FLEX 2.0 for the LFD-400

Although the LFD-400 disk controller was designed for use with 10 sector hard-sectored mini-diskettes, it is equally capable of reading soft-sectored diskettes such as are used with the SWTP and Smoke Signal mini-disk systems. Since the LFD-400 is essentially a software controlled system, all that is required is an appropriately designed program.

Soft-sectored mini-diskettes are usually formatted for either 128- or 256-byte sectors. Either format can be read by the LFD-400, however, the more efficient 10 sector, 256 byte/sector soft-sector format is more compatible with the LFD-400.

TSC's FLEX 2.0 USES JUST SUCH A FORMAT AND IS EASILY ADAPTED TO THE LFD-400!

Percom has developed a FLEX Translator (FLEXTRAN) which permits any FLEX 2.0 compatible soft-sectored mini-diskette to be read by the LFD-400 and copied track-for-track to a Percom hard-sectored diskette. The Translator diskette also contains a program which modifies the SWTP version of FLEX 2.0 to function properly with the LFD-400 as well as several utilities which permit MINIDOS files to be converted to FLEX files and vice versa.

TSC has several versions of FLEX. The Percom FLEXTRAN diskette is designed for the SWTP version of FLEX 2.0. The older miniFLEX 1.0 and Smoke Signal DOS use a 128 byte/sector format which can be read by the LFD-400 but is not compatible with FLEX 2.0.

A program which converts FLEX 1.0 and Smoke Signal files to the FLEX 2.0 format should not be particulary complicated however we will leave the design to some enterprizing user with a need greater than ours. One approach would be to pair the 128 byte sectors from the soft sectored diskette into each 256 byte sector on the Percom disk then write a utility to sort the sectors.

The FLEXTRAN diskette (which includes source code files) complete with instructions is available from Percom for $24.95. You have to get FLEX 2.0 from TSC.

6809 ADAPTER FOR $69.95

This project had a rather interesting start. We got a "non-working" 6809 chip from Motorola in February for photographic purposes. We all took it for granted the chip was indeed non-functional. All that is except Byron Seastrunk. If you have called Percom about a problem or technical question, chances are you talked to Byron. Byron is an avid and talented computer experimenter and wanted a 6809 for his personal use. However, all of the "working" 6809 chips we had were tied up in the development of our 6809 Single Board Computer. One day during a "bull session" we were kidding Byron about some of his personal projects when the subject of the 6809 came up. Byron was telling us all the things he could do if he had a 6809. So we gave him the "non-functional" 6809.

About an hour later we heard a shout from Byron, "Hey, come look at this, this chip works!" Byron had plugged the "non-functional" 6809 into our development system.

The following Monday morning, Byron had something to show us. He had mounted the 6809, a crystal, and a couple of TTL chips on a piece of perf board which was plugged into the 6800 socket on the Southwest Technical MP-A2 processor card. The SWTP computer was running as a 6809!

Obviously, we are very excited about such a simple low cost way to experiment with the 6809. The 6809 adapter PCB is now ready as is the ROM monitor (PSYMON).

The 6809 Rom operating system costs $69.95, which may seem a little high. However, this is a consequence of the current cost of 2716 EPROM's. If you have a means to program your own 2716 ROM's, you can get both the source and object of the operating system on User's Group Diskette #3 ($10.00).

Since 6800 code will not execute on a 6809 we have recoded the MINIDOS and MINIDOS-PLUS ROMs for the 6809 and have added a few features. We want to live with them a little longer before release but they should be available some time in October. The price of each ROM will be $34.95. The ROM source files will be released on a User's Group Diskette (probably #5).

When you order the 6809 Disk ROM's be sure to tell us whether you are using the disk with the 6809 adapter or with the PERCOM SBC/9 described elsewhere in this newsletter.

