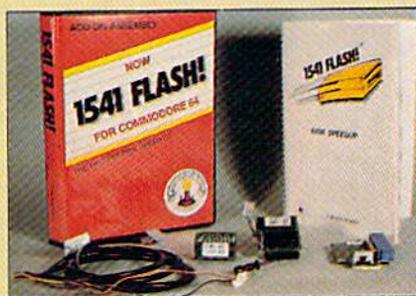


# Disk Spinners

## Replacements and Enhancements for the 1541 Disk Drive

By Morton Kvelson

Last month we examined the Indus GT and Commander II drives, 1541 Physical Exam, and On Track Indicator. This month we conclude with Kwik-Load!, 1541 Flash, and Fast Load.



READER SERVICE NO. 175



READER SERVICE NO. 176



READER SERVICE NO. 177

## PART II

### KWIK-LOAD!

Datamost Inc.  
20660 Nordhoff Street  
Chatsworth, CA 91311  
Phone: 818-709-1202  
Price: \$19.95

While placing the emphasis on fast disk operation, the *Kwik-Load!* name neglects to mention the additional features of this low-cost yet powerful disk utility. Written by Mark Riley, author of *Paint Magic*, the *Kwik-Load!* utility disk contains two programs. The first speeds up the LOAD time of the 1541 with the Commodore 64 by a factor of five. The second is a collection of disk utilities which simplifies and speeds up the most common disk file maintenance operations.

The *Kwik-Load!* utility is a short machine language routine which loads into the \$C000 block in the Commodore 64. It is linked into the C-64 operating system by changing the LOAD vector at \$330-\$331 to point at itself, thus diverting all subsequent LOADs away from the usual Kernal routines. Although a three to one speed benefit is touted by the program's purveyors, the actual benefit is a combined function of the type of disk activity, program length, and number of files being accessed. Typical speed improvements hovered around the five to one mark. For ex-

ample, *Paper Clip*, our perennial favorite for long LOADs, clocked in at less than 15 seconds, down from over a minute and a quarter on the first try. Note that *Kwik-Load!* only works when loading programs. It has no effect on SAVE times.

As with all RAM based speedup utilities, *Kwik-Load!* will perform best with BASIC programs. Most autoboot commercial software will disconnect the program during the boot process. A second version of *Kwik-Load!*, supplied on the disk, LOADs into the top of free BASIC RAM. In the process, it reduces the amount of available memory for BASIC programs by one kilobyte. In exchange, Commodore's DOS wedge can be LOADed in the usual fashion.

### KWIK-COPY

*Kwik-Copy*, the second part of this package, is a comprehensive disk utility program. The highlight of the package is a high speed disk copy routine which will copy an entire disk in 4.5 minutes and three passes with just a single disk drive. If two drives are used, the process takes a mere 3 minutes 40 seconds (of course the need to swap disks back and forth is also eliminated). These times were obtained with the verify option turned off. Turning verify on will slow things down a bit, but not very

much. The routine aborts on encountering a bad sector, so do not wait for those disks to start going bad before backing up.

*Kwik-Copy* automatically accounts for a second drive. If you have a hardware device nine on one drive, turn them both on and boot the program. If both drives are a device eight, turn one on and boot up. When done, turn on the second drive.

*Kwik-Load!* will automatically sense the presence of the additional drive and perform a soft change of the device number.

Other utilities included are an easy to use sector editor with a rather nice two part hex and ASCII display, a high speed file copy utility, and a BAM directed copy routine. A drive speed checking routine is included as well. The speed test is completely passive as it does not write to the disk surface when in operation.

The file copy routine has a very handy feature which the manual fails to document properly. When the routine prompts for a file name, enter the asterisk (\*) character as a default. The program will automatically display each file name and ask if you wish to copy it.

