it to friends or hinted to others. Enjoy!" (Thanks a LOT to Stefan Herr (Steve@lioness.okapi.sub.org) for digging up this one-of-a-kind gem).

SPIKE: If you position the door ALMOST all the way to the right of the screen, then jump into it, so as to be jammed between the door, and the little space that is left; the game freaks out, you will be pushed forward about 47,000 points, and the difficulty will be increased proportionally.

STAR CASTLE: This is the most extravagant egg in all the Vectrex games. The designer put in his own title screen which brazenly proclaims "PROGRAMMED BY WILLIAM HAWKINS GT 1983". A quick caveat; this only works on a cold restart (i.e. the first time you turn the game on) and will not work if you start the game over by pressing the reset button. However, it will work with the software selectable muticarts if Star Castle is the first game you select after turning the game on. To get the screen to appear you must push the 1, 2, and 4 keys on the player 1 control panel before the Star Castle title screen music finishes playing. If those 3 buttons are down when tune ends, the programmer title screen will appear. It will last for about 2 seconds or until you release one of the buttons. It is my guess that the GT stands for Georgia Tech and the 1983 is the year the software was written. (MANY thanks to Fred Taft (fred@hpcvusc.cv.hp.com) for discovering this after disassembling the object code).

WEB WARS: You can see a special programmer title screen that proclaims, "PROGRAMMED BY WILLIAM HAWKINS DUNCAN MUIRHEAD PATRICK KING GT 1983" if you follow the instructions found in the "STAR CASTLE" entry above. I discovered this by trying the "original" Star Castle trick on other games that I knew Bill wrote. This screen is different from all the similar ones in that the font size is about 3 times as big.

Back to top

3.0) The 3-D imager

3.1) How does the 3-D imager work?

Robert Stickles (sutekh@feldspar.com) explained it very well like this: The 3-D imager spins a disk which is 1/2 black and 1/2 colored bands that radiate from the centre (Usually red, green and blue) between your eyes and the vectrex screen. The Vectrex is synchronized to the rotation of the disk (or vice versa) and draws vectors corresponding to a particular color and/or a particular eye. Therefore only one eye will see the vectrex screen and its associated images (or color) at any one time while the other will see nothing.

A single object that does not lie on the plane of the monitor (i.e. in front of or into the monitor) is drawn at least twice to provide information for each eye. The distance between the duplicate images and whether the right eye image or the left eye image is drawn first will determine where the object will appear to "be" in 3-D space. The 3-D illusion is also enhanced by adjusting the brightness of the object (dimming objects in the background). Spinning the disk at a high enough speed will fool your eyes/brain into thinking that the multiple images it's seeing are two different views of the same object, and voila!

Instant 3-D and color.

Back to top

3.2) I see double images and blurry objects; is my 3-D imager broken?

Robert Stickles (sutekh@feldspar.com) answered this very well like this: Probably not. There are problems with the basic design of the imager as implemented. When the imager displays red objects, especially those that are to appear in the foreground, it's very difficult for your eyes to resolve the two images and you end up seeing double. Two things contribute to this: When your eyes naturally try to focus on an object that is supposed to be in the distance the objects close up become out of focus. This makes games that have 3-D objects deep "into" the screen (such as Narrow Escape) have double images for the foreground objects (such as your ship).

The second factor is the "ghosting" created by red (and oddly enough, only red) images seen through the imager. For example, the red tracks in Crazy Coaster are hard to visualise because my eyes can see white ghosts of the image intended for the opposite eye, and consequently you interpret the jumble as two different objects and not one. I am not completely sure what causes this, but it may be due to inaccuracies in the synching of the wheel. I do believe that the reason why the 3-D Minestorm color wheel is different from the one used for the other games (it has little red and the sync hole is slightly offset) is to show off the imager at it's best, with lots of green and blue (or maybe the coders just wanted lots of green!). I will make a homemade color wheel similar to the CC/NE one, but with different colors to determine for sure if the color red is the problem or it is a sync problem. The 3-D Minestorm wheel differs too much from the other wheel to make a good judgement.

I have found two ways to remedy this problem:

1) The further your eyes are away from the screen, the easier it is to resolve the double images. So sit waaaay back and enjoy. This helps the focusing problem.