THE PERCOM 6809 SINGLE BOARD COMPUTER

Although the 6809 adapter is the least expensive way to start playing with the 6809, it does not allow you to take full advantage of power of the 6809. You are also confined by the memory map restrictions of the SWTP computer.

The SBC/9 on the other hand allows you to take full advantage of the 6809 and it reorganizes the memory map to permit up to 60K of contiguous RAM. Since it contains ROM, RAM, parallel I/O and a 110 baud to 19.2 kbaud serial RS-232 interface, the SBC/9 can be used as a single card control computer or as an upgrade CPU for your existing SS-50 bus computer.

The SBC/9 is completely compatible with the existing SS-50 bus, requiring no modification of the motherboard, memory or I/O slots.

The SBC/9 includes a well buffered multi-address, 8-bit bidirectional parallel I/O channel to interface directly to off-card I/O devices such as an encoded keyboard. It has extended address line capability which does not disable the on-board baud rate clock nor require additional hardware in I/O slots. Furthermore all on-board I/O is fully decoded so that off-card devices may use adjoining memory space.

We call the Percom 6809 ROM Operating System PSYMON (Percom SYstem MONitor).

PSYMON provides the usual ROM monitor functions in 1K; however, it is extendible and has the most powerful and most flexible structure of any ROM operating system we know of. The I/O is easily directed to any peripheral device you may connect to your computer including the disk. Furthermore, the command set is easily modified or extended.

We are so confident of the power of PSYMON that we are offering it royalty-free to other 6809 equipment manufacturers with the hope that it will become a standard 6809 ROM operating system. The 6809 source file of PSYMON is included on User's Group Diskette #3. We are not yet ready to release our 6809 assembler; however, you can get a printed copy of the assembled listing by ordering the PSYMON Instruction Manual ($9.95).

PSYMON was designed to be as easy as possible to interface to regardless of the hardware environment. It may be highly customized and extended due to its unique "look-ahead" and device independent I/O structure.

A pointer in PSYMON's RAM contains the address of an alternate command table. Since the alternate table, if present, is always searched first, any or all of PSYMON's commands may be redefined or extended by the user.

Command Set Summary

M	(ADDRESS)	– MEMORY EXAMINE/CHANGE
G	(ADDRESS)	– GO TO ADDRESS
R	(REGISTER)	– REGISTER EXAMINE/CHANGE
L		– LOAD PROGRAM (FROM TAPE)
S	(START) (END)	– SAVE PROGRAM (TO TAPE)
B	(ADDRESS)	– SET/LIST BREAKPOINTS (10 MAX)
U	(ADDRESS)	– UNSET BREAKPOINTS
Z		– JUMP TO ADDRESS C000 (HEX)

All I/O in PSYMON uses a data structure known as a DEVICE CONTROL BLOCK (DCB). The DCB allows PSYMON to be relatively I/O device independent by leaving as much of the detail of the actual I/O as possible to the specific I/O device driver. The DCB is simply a table of parameters located somewhere in memory which among other things contains the address of the device driver routine. The Input/Output characteristics of the system may be subtly or radically altered by changing the contents of the DCB or by directing I/O through a different DCB.

For example, data normally transmitted to the console terminal may be easily redirected to the printer or a disk. Likewise, a program may be loaded from a modem or disk instead of cassette tape by modifying the tape input DCB or by redirecting the input through another DCB.

The Percom Operating System currently exist in several versions. The versions are identical except for I/O and RAM configurations.

1. For the Percom adapter modified MP-A2 systems (I/O at $8000, RAM at $A000)
2. For the Percom SBC/9 system (I/O at $F7F0, RAM at $F000)
3. For the Percom Adapter modified CMS EXORcisor bus system (I/O at $E3C0, RAM at $E400)
4. For the Percom 6809 EXORcisor bus system (I/O at $E7F0, RAM at $E000)
5. For the SWTP MP-09

The Percom LFD-400 runs with TVBUG! This was another interesting project we thought you might like to know about. One day last spring, we got a call from the Motorola applications group in Austin, Texas. They were looking for a way to quickly load a demonstration program into their MicroChroma 68 Color Graphics evaluation kit and they wanted to know if and how the LFD-400 could be connected to the Color Graphics kit. If you are not familiar with Motorola's Micro Chroma Kit, read the "TVBUG" article by Tim Ahrens in the June 1979 issue of Kilobaud.