## CONCLUSION

*Kwik-Load!* is the first of a series of competitively priced (\$19.95) *Kwik-Ware!* software to be released by Datamost. All of these programs will incorporate the same high speed disk routines. It is a package well worth consideration by the budget conscious. □

## 1541 FLASH

Skyles Electric Works  
231 E. South Whisman Road  
Mountain View, CA 94041  
Phone: 415-965-1735  
Price: \$89.95

The Skyles Electric Works 1541 Flash consists of two eight kilobyte ROMs with associated hardware and a disk drive to computer connecting cable. The Flash is actually a replacement for the C-64 Kernel and half of the 1541 DOS. In operation, the Flash provides approximately a three to one speed improvement for all disk operations. A mini DOS wedge and some C-64 program editing support are included as well.

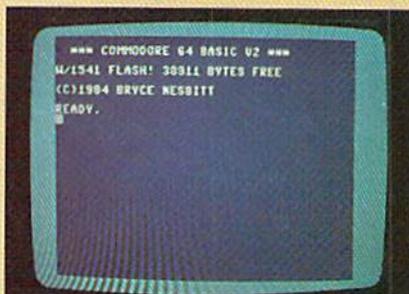
## HARDWARE AND INSTALLATION

The 1541 Flash consists of several components. In addition to the two ROMs mentioned above, there is a

pair of printed circuit adapter boards, a cable assembly, and a combination connector/switchboard/user port extension assembly.

Installation of the Flash is not for everyone. At best it will require disassembly of both the Commodore 64 and the 1541 disk drive. At worst, considerable adaptive surgery of the C-64 circuit board will have to be performed.

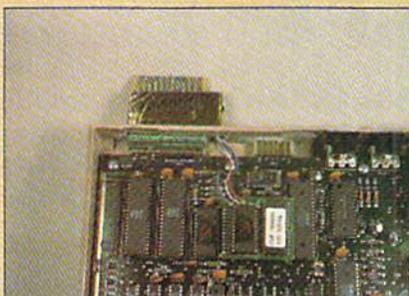
On the C-64 side you will have to remove the Kernal ROM and replace



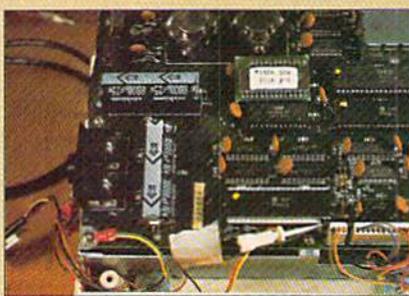
Startup screen with Flash installed.



Flash hardware components (see text).



Flash installed in C-64's user port.



Flash installed in 1541 disk drive.

it with an adapter board which allows for the simultaneous installation of two ROM chips. This will present little difficulty if your C-64 has its Kernal ROM in a socket. Many of the more recent editions of the C-64 have the chips permanently soldered into place. Extraction, in this case, is a tricky procedure involving the simultaneous unsoldering of a chip with 24 leads. This has to be done without damaging either the circuit board or the original Kernal ROM. If your C-64 has a soldered-in Kernal and your dealer is not able to perform the necessary microsurgery (a likely occurrence), Skyles will do the service for \$28.50. Given round trip transportation for the computer, this would probably be a three week minimum proposition. If you happen to be in northern California with your C-64, you may call for an appointment for an on the spot replacement.

A special adapter board replaces the original ROM chip. This consists of the replacement ROM, a second socket to allow reinstallation of the original ROM, and a pair of wires which go to a second adapter board which plugs into the user port.

The second board serves several purposes. It includes a small switch which chooses between the two ROMs now installed in the C-64. It provides a convenient termination point for the extra cable which goes to the 1541 disk drive. It connects up to two of the lines on the CIA port and it extends the user port itself for use by other accessories.

As a result, the user port contacts are fully exposed to possible electrical contact with other objects. An insulated protective cover should have been provided with the kit. Also, unlike the original C-64 contacts, the extension board is not gold plated.

In the 1541, one of the operating system ROMs has to be pried from its socket and replaced. Also, one of the 40 pin VIA chips is yanked, a pin is bent so it points away from the body of the chip, and the chip is reinstalled. A pair of micro chips on the supplied cable assembly are connected to the VIA chip. Routing of the cable completes the installation.

We felt that an adapter board with a permanent connection would have done away with the need for the microchips or any bending of chip leads. For our test installation, we rigged a 40 pin socket to eliminate the lead bending step.