2) Using an overlay on the screen tends cut down on the red "ghosting". I use a Spinball/Flipper pinball overlay , but any of the single color overlays (Berserk, Blitz, etc) will work just as well. This seems to cut down the the intensity of the ghosts (and using the brightness control wouldn't hurt either)

I now really enjoy playing Narrow Escape as it was intended (sort of a head-on Zaxxon) and play this game more often than Web Wars or Armor Attack. I'm not as thrilled with Crazy Coaster as it seems to have an unpolished feel to it. Besides, it looks *nothing* like the screen shots. :-)

Back to top

3.3) I have a 3-D game but no imager. When I play the game it doesn't do anything; is it broken?

Probably not. The 3-D games all start out by trying to spin up the 3-D wheel so before an image is displayed so that it will look 3-D right away. They send power to the motor and then check they sync pulse to see how fast the wheel is spinning. If it isn't spinning fast enough, it increases the voltage to the motor gradually until it is. If the voltage gets maxed out and the wheel still is not spinning fast enough, the game will try to run but at a reduced frame rate. If there is no 3-D imager attached then there is no sync pulse and the speed of the wheel will always be interpreted as zero. The game will not run until it sees a sync pulse of some kind.

William Howald (howald@u.washington.edu) did find a way to get 3-D games to run without the imager though. If you plug a controller into port 2, and bash away at the 4 button, after 1-2 minutes (be patient) the game will start running but -s l o w l y-. Every tap on the button will "flash" one frame on the screen and the sound if playing will advance to the next step. The wire for the 4 button is the one hooked up to the be hooked up to a optical sensor that reads light through the hole in the

disk which is used as a sync pulse. I think you could build a oscillator(about 10 Hz?) and pulse the 4 button to "play" without glasses!

Back to top

3.4) Are there any 3-D imager replacements available?

Yes, recently a new 3-D imager replacement has been released.
Here is an extract of the review for the new imager.
For the full review, visit: http://www.vectrexnews.com

Technical:
The New Vectrex 3D Imager is 100% compatible to all Vectrex 3D games since it uses exactly the same circuit. However the colour wheels are not compatible to the old ones, since the New imager uses bigger wheels that promise to allow a larger viewing range to the wearer.

This is no disadvantage since both wheels (Minestorm and CrazyCoaster/ NarrowEscape) are included by standard and replacements are available. The wheels could be swapped as easy as swapping CDs in a CD player. The colour wheel spins right before the wearer's nose. Experiments with all types of heads and noses have shown there are no problems with your nose hitting the wheel. (extended viewing range to both sides!)

Ergonimical:
The New Imager can be fit to anyones head by tightening-loosening the head-mountingscrew. This way it can be fitted fast and comfortable like a helmet: A feature not only programmers will esteem is the flip-up-visor. So you can easily switch between your Vectrex game and reality.

Pros:
- 100% compatible to all existing and upcoming Vectrex 3D games
- Very steady -> Cannot get damaged by falling 2m on the ground
- Very light (about 250 grams)
- Extended viewing range to the left and right
- All wheels included

Cons:
- Will never be as sought-after as the original one. It has a serial number anyhow.

Conclusion:
The new Imager features same functions like the original one.
The so called "extended functions“ like the more comfortable handling are nice gadgets anyway. If you ever wanted to play 3D games on the Vectrex but couldn't afford hundreds of dollars this is your way to go. For the price of 65 EUR the New Imager is priced agressively below the original Imagers price.

Back to top

4.0) Minestorm/II

4.1) What is Minestorm/II?

As we all know, the very first Vectrex units were shipped with a flawed version of Minestorm. Evidently nobody ever though that any player could ever get to, let alone survive wave 12 so they only included data for 12 waves. Predictably, most players found that their game crashed after wave 12 (the "wave 13" bug) because the software indexed off the end of the table which contains the information about what items were to exist on each wave. It reads in garbage which usually causes the game to crash.

I have in my possession a cartridge that originated from a private owner on the East Coast of the USA (who was recently identified) which has a fully produced label that says "Minestorm". The title screen of this game says, "Minestorm II". This is a bug free version of Minestorm as you can easily play past wave 13 (I will read in the ROM data as soon as I can). It would seem that if you contacted GCE/WT about the bug, instead of swapping out the Executive/Minestorm ROM inside the Vectrex unit, they simply sent you a production Minestorm cart. Evidently the cart did not come with a manual or box all the other games in this private collection still had these things. If you want to see what it looks like, there is a JPEG in the archives.