Now, the Micro Chroma Kit is designed to plug into the Motorola EXORcisor bus; however, the LFD-400 was designed for the SS-50 bus so we had to come up with a way to get the two together. Several months earlier one of our customers (Joe Sasser) had connected an LFD-400 to a Motorola D1 6800 evaluation kit. The D1 kit like the Micro Chroma kit was designed to plug into the EXORcisor bus. Joe had mounted the LFD-400 controller on an EXORcisor bus compatible prototype card and was gracious enough to send us the details of his adaption.

We duplicated Joe's adaptation, prepared versions of the MINIDOS and MINIDOS-PLUS ROM which were compatible with TVBUG, and hopped a flight to Austin. The combination worked perfectly! Those of you who visited the Motorola booth at the West Coast Computer Fair may have noticed the Percom Disk connected to TVBUG.

If you have TVBUG and would like to duplicate the experiment, get a copy of Percom Technical Memo TM-LFD-400-19, and modify the MINIDOS an MINIDOS-PLUS ROMs wherever a routine is MIKBUG is called to the corresponding address in TVBUG. You can also get the ROMs from Percom for $34.95 each.

User's Group Diskette #4 is devoted to TVBUG Color Graphics. It has the program Motorola demoed at the West Coast Computer Fair (WCCF), a graphics generator program (SKETCH), and several "pictures". This diskette is still largely unused so we are looking for user contributions.

EXORcisor Bus LFD-400

As a result of the TVBUG project we discovered there was a big interest in a low cost disk system for the EXORcisor bus. One look at Motorola's price list will tell you why!

The EXORcisor bus is different than the S-100 and SS-50 buses found in 'hobby' computers. However, it is the standard bus for most 6800 based industrial computing equipment. The EXORcisor bus has not been widely accepted by home computerists until recently because the modules cost more than corresponding 'hobby bus' modules.

We are pleased to announce an EXORcisor bus compatible version of the LFD-400. It is currently working with TVBUG, several of the Micro Modules, the Creative Micro Systems 9600, and EXBUG.

The MINIDOS and MINIDOS-PLUS ROMs are somewhat different for each of these systems so be sure to tell us what you are using when you order.

We added 1K of scratch RAM to the LFD-400EX and relocated the Disk Controller Address. Otherwise, it is the same circuit as the SS-50 bus LFD-400.

Virtually all of the software which was developed for the LFD-400 is available for the LFD-400EX. This includes Super BASIC, the INDEX DOS, the Touchup Editor and Text Processor, and the Percom 6800 Assembler. Prices start at $650 for a single drive system. Availability is 4 weeks.

MORE DISK SYSTEMS

Percom now has so many different disk systems our telephone operators have trouble keeping track of them all! We are really not trying to confuse anyone. It's just that different users have different requirements and we are trying to satisfy as many requirements as we can.

LFD-400(EX):

This is our 5 1/4" Single Density Hard-Sectored Mini Disk System which has been proven in over two years of use. Last year, we switched from 35 track Shugart Drives to 40 track Pertec and Siemens (Wangco) drives. This summer we expanded the line with an EXORcisor bus compatible controller.

The LFD-400 is designed to accommodate dual-headed drives which should be available (with supporting software) in early 1980.

LFD-800(EX):

This is essentially the same as the LFD-400; however, it uses Micropolis 77 track mini-disk drives. These drives permit 197K bytes to be stored on one side of a single density mini diskette! That's almost as much storage capacity as an 8" floppy. Prices start at $895.95. Like the LFD-400, the LFD-800 is also available for the EXORcisor bus. Since there is a long waiting list for the LFD-800, you should ask about the delivery schedule when you order.