## OPERATION

Bryce Nesbitt is a name with which owners of the Flash will become intimately familiar. The C-64's turn on greeting message is augmented to remind you of Bryce's handiwork whenever you power up. User RAM is unaffected by the Flash. The usual 38911 bytes free appears. The switch on the user port adapter allows you to completely restore the original configuration of the C-64 by electrically switching between the original ROM and the Flash ROM. This will allow use of the computer with an unmodified disk drive or with any user port accessories which may require all of the CIA lines. The hardware change in the 1541 is irreversible. A DOS command has been added to provide a soft reset of the disk drive to permit operation with the unmodified C-64.

In operation, we found the Flash to give an approximately three to one speed improvement for all disk drive operations. This included file operations as well as program loads. The actual speed benefit varied with the particular sequence of operations. For example, *Easy Script* went from 62 to 30 seconds, *Paper Clip* from 78 to 23 seconds, and *Standing Stones* by Electronic Arts from 139 to 80 seconds. Programs which perform complex operations on multiple levels, typically databases, will also benefit from the much faster head movement which accompanies the Flash in the 1541. This high speed head movement remains in effect even when the Flash is deactivated.

## COMPATIBILITY

Compatibility with commercial software is quite good. All the standard Commodore DOS commands are recognized. Most copy protected software worked without any problems, although some programs

would load only if the Flash was turned off. We did come across some samples which would not work at all with the Flash-equipped disk drive. An arrangement for the disk drive similar to the C-64, where the original ROM can be switched back in, would have been beneficial.

## SYSTEM ENHANCEMENTS

The Flash includes a tiny DOS wedge which simplifies issuing disk commands and reading the error channel. The commercial at (@) symbol replaces the OPEN 15,8,15: PRINT#15, sequence when followed by any standard DOS command. The character alone reads the error channel. The disk directory can be displayed to the screen without affecting the program in memory.

The Commodore full screen editor is enhanced with several new features. These include rapid cursor movement to the bottom of the screen, a sixteen character tab, line delete, partial screen clear, and a program LISTing pause.

Several DOS commands have been added as well. These deal with the block read and write operations and are intended for programmers who wish to directly utilize the high speed Flash routines.

## CONCLUSIONS

The 1541 Flash does make working with the 1541 disk drive far more comfortable. The waiting time for long files to LOAD, which used to be an everlasting tedium, has been reduced to a tolerable bore. Shorter LOADs which merely involved an annoying delay respond with a welcome snappiness. The fairly complex installation will deter many users from the purchase of a Flash. We do suggest you check your C-64 for a socketed Kernal ROM before making a final decision. The manual does include a detailed installation section, with reasonably clear photographs, which should prove adequate for anyone with some familiarity with the hardware.

Overall, the Flash was a pleasure to work with. It was not without

some reluctance that we removed it from our system after the thirty day evaluation period. □

## FAST LOAD

Epyx  
1043 Kiel Court  
Sunnyvale, CA 94089  
Phone: 418-745-0700  
Price: \$40.00

The Epyx *Fast Load* utility is packaged as an eight kilobyte ROM in a plug-in cartridge. You just plug it in to the cartridge port of the C-64 and forget about it. The most dramatic improvements in disk drive speed are associated with the LOADING of long program files, the longer the better. For example, *Paper Clip* normally LOADs in one minute and eighteen seconds; with *Fast Load* it only takes fifteen seconds—a more than five to one speed up.

The performance is not nearly as impressive when you get away from straight LOAD operations. For example, *Standing Stones* from Electronic Arts normally boots in two minutes and twenty seconds. With *Fast Load* the procedure is reduced to one minute and forty seconds, a forty percent increase in speed. Another example is Commodore's *Easy Script*, where the original LOAD time of one minute and two seconds showed a mere five percent improvement at fifty nine seconds. Of course, other cartridge-based software was actually slowed up by the amount of time it takes to yank *Fast Load* from the expansion port. Finally, working from within *Easy Script*, we found no discernible difference in the time which it took to read and write text files.