Back to top

4.2) What is the Minestorm "Wave 13" bug?

Fred Taft (fred@cv.hp.com) explained it to me very well like this: Each level of Mine Storm is described by an entry in an array of structures; the array entry described such details as the types of mines at the level, etc. Unfortunately, the array was only defined to contain 13 entries! That's why the first 13 levels work as expected. However, once you got past level 13, the game ran out of array entries, but because it did not check for this, it simply used the next block of code after the array, as the information describing the next level. The code was smart enough to skip levels if there were no valid mines; that's why it occasionally skips levels.

As for sometimes jumping back to the startup screen after you've completed a level, that is also a 'feature' of the code. Once a level is cleared, it jumps to some code which looks to see if any buttons are pressed; if they are, then it assumes the user wants to start a new game; this is code which should have only been executed when a game was over, but it gets checked after completing a level also. Keep in mind that this is the very first release of the Minestorm and later versions had various portions of the bugs patched out.

Back to top

4.3) Well how many released versions of the Minestorm software was there?

There were at least 3 versions. Two with the "Wave 13" bug which are different in that waves 2 and 3 are swapped and one with the bug fixed. The test cart checksum will give a different value for different ROM versions so this is a way for you to check.

Back to top

5.0) Emulation

5.1) How can I play the games if I don't have a Vectrex? [6/99]

You can also run vectrex games using emulators.
Emulators are pieces of software which emulate a hardware platform.
A few ColecoVision emulators have popped up, and the following is a listing of the most popular ones. If you're new to the world of emulation, you may want to read the Classic Gaming Newbie Guide at http://www.classicgaming.com/cgng.

Back to top

5.2) Emulator list

Emulators for personal computers:

Emulator	Version:	Platform(s):	Notes:
VecX	0.2b	Win32	most portable emu
VecX, reset hack	0.1	Win32	developers version
VecX for Apple	0.11	Apple	-
MESS	1.02	Win32,MacOS,etc	-
DVE	2.0b	DOS	-

Emulators for consoles:

Emulator	Version:	Platform(s):	Notes:
Vectrex emulator(VecX)	0.1b	Xbox	-
Vectrex emulator DC	0.1b	Dreamcast	-
GP32VecX	0.2	GP32	-

Back to top

6.0) New Hardware

6.1) 3-D Imager replacements

New 3D-Imager:

The brilliant Idea of having a spinning disc coloured half black, half red-green-blue to simulate 3D by drawing different pictures to each eye resulted in the most soughtafter Vectrex item today: The Vectrex 3D Imager.

The New Vectrex 3D Imager is 100% compatible to all Vectrex 3D games since it uses exactly the same circuit. However the colour wheels are not compatible to the old ones, since the New imager uses bigger wheels that promise to allow a larger viewing range to the wearer.

For more information about the new 3-D imager, see section 3.4 of this FAQ

Kev3D Adapter:

Alternatively, there exists an adapter for using the Sega MasterSystem 3D goggles on the Vectrex called the "Kev3d adapter". The adapter has only been sold for a small period of time, so not too many have been sold.

For more information on the new Vectrex 3D Imager or the Kev3D adapter, go to "the system" section at: http://www.vectrexnews.com

Back to top

6.2) New Controllers

There have been a number of different replacement controllers on the market for several years now. For more information and their manufacturers, check out the Links section of this FAQ (chapter 9).

Back to top

6.3) VecFlash/VecVox

The VecFlash is a FLASH / Multi Cart with the following features:

- 16 x 32K banks (inc Menu Bank)
- FLASH RAM: games are stored indefinitely without power
- Pressing reset brings the menu back up (no on/off between games)
- VecRAM mode: loads + stores + runs a single binary (for dev work)
- Auto menu generation: PC loader updates Vec menu code
- Fully upgradeable future-proofed firmware

The VecVox is a SpeakJet based unlimited-vocabulary speech / sound synthesizer connecting to the Vectrex console via the second joystick port. The on-board VecTrans™ chip accurately emulates the old SPO256-AL2 based VecVoice making the unit fully compatible with existing speech games such as: Verzerk, Pythagorean Theorem, Y.A.S.I, Debris (VecVoice is activated by holding down the mode switch on power-up)

In normal (SpeakJet) mode, the unit is capable of amazing retro speech and sound effects Here's a quick sound demo.

The VecVox comes as a fully built PCB with cable to connect to the Vectrex (just plug in a set of PC speakers, headphones etc).