LFD-1000:

Did you know that you could store 400K bytes of data on one side of a 5 1/4" Mini Diskette? That's more data than you can store on an 8" disk at single density! The LFD-1000 does it with Micropolis 77 track mini disk drives using Group Code Recording (GCR). This advanced magnetic storage technique stores data more compactly than Double Density.

The LFD-1000 is a two drive system expandable to 4 drives! If the LFD-1000 can't provide you with the storage you need it's time you looked at a hard disk system. (Hint, Hint)

IN DEVELOPMENT

We have several other Disk Systems in the works for mid 1980 and will tell you more about them when they are ready for release.

WINDEX AND LIFE
for the ELECTRIC WINDOW

The ELECTRIC WINDOW is Percom's new programmable 80x24 memory resident video display. With dual character generators and dual intensity display, the ELECTRIC WINDOW is ideal for word processing environments or it can eliminate the need for a high cost data terminal. We have a version of our 6809 Operating System (PSYMON) which uses the ELECTRIC WINDOW and an ASCII Keyboard as the system console. The ELECTRIC WINDOW instruction manual contains the listing for a Software Driver (WINDEX) and for the game of Life.

The source and object for both WINDEX and LIFE are on User's Group Diskette #3. The 6800 version of LIFE evolves at about one generation every 6 seconds while the 6809 version runs about 7-10 generations/sec!

We are working on a 6809 word processor for use with the ELECTRIC WINDOW which should be available early 1980.

PINK PEARL FIGHTS INTERMITTENTS

Another suggestion for battling intermittent SS-50 bus connections. Periodically "ERASE" the crud from the mother board pins with a "PINK PEARL" eraser. That's right, the kind you get as the variety store. This suggestion is PERCOM TESTED, it works! Run the eraser along the sides of the pins contacted by the PC card connectors. The black residue left on the eraser is the crud which causes your problems.

LFD-400 USER'S GROUP

To permit all LFD-400 users an information exchange forum, we have formed an LFD-400 USER'S GROUP. This newletter will be used to inform users of contributed programs and suggestions. However software will be distributed on diskette for a nominal charge to cover cost of reproduction and distribution.

Obviously such a group needs a few guidelines to speed transfer of information and keep the cost of distribution to a minimum.

1. Since software contributions will be distributed on diskette, all contributions must be submitted on LFD-400 compatible diskette. If at all possible, supply the source and object files in a format compatible with PERCOM disk BASIC or the PERCOM 6800 Symbolic Assembler (ASMBLR) and Hex loader (HEXLDR). If the software requires special instructions include them as remarks in the source file or as a separate text file.
2. If your contribution is accepted for distribution to the USER'S GROUP, your diskette will be returned with a copy of a USER'S GROUP diskette of your choice at no charge. We reserve the right to edit or reject a contribution if it is in the best interests of the USER'S GROUP.
3. We will list names and addresses of contributors in the newsletter together with a summary of the contribution unless specifically instructed otherwise.
4. All contributions become the property of the LFD-400 USER'S GROUP and are available to all members for a nominal reproduction and distribution charge of $10.00 per diskette (plus shipping). We will put as many contributions on a diskette as we can. Unless specifically stated otherwise, all contributions to the LFD-400 USER'S GROUP may be reprinted or copied for any non-commercial purpose provided credit for the material is given to the LFD-400 USER'S GROUP.
5. Please do not send us anything owned or copyrighted by others without their written permission. Contributions will be distributed 'as-is' without guarantee or support. PERCOM Data Co. Inc. is not responsible for damages either direct or consequential which may occur as a result of the information submitted or distributed by the LFD-400 USER'S GROUP.
6. PERCOM is not responsible for loss or damage of material or diskettes sent to us. Make a duplicate of anything you wish to keep and put your name and address on any material you want returned. Pack diskettes in a crushproof carton or sandwich between two pieces of corrugated carton stock. Cross the corrugations at right angles for maximum protection of the diskette. Mark the parcel:
    MAGNETIC SENSITIVE MATERIAL
    DO NOT BEND
    DO NOT X-RAY
    Be sure to insure the parcel for the cost of the diskette.