## A DOS WEDGE— BUILT IN

*Fast Load* offers far more than a five to one speed increase in program LOADs. It is actually several utilities in one package plus a number of DOS convenience features thrown in for good measure. When your C-64 is powered up with the *Fast Load* cartridge in place, the only discern-

ible difference is the product name along with the usual sign-on message. Do not let this lull you into a false sense of smug somnambulance. Lurking at your fingertips are a myriad of hitherto unavailable features just awaiting your beck and call.

The first and foremost is an instant DOS wedge. To get a directory listing just type "\$" (that's SHIFT 4 for all you neophytes) and hit RETURN. *Voila*, the directory scrolls by right

before your eyes. Furthermore, any program residing in the computer's memory remains totally oblivious to the turmoil taking place around it. The only drawback was that there seemed to be no way to slow down or put a halt to the process. Once started, the directory seemed most determined to scroll by to its final conclusion where it profoundly proclaims the disk BLOCKS FREE message.

Hitting RUN/STOP and RESTORE just made matters worse. The screen cleared and the drive went off to sulk, apparently on an endless binge of disk spinning. Even depriving it of its orbiting celluloid had no noticeable effect. Despair not; the commercial at (@) is available for inquiring into the health and well-being of the disk drive as it reads the DOS error channel. Exercising its function brings a response of blissful contentment (a display of 00 OK 00 00) shortly followed by a cessation of all rotary motion.

One other peculiarity commanded our attention. The traditional means of querying the disk contents, namely LOAD "\$",8, returned a gaggle of worthless gibberish. However, the slash (/) character, which is now available in addition to the traditional LOAD command, served well in the classical sense. The directory thus LOADED retains its useful meaning. Other handy characters are the percent (%) symbol which replaces the binary LOAD "FILE",8,1 sequence and the left arrow (←) which replaces the BASIC SAVE.

Last but not least, the well-known LOAD "\*\*\*",8,1 sequence, used by many purveyors of commercial software, is now available by the simultaneous depression of the Commodore logo and RUN/STOP keys.

## THE DISK TOOL

In addition to the built-in Wedge, *Fast Load* has a series of utilities referred to as the *Disk Tool*. Upon critical analysis, we would consider these a full-fledged crowbar. The British Pound key is used to access the *Tool* utilities. These are most comprehensive. Included are:

- A single file copy utility which is limited to program files.
- A full disk copy utility which allows for preformatted as well as post-formatted disks. This routine takes about ten minutes.
- A BAM-directed disk copy utility. This will only copy sectors which are marked as allocated on the block availability map.
- A disk sector editor utility. This allows you to read any disk sector,

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modify it, and write it back to any sector on the disk.

- A file utility which allows for locking and unlocking files (prevents inadvertent scratching), and renaming and copying of program files.

Overall, a rather nice collection of utilities to have in one place.

## ML MONITOR

The *Fast Load* cartridge includes a machine language monitor. This program provides a full range of machine code disassembly and memory display modes, access to the disk directory and command channel, and both relocating and non-relocating binary LOADs. A full array of logical and arithmetic operators are available for easy calculation of pertinent parameters. Hexadecimal, decimal, binary, and ASCII conversion are built in. About the only thing lacking is the customary single-line mini assembler.

## A COUPLE OF QUIRKS

We noticed some additional oddi-

ties worth passing on to the potential user. Executing a call to the C-64 reset vector (SYS 64738) restores the C-64 to the power-up state as if the *Fast Load* cartridge were not there. Resetting via a hardware reset button brings the *Fast Load* cartridge back online. The *Fast Load* cartridge may also be disabled via a command from the built-in *Disk Tool* utility.

## A GOOD RETURN

The *Fast Load* cartridge offers a wide array of features in a compact package. The operation is surprisingly transparent to all the forms of commercial copy protection we have looked at. For the few exceptions, *Fast Load* may be totally disabled via the built-in soft switch without physically removing the cartridge. Overall, it may not be the fastest disk speedup utility, but it certainly offers a good return for the dollar. □

## CONCLUSIONS

Of the three products we looked at, the Skyles Flash should provide

the greatest overall improvement in disk handling with the 1541 disk drive. This is a direct result of applying the speedup routines to all disk operations under all operating conditions. If you can handle the relatively complex installation, then the Flash will significantly cut down on time spent waiting for the drive.