You can find out more about these projects on Richard Hutchinson's website: http://www.vectrex.biz

Back to top

6.4) Multicarts

A few multicarts have been released for the Vectrex. The first multicart to be released was developed by Greg Woodcock. After the woodcock multi-cart there came the Sean Kelly multi-carts, which are still a popular item on ebay these days.

Currently, John Maccallan is selling his new multicarts at his ebay-store.

For more information on multicarts, look at Section 6.3 of the FAQ, or
at the links section 9.3 of this FAQ.

Back to top

7.0) Repair tips:

7.1) Is there a way to make a Vectrex joystick perhaps with autofire
capability?

Brian Holscher (brianh@ichips.intel.com) has designed a flexible way to
convert a Sega Genesis controller for use with the Vectrex. He will
build one for you for a small fee or if you check the archives, you will
find a file describing how to build one yourself (it is more complex
than you will probably be expecting).

The Brian Holscher article can be found here:
http://www.classicgaming.com/vectrex/controller.txt [6/99]

Jay Tilton's Atari to Vectrex conversion article is here:
http://www.classicgaming.com/vectrex/da_converter.txt [10/99]

Autofire circiut instructions are are here:
http://www.classicgaming.com/vectrex/autofire.txt [10/99]

BUYING CONVERTED CONTROLLERS

Currently, converted Sega controllers are available through John Dondzila. Inquire at:
http://www.classicgamecreations.com/ [6/99]

Back to top

7.2) My Vectrex is very noisy; is there anything I can do to make it any
quieter?

Here is what Daniel A. Muntz (dmuntz@quip.eecs.umich.edu) said helped
him: The noise isn't digital in nature and it closely follows the
video. It also isn't a power supply problem; isolating the audio input
of the amplifier from the sound circuit revealed no noise at all. It
seems the noise is generated in two ways:

1: By induction; Moving the audio cable around makes the noise less or
more prominent. It is at minimum when the cable is placed in its
original manufactured groove. Good design since that's farthest from
the CRT yoke.
2: By ground impedance; Although all supplies are clean the hum is still
present in the modulated DC difference between the two boards.

A definite improvement can be achieved by doing the following:

1: Rewiring the ground between the digital and video board.
2: Shielding audio circuit and changing cable to volume pot to a better
shielded one.

A tutorial on how to reduce the buzz in your Vectrex is here:
http://www.classicgaming.com/vectrex/no_buzz.zip [6/99]

John Dondzila has noted that placing a piece of clear tape over the speaker
grill can also reduce the buzz. [6/99]

Back to top

7.3) My joystick won't auto-center anymore; can I fix it?
(AKA How do I get inside or open up my joystick?)

You can't make it "good-as-new", but you can repair it so that is is
usable again. You must first get past the sticker on the top of the
joystick to get at the 5 screws that hold it together (4 are about 3/8"

in from the sides and 1/2" from the top/bottom and the last is about 1/2" to the right of the cable). Just feel around and you should be able to find where the holes are. You can either try to peel off the sticker (difficult to do without damaging it but possible if you are careful) or simply punch 5 holes in it so you can remove the screws (leaving most of the sticker intact). Now that you have the joystick open, remove the broken spring that used to center the joystick.

You then have 2 choices that work equally well.

(1) Sean Kelly (skelly@flood.xnet.com) came up with another great method. If you are technically inclined, you can open the potientometer and replace the spring with a spring out of an Atari 2600 cartridge. The spring that's used to push down the "protective" cover on 2600 carts fits nicely. It needs a little bending, but I've replaced several broken ones with them and they work great...

(2) Use the core from the largest available guitar string to replace the spring you just removed. If you snip off one end you can remove the (usually gold) wire wrapped around a core wire by pulling on the gold wire. Credit goes to Dan Muntz once again for this clever solution and to Mike Packard (lordgen@kaiwan.com) for details about the screws.

Back to top

7.4) My Vectrex just shows a white dot when I turn it on. I can hear the game playing but there is no picture. Can I fix it?

There is 1 common problem that will cause this symptom. Inside the unit there is a 4-wire power connector connecting the side board to the bottom board. Often units with no picture have bad solder joints on this connector. Try resoldering the pins and see if that helps.

Back to top

7.5) How can I make a copy of a screen overlay?