LFD-400 USER'S GROUP DISKETTE #1

Revised 6/4/79. Now contains all MINIDOS-PLUSX (MPX) utilities. This is the standard diskette now supplied with all LFD-400 systems.

MINDOS: Complete source of MINIDOS V1.4

MNDOS+: Complete source and object of MINIDOS-PLUSX (MPX)

CREATE: An MPX utility which creates a disk file and allocates disk space to the file. Source and object.

COPY: An MPX utility which copies disk files. Also permits naming of unnamed (MINIDOS) files. Source and object.

BACKUP: An MPX utility which duplicates diskettes. Partial or total duplication is permitted. Source and object.

PACK: An MPX utility which recovers unused disk space. Source and object.

PDIR: An MPX utility which lists the selected disk directory on the system printer. Source and object.

MEMTST: A memory test utility designed to locate disk sensitive memory problems.

HEXLDR: A utility which loads the S1-S9 object and overlay files created by the assembler.

DSKMAP: An extremely useful utility. May be used to locate bad sectors, lost files, study file structure, understand disk operation.

PRTOUT: A utility to print text files on the system printer Includes pagination.

BASPAT: An object code overlay which modifies SWTP cassette Basic for disk operation.

EDPAT: A simple object code overlay which modifies the TSC Text Editor for disk operation.

ASMPAT: An object code overlay which modifies the TSC Assembler for disk operation.

CORES: An object code overlay which modifies the SWTP co-resident Editor/Assembler for disk operation.

SRCGEN: An object code overlay which modifies the Smoke Signal source generator for disk operation.

LFD-400 USER'S GROUP DISKETTE #2

REVISED 6/4/79. To make room for the MPX utilities on Diskette #1 we had to move Al Tejera's BASIC FILE MANAGER to Diskette #2.

TAPDSK: A utility for transferring cassette text prepared with the SWTP Co-Resident Editor/Assembler to a disk file.

DSKTAP: A utility for transferring disk object code files in the Motorola S1-S9 format to cassette.

ABASIC: Submitted by J. Lange, overlay patch to adapt MicroWare A/BASIC (cassette version) to run on the LFD-400.

DSKCPY: Submitted by D. Beck, A single drive disk copy utility. Useful for backing up or duplicating diskettes if you have only one disk drive. Requires 16k.

OTHELLO: Submitted by B. Seastrunk, A game for the fun and games enthusiasts.

BASFM: Submitted by A. Tejera, A disk operating system written in Percom 'Bandaid' (modified SWTP 8K BASIC). Permits Basic programs to be accessed and manipulated by 10 character file names. Commands include INITIALIZE, LIST, RUN, LOAD, RENAME, UPDATE, DELETE, HELP.

Maintainance Memos (we used to call them Patch Memos) are the vehicle we use to inform LFD-400 users of software 'fixes' and improvements. Patch Memos #1 thru #5 were printed in issue #2 of the PERCOM PERIPHERAL. Remember that all changes are cummulative unless otherwise stated. This means that a patch may depend on the implementation of a previous patch to function correctly.

MAINTENANCE MEMO MM-LFD-400-06 APRIL 25, 1979

PRODUCT: PERCOM SYMBOLIC ASSEMBLER VERSION 2.01

PROBLEM SOLVED:
1. Application of Patch Memo PM-LFD-400-03 caused the version number to be corrupted.