In terms of greatest convenience and utility, we place our bets on the Epyx *Fast Load*. The cartridge format makes for fast and foolproof installation as well as portability. As with the Flash, it is instantly available on power up. It also has the widest selection of built-in support utilities. Advanced users will be pleased by the instant availability of the powerful ML monitor.

The *Kwik-Load!* package offers a good value. The disk copy and backup utilities win the prize for speed. Given the low cost, you may just not want to pass this one up. □



## EPILOGUE

Not being content to leave well enough alone, we present some last-minute updates on the Skyles Flash and the Epyx *Fast Load* cartridge. This information came to us just before we went to press on this issue.

## THE 1541 FLASH

Skyles has indicated that the latest version of the Flash will include a defeat switch for the disk drive as well as the computer. This allows the Flash to be completely disconnected from the system. The price of the new unit will be \$99. Present users may upgrade for \$15 plus \$3.50 shipping and handling. Work is nearly complete on a two disk version of the Flash which will sell for \$139.95 (\$49.95 for the upgrade). We hope to report on this when it comes available.

## FAST LOAD

A second sample of the Epyx *Fast Load* cartridge appeared unannounced upon our doorstep. Although all external indications appeared identical to our first sample, we gave it a try. Much to our surprise, we found some subtle improvements. This latest revision properly handles the LOAD"\$",8 command we discussed earlier. Epyx is apparently busy swatting bugs as fast as they find out about them. This latest version of *Fast Load* brings the count up to three revisions which we know about. At this rate, the product should be well in hand by the time you read this report.

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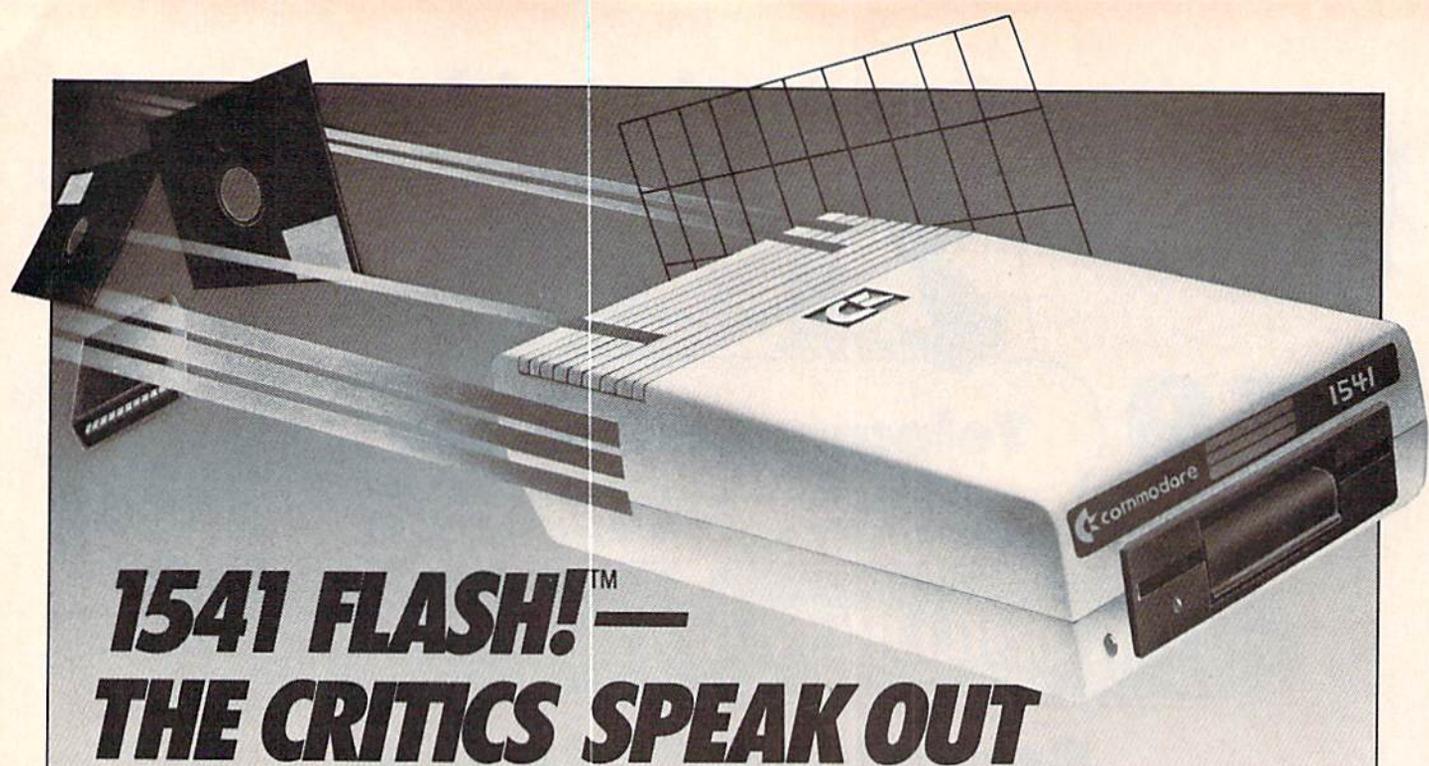
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3