With the advances made in the past 2 years in color scanners, copiers and printers, it is now possible to make a near exact duplicate with the push of a (few) button(s).

0. First you need an original overlay, preferably one with little fading.
1. If you want a "rough" copy, simply get a good high end color photocopy onto acetate (those overhead projector plastic sheets).
2. If you want a better copy, you scan the image, preferably in color. I think 150 DPI is okay though some people may want to go for maximum resolution.
3. Then you need a good paint program, I used Adobe Photoshop to do some preliminary clean-up work, but I have a feeling it would take quite a bit of work to make a perfect overlay.
4. Printing--the critical part. You need a color printer that can do acetate (animation cel) printouts. Unfortunately, no color printer can work on thick sheets, which brings us to 5.
5. You need go to a hobby shop and get a piece of .045 thick clear sheet of [poly]styrene. Its pretty cheap.
6. The only part I haven't worked out, bonding the acetate overlay to the styrene. It is probable that there are some mucho expensive color printers that professional print shops use that can print onto any thickness sheets but I haven't done much looking.

Thanks to Noel (NOEL@UMBC2.UMBC.edu) for this info.

Back to top

8.0) Legal issues

8.1) Isn't copying the games by burning EPROMs stealing or violating a copyright?

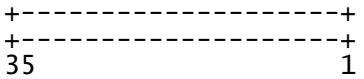
If the system is "dead" then no money is lost by making copies of something which otherwise would never be available. Even so, it is a

fuzzy matter and technically the answer should probably be, "YES."
Fortunately, Smith Engineering [Jay Smith] has given permission to make
copies of all Vectrex related materials (manuals, games, overlays, etc.)
as long as it is not for profit.

Back to top

8.2) OK, I want to make a copy of a game; what is the pinout of the port?

The even pin numbers are on the top while the odd are on the bottom.
one and two start on the right side (or near side as oriented when cart
is inside the base unit), and 35 and 36 are on the left (or far) side.



Back to top

8.3) Do I have to make my own multi-cart; can't I just buy one from
somebody?

No; I mean, Yes, er... There are several people making multi-carts
for resale on the net but the best ones (by far) were being made by Mark
Woodward. He has sold out of the original batch and it was such a
headache that he will not be doing it again. Instead, I have taken over
the project and am working on getting the images to some unreleased, yet
completed games. They are Tour de France and Mail Plane (and perhaps
another "goodie" that isn't really a game but a silly in-house project
never meant for release).

After the woodcock multi-cart there came the Sean Kelly multi-carts.

Ronen Habot has released a tutorial for making one like the one he made:
http://vgcollect.freehosting.net/myvectrex.htm [6/00]

Currently, multi-carts can be found on ebay or through John Maccallan.

Back to top

9.0) Vectrex Links and information

9.1) Vectrex related websites

Vectrexnews - The number one newssource for the vectrex scene
http://www.vectrexnews.com

Spike's Big Vectrex Page
http://www.classicgaming.com/vectrex

Vectrex resource center
http://www.roachnest.com/vectrex.html

Vectrex.nl
http://www.vectrex.nl

rec.games.vectrex
news: rec.games.vectrex
or to view it in your web browser:
Deja.com: http://www.deja.com/group/rec.games.vectrex

Vectrex FAQ online
http://www.vectrexnews.com/faq

Vectrex game database
http://vgdb.vectrex.com

The Vectrex High Score Page
http://members.aol.com/pbjurman/vectrex.html

Vectrex Easter Eggs
http://www.digitpress.com/eastereggs/vectrex.htm

Playvectrex.com
http://www.playvectrex.com

Vectrex.com
http://www.vectrex.com

Vectrex.org.uk
http://www.vectrex.org.uk

Fred's Vectrex Page
http://www.geocities.com/fredtaft/

Manu's Vectrex Site
http://www.pelikonepeijoonit.net/vec/

Nicolas Sapin's Vectrex Scan/trade Page
http://perso.club-internet.fr/sap1/

Pepijn's Minestorm site
http://www.xs4all.nl/~bakkerp/Minestorm/

Official MESS Emulator Homepage
http://www.mess.org/

Vectrex FTP Archive
ftp://ftp.csus.edu/pub/vectrex

Back to top

9.2) Modern games resellers/creators

Revival Studios (classic game development)
http://www.revival-studios.com/

Mark Shakers website (modern vectrex games for sale)
http://www.vectrexcarts.com/