PROBLEM IDENTIFIED:
2. Referencing labels which reside in the BASE PAGE prior to defining those labels will cause invalid addresses and relative offsets to be generated. The assembler does not recognize this and will not flag it as an error. As an example, the following program will cause the problem.

```
        ORG   $0020
TAG1 LDA A TAG3
     BSR   TAG2
     BRA   TAG1
TAG2 RTS
TAG3 FCB   0
```

This problem cannot be corrected by patching but will be corrected in the next revision of the SYMBOLIC ASSEMBLER. To avoid the problem always define base page references BEFORE using the labels. This is usually not a problem if your programs start at address $0100 or higher, which is the usual procedure.

MAINTENANCE APPLICATION

To apply the changes in this memo it is first necessary to load the Percom SYMBOLIC ASSEMBLER into memory. Whether using MINIDOS or MINIDOS-PLUSX this is done with the 'L' command. When the assembler has been loaded, use your system ROM monitor (MIKBUG, SWTBUG, etc.) to apply the changes. This is normally done with the 'M', or Memory Change function. When all changes have been entered, save the modified assembler using the MINIDOS or MINIDOS-PLUSX 'S' command. Save memory from address $0100 to $13FF with program start at address $0100.

Patch Address	Patch Data
1356	32 2E 30 32 0D 0A

DOCUMENTATION CHANGES:

With the application of this patch the PERCOM SYMBOLIC ASSEMBLER is elevated to VERSION 2.02. With regard to the problem identified in this memo, a programming convention is suggested: always define any variables used in the BASE PAGE (locations $00-$FF) prior to referencing them in a program.

MAINTENANCE MEMO MM-LFD-400-07 APRIL 25, 1979

PRODUCT: PERCOM SUPER BASIC VERSION 1.02

PROBLEM SOLVED:
1. When loading a program from cassette tape using 'TLOAD', SUPER BASIC fails to turn off the tape reader.

MAINTENANCE APPLICATION

To apply the changes in this memo it is necessary to first load PERCOM SUPER BASIC into memory. Whether using MINIDOS or MINIDOS-PLUSX this is done with the 'L' command. When SUPER BASIC has been loaded, use your system ROM monitor (MIKBUG, SWTBUG, etc) to apply the changes. This is normally done with the 'M', or Memory Change function. When all changes have been entered, save the modified BASIC using the MINIDOS or MINIDOS-PLUSX 'S' command. Save memory from address $0100 to $2FFF with program start at address $0100.

Patch Address	Patch Data
0418	33
111D	05 B5

DOCUMENTATION CHANGES

With the application of these changes SUPER BASIC will be elevated to version 1.03. Please reference this version in any correspondence relative to SUPER BASIC.

MAINTENANCE MEMO MM-LFD-400-08 MAY 25, 1979

PRODUCT: PERCOM SUPER BASIC VERSION 1.03

PROBLEM SOLVED:
1. SUPER BASIC returns an incorrect value in 'SCTR' when a data record ends exactly on a disk sector boundary.

MAINTENANCE APPLICATION:

To apply the changes in this memo it is necessary to first load PERCOM SUPER BASIC into memory. Whether using MINIDOS or MINIDOS-PLUSX this is done with the 'L' command. When SUPER BASIC has been loaded, use your system ROM monitor (MIKBUG, SWTBUG, etc) to apply the changes. This is normally done with the 'M', or Memory Change function. When all changes have been entered, save the modified BASIC using the MINIDOS or MINIDOS-PLUSX 'S' command. Save memory from address $0100 to $2FFF with program start at address $0100.

Patch Address	Patch Data
0418	34
0761	BD 2D 4B 01 01
2D4B	96 F6 27 05 96 FC 8B 01
2D53	19 39

DOCUMENTATION CHANGES

With the application of these changes SUPER BASIC will be elevated to version 1.04. Please reference this version in any correspondence relative to SUPER BASIC.