# 1541 FLASH!™ — THE CRITICS SPEAK OUT

This advertisement has been written by independent reviewers of Commodore computer products. We thank them for their frankness and the high marks awarded to the Skyles Electric Works 1541 FLASH!.

## The Reviewers Comment

"Tired of that slow disk drive? The solution is here, and it costs about \$90. Considering what it does, the price is a bargain! It speeds up your 1541 disk drive 200%–300%. And if you write your own software specially for the FLASH!, you can achieve speed increases of 600%!

The 1541 FLASH! is the best! It's better than KWIK LOAD!™ And better than 1541 Express!™

Does it sound too good to be true? Do you suspect there must be some drawback that I haven't mentioned? Well... There is one. You have to open up your keyboard and 1541 drive and do a little work inside them. You need to replace a couple of chips with new ones provided by the FLASH!. And an extra cable will run from your keyboard's user port to your 1541 drive. But the installation is explained in complete detail with pictures. It's a simple operation that will take under 30 minutes. And in return you will have a disk drive that literally races along!

The biggest complaint with the Commodore 64 is the slow disk drive. No more! You will never be willing to go back after having used the 1541 FLASH!. It really spoils you! It's even faster than a parallel drive with an IEEE interface! Don't be afraid of the installation. It's really simple. And if you prefer not to do it yourself, your local user's group probably has people with the ability to install it for you. You'll be glad you did!"

*The Northwest Users Guide, Jan. 1985*

"A tiny wedge is included... you simply SYS65526 to enable it. Those who enjoy using the wedge as part of their normal computer will like this feature.

The utilities added by FLASH! include single, double and simultaneous keystroke implementation of such niceties as delete line, escape quote, cursor to bottom of screen, 16 character tab, and return without line execution.

My children have played some of their favorite games and used utilities or educational software without any problems whatsoever, using the 1541 FLASH! All in all, this device will save the purchaser much of the frustration normally experienced, as well as the time required in normal disk drive-computer interactions. With the above noted exception, I'm very pleased with its operation, and won't hesitate to recommend it to those who would like faster loads and saves or want additional flexibility and power at a moderate price."

*RUN, May 1985*

"Having used 1541 FLASH! for several days, already I can't bear to go back to a slow 1541. It's amazing how quickly you can get spoiled by a luxury like this. More than a few editors here have cast covetous eyes on the upgraded 64/1541. And the price is reasonable for such a dramatic enhancement. After reading the installation description above, you can decide if you're up to opening your equipment, yanking out chips, and enjoying a 300% speedup."

*Compute!'s Gazette, Jan. 1985*

## Commercial Details

1541 FLASH! .....	\$ 89.95*
1541 FLASH! with Disk Switchboard .....	99.00*
1541 FLASH! for Two Drives .....	139.95*
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## Skyles Electric Works

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