Alex herbert's website (classic game development)
http://www.herbs64.co.uk/

John Dondzila's Videogame Creations
http://www.classicgamecreations.com/

Fury Unlimited (classic game development)
http://www.furyunlimited.com/

Good Deal Games (classic game store)
http://www.gooddealgames.com

My Vectrex - Ronen Habot (new games)
http://vgcollect.freehosting.net/myvectrex.htm

Kristof's Vectrex Page for New Games
http://members.tripod.lycos.nl/kristoftuts/index.html

Back to top

9.3) New hardware resellers/creators

Richard Hutchinson's website (VecVox/VecFlash)
http://www.vectrex.biz/

John Maccallan's ebay store (Multicarts/3dimager/etc)
http://stores.ebay.com/Retro-Gaming-Solutions

Zektor vector generator
http://www.zektor.com/zvg/index.htm

Playstation Controller Adapter
http://www.multigame.com/psx2vect.html

Marc's hardware projects
http://www.upl.cs.wisc.edu/~de-smet/projects.html

Back to top

9.4) The Vectrex FTP archive

The ftp Vectrex information archive is at ftp.csus.edu (130.86.90.1) in the pub/vectrex directory. It is maintained by John F. Sandhoff (sandhoff@csus.edu).

There are binary listings (2 flavors; pure binary from the ROMs, and Motorola "S-format" dumps) for most of the games along with instructions on how to burn EPROMs. There are several commented examples of code demonstrating how to write both music and graphics. There is also a copy of the service manual and much more. Almost all of the stuff is bundled into a compressed file called "vectrex.tar.Z". There are plenty of experiments to keep an eager hacker busy including schematics of the 3-D goggles (very simple circuit to build). Recently, some GIF/JPEG files were added showing some of the screen overlays (there are also GIFs of the 2 color wheels). Also, text files of the manuals for most, if not all, of the games are there.

David Wright (davewt@NCoast.ORG) will be putting the Vectrex stuff up on his Email server. If you don't have FTP access, this may work for you. If you want to try and get at it, the Email server is at "impinfo@Prism1.COM". If your site doesn't like that, try "prism1!impinfo@NCoast.ORG". To receive a list of the files available place "send vect.index" in the message body. You can also add "send help" to get a complete set of instructions. Be aware that some of these files are huge and may push you over your mailbox or disk space quota immediately.

Vectrex FTP Archive: ftp://ftp.csus.edu/pub/vectrex
Other Vectrex Links: http://www.classicgaming.com/vectrex/link.htm [7/00]

Back to top

9.5) Persons involved in Vectrex development

Lenny Carlson
   Musician hired to write game sounds and title tunes
   Did finishing touches to Bedlam

Michael Cartabiano
   Product Manager for numerous projects [10/99]

Jeff Corsiglia
   Main game designer

  (Jeff Corsiglia added: I had responsibility for game design for
   Vectrex - many of the ideas and effects in the games came from
   the programmers as well as me, in varying proportions. Some programmers
   liked to work from a tight spec, others made major design contributions.
   The atmosphere was collegial and the teams were highly co-operative.
   Ideas flowed, enthusiasm was high, and the overall level of creativity
   was astonishing. Our system was to team the designer, (usually myself),
   with a programmer. My responsibility was mostly for the concept, the
   storyboards, definition, and pitch to the client) [07/05]

   Designed 3-D Crazy Coaster
   Designed 3-D Narrow Escape
   Designed Minestorm [07/05]
   Designed Cosmic Chasm
   Designed Hyperchase
   Designed Blitz!
   Designed Clean Sweep
   Designed Fortress of Narzod [07/05]
   Quit WT in 1982 to go work for Datascan
   (Jeff Corsiglia added: Vice President, Video Games Division.
   Responsible for design and production of games. Also oversaw the
   design and development of the 3D Imager peripheral for Vectrex.) [07/05]
   contracted with GCE to do Vectrex games

Miva Filoseta
   Designed many, if not most, of the colorful overlays
   Now works for Mattel

John Hall (*)
   Worked on The Executive
   Coded Mine Storm [07/05]
   Coded Fortress of Narzod [6/99]
   Coded Dark Tower [6/99]

Bill Hawkins
   Coded 3-D Minestorm
   Coded 3-D Crazy Coaster
   Coded Bedlam
   Coded Cosmic Chasm
   Coded Lenny Carlson's Greatest Bits (never intended for release)
   Coded Rip Off
   Coded Star Castle
   Coded (with Duncan Muirhead) Web Wars