PRODUCT: PERCOM SUPER BASIC VERSION 1.04

PROBLEMS SOLVED:
1. Error 'IO' is sometimes reported incorrectly
   (usually with serial ports)

MAINTENANCE APPLICATION

To apply the changes in this memo it is necessary
to first load PERCOM SUPER BASIC into memory.
Whether using MINIDOS or MINIDOS-PLUSX this is
done with the 'L' command. When SUPER BASIC has
been loaded, use your system ROM monitor (MIKBUG,
SWTBUG, etc) to apply the changes. This is
normally done with the 'M', or Memory Change
function. When all changes have been entered, save
the modified BASIC using the MINIDOS or
MINIDOS-PLUSX 'S' command. Save memory from
address $0100 to $2FFF with program start at
address $0100.

Patch Address	Patch Data
0418	35
1C50	00

DOCUMENTATION CHANGES:

With the application of this patch SUPER BASIC
will be elevated to version 1.05. Please
reference this version in any correspondence
relative to SUPER BASIC.

PRODUCT: PERCOM SUPER BASIC VERSION 1.05

PROBLEMS SOLVED:
Following application of PM-LFD-400-09 Error 'IO'
is reported whenever I/O is thru an MP-C
Interface.

MAINTENANCE APPLICATION:

To apply the changes in this memo it is necessary
to first load PERCOM SUPER BASIC into memory.
Whether using MINIDOS or MINIDOS-PLUSX this is
done with the 'L' command. When SUPER BASIC has
been loaded, use your system ROM monitor (MIKBUG,
SWTBUG, etc) to apply the changes. This is
normally done with the 'M', or Memory Change
function. When all changes have been entered, save
the modified BASIC using the MINIDOS or
MINIDOS-PLUSX 'S' command. Save memory from
address $0100 to $2FFF with program start at
address $0100.

Patch Address	Patch Data
0418	36
1C4F	BD 2D 55 01
2D55	A6 00 4C 26 03 A6 01 4C
2D5D	39

DOCUMENTATION CHANGES:

With the application of these changes SUPER BASIC
will be elevated to version 1.06. Please
reference this version in any correspondence
relative to SUPER BASIC.

PRODUCT: PERCOM SUPER BASIC VERSION 1.06

PROBLEMS SOLVED:
1. Use of 'TAB(N)' in a PRINT statement following
   a DISK I/O results in printing at the wrong
   column.

MAINTENANCE APPLICATION

To apply the changes in this memo it is necessary
to first load PERCOM SUPER BASIC into memory.
Whether using MINIDOS or MINIDOS-PLUSX this is
done with the 'L' command. When SUPER BASIC has
been loaded, use your system ROM monitor (MIKBUG,
SWTBUG, etc) to apply the changes. This is
normally done with the 'M', or Memory Change
function. When all changes have been entered, save
the modified BASIC using the MINIDOS or
MINIDOS-PLUSX 'S' command. Save memory from
address $0100 to $2FFF with program start at
address $0100.

Patch Address	Patch Data
0418	37
1BFB	01 01 01 20 0F
1C08	01
1C11	8C 00 08 27 04 96 3D A7
1C19	E2 BD 2D 5E 01
2D5E	D7 E1 4F C1 08 27 04 DE
2D66	E0 A6 E2 97 3D 96 77 39

DOCUMENTATION CHANGES:

With the application of these changes SUPER BASIC
will be elevated to version 1.07. Please
reference this version in any correspondence
relative to SUPER BASIC.

PRODUCT: PERCOM SUPER BASIC VERSION 1.07

PROBLEM SOLVED:
1. If no End-of-File mark is read from the disk
   prior to encountering the physical end (Forward
   Link = 0) Error 'OF' is reported.

MAINTENANCE APPLICATION:

To apply the changes in this memo it is necessary
to first load PERCOM SUPER BASIC into memory.
Whether using MINIDOS or MINIDOS-PLUSX this is
done with the 'L' command. When SUPER BASIC has
been loaded, use your system ROM monitor (MIKBUG,
SWTBUG, etc) to apply the changes. This is
normally done with the 'M', or Memory Change
function. When all changes have been entered, save
the modified BASIC using the MINIDOS or
MINIDOS-PLUSX 'S' command. Save memory from
address $0100 to $2FFF with program start at
address $0100.

Patch Address	Patch Data
0418	38
07A6	7E 2D 6E 01
2D6E	DE F2 27 03 7E 07 AA BD
2D76	07 FA 7E 07 ED

DOCUMENTATION CHANGES:

With the application of these changes SUPER BASIC
will be elevated to version 1.08. Please
reference this version in any correspondence
relative to SUPER BASIC.

PRODUCT: PERCOM SUPER BASIC VERSION 1.08

PROBLEMS SOLVED:
1. If Error 'O$' occurs, repeated attempts at STRING references may cause SUPER BASIC's stack to be destroyed, causing BASIC to die.
2. Illegal use of 'STRING=' after variables have been defined is now reported as error 'I$' to prevent further execution errors.

MAINTENANCE APPLICATION:

To apply the changes in this memo it is necessary to first load PERCOM SUPER BASIC into memory. Whether using MINIDOS or MINIDOS-PLUSX this is done with the 'L' command. When SUPER BASIC has been loaded, use your system ROM monitor (MIKBUG, SWTBUG, etc) to apply the changes. This is normally done with the 'M', or Memory Change function. When all changes have been entered, save the modified BASIC using the MINIDOS or MINIDOS-PLUSX 'S' command. Save memory from address $0100 to $2FFF with program start at address $0100.

Patch Address	Patch Data
0418	39
0393	2D 82
10C9	BD 2D 7B
2D7B	01 0E 4F 7F 00 6F 39 DE
2D83	28 9C 43 26 03 7E 11 BC
2D8B	DE 32 7E 0B 50

DOCUMENTATION CHANGES:

With the application of these changes SUPER BASIC will be elevated to version 1.09. Please reference this version in any correspondence relative to SUPER BASIC.

The meaning of Error 'I$' is now enhanced to include illegal use of 'STRING=' after variables have been defined/referenced.

PRODUCT: INDEX DISK OPERATING SYSTEM

SUBJECT:
1. Modifying INDEX for ESCape key control of the display pause function.

Several INDEX users have expressed a desire to use the console ESCape key as a display "pause" toggle control instead of the Control-S and Control-Q keys which normally "pause" and "unpause" the console display. The following patch to the INDEX DOS implements this change.

PROCEDURE:
1. Use MINIDOS or MINIDOS-PLUSX to load (do not execute) the INDEX DOS.
2. If you are using MINIDOS-PLUSX return to SWTBUG (X).
3. Change the following locations in INDEX:

Address	Value	Remarks
A255	1B	ESCAPE KEY
B40A	10	TST QSTOGL
B40B	7D B631	
B40E	27 04	BEQ
B410	BD 52E7	JSR QSOCLR
B413	3B	RTI

The complete listing of the INDEX CONSOLE CONTROL MODULE is contained in Appendix C of the INDEX ADVANCE PROGRAMMERS GUIDE.
4. Save the INDEX DOS back to disk using the MINIDOS SAVE procedure. DO NOT USE the MINIDOS-PLUSX save procedure. Since the MINIDOS-PLUSX directory is stored in memory occupied by the INDEX DOS it will destroy a part of INDEX.

To save the INDEX DOS you must escape from MINIDOS-PLUSX to MINIDOS using the MINIDOS-PLUSX 'M' command (followed by RETURN).

```
>M (CR)
S A100 B7FF A100 DSSS
```

You must provide the DSSS value where you wish the INDEX DOS to be saved (usually 1010)

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*** IN THIS ISSUE ***

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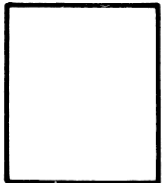
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Address Correction Requested