Mark Indictor (*)
   First duties during development:
      Software for communication with the ICE (In-Circuit-Emulator)
      Star Trek
   Games:
      for Western Technologies:
         Designed and coded Star Trek
      for GCE
         Designed and coded Spinball
         Designed and coded Polar Rescue
         Designed and coded Mail Plane (not published, for use with Lightpen)
         (Jeff Corsiglia added: While I had some input on these, I was mostly
          in the role of Producer at this point. Mark should get design
          credits for these. He could both design AND code with
          equal brilliance.) [07/05]

Gerry Karr
   Took over The Executive project after John Hall concentrated on Minestorm

Chris King
   Coded Berzerk
   Designed and coded Hyperchase

Patrick King (*not* related to Chris)
   Designer of Web Wars
   Went on to work for Sega

Ronald J. Logsdon
   Designed and coded Melody Master

Kim Martin
   Digitized the Scramble landscapes
   Beta-tester (mainly for Scramble)

Richard "The Mouse" Moszkowski ("The Mouse" is a nickname, nothing more)
   Programmed game watches prior to Vectrex work
   Involved with Vectrex since its inception
   Coded 3-D Narrow Escape
   Coded Art Master
   Coded Clean Sweep
   Died by his own hand in October 1995

Duncan Muirhead
   Joined WT at the end of 1981 (or beginning of 1982)
   Coded Armor...Attack
   Coded (with Bill Hawkins) Web Wars

Walter Nakano
   Model builder
   Co-designed Vectrex external case 1-2 years before the Macintosh!

Paul Allen Newell (*)
   Coded Scramble

Gary Niles

Vice President at WT during Vectrex era
From there went to Sega, then Revell, and as of 1996 is with Galoob
Galoob Toys bought by Hasbro, Gary is now producing his own toys [07/05]

Mike Purvis
Hardware Tech

John Ross
Developer of the hardware
(Jeff Corsiglia added: John Ross was the "Father of Vectrex" He conceived the system, proved the concept, and developed the hardware, directed much of the firmware development. He also brought me the idea for the 3-D Imager and helped tremendously with its early development. Without John, there would be no Vectrex!) [07/05]

Tom Sloper
Came up with "Vector-X"
Started out at WT as a modelmaker and then designed watch and calculator games
Designed Bedlam
Designed Spike!
Played arcade games for programmers since he could "beat" most of them After WT, worked for Datascan, Sega, Rudell Design, Atari Corp. and finally ended up at Activision (since 1988) where his title now is "Senior Producer"

Ed Smith (Jay's brother)
Manager of engineering during early development
Before Vectrex, he worked at Harris in Orlando and frequently used GA Tech Co-ops
Hired a bunch of ex-Harris guys to work at a new Western Technologies branch office in Orlando where a number of games were written

Jay Smith
Founder and president of Western Technologies/Smith Engineering

Colin Vowles
Model builder; co-designed the external case 1-2 years before the Macintosh.

(*): These persons worked on the "Atari reverse engineering" project. Only one of the three games that were created by that group was released (the one written by Paul Newell). Anyway, the whole project was canceled later because the competition (e.g. Activision) was too big.

Other people involved (this list does not claim to be complete) were David Blair, Alan(Allen)Cobb, Ed Faris, Joel Hassell, Don Herndon, Ed Horton,
Bill Hudson, Kevin Hudson, Nolan Johnson, Steve Marking, Lori Pearsall, and Bob Rutkowski.

Sources: Electronic mails from Mark Indictor, Paul Newell, Chris King, Ronald J. Logsdon, Bill Hawkins and Tom Sloper, personal letter from Jay Smith, several articles from "Electronic Games" magazine (provided by Paul Newell), article from "Creative Computing" magazine (provided by Dion Dock). Emails from Jeff Corsiglia [07/05]

Back to top

Martijn Wenting would like to thank Gregg Woodcock, BaronVR (the previous maintainer of this faq) John MacDonald (the brief 2nd maintainer of this faq), John Dondzila, Chris Salomon, Mathis Rosenhauer, Brett Walach, Robert Mitchell, Joe Britt, Fred Taft, Sean Kelly, all the new programmers and techies, and all who contributed info, corrections, and suggestions for this FAQ.

faq@vectrexnews.com