MEGASOFT

QUICKDOS

For the OPUS Discovery

Loading Manual

```
        ***            *          *        ****     ***     ****
       *   *                      *     *   *    *   *   *   *
       *   *   *    *   *   ****   *   *    *    *   *   *   *
       *   *   *    *   *   *      ***      *    *   *   *    ***
       * * *   *    *   *   *      *   *    *    *   *   *       *
       *  **   *    *   *   *      *   *    *    *   *   *       *
        ****   ****  *   ****  *    *   ****     ***     ****      2.17
             *
```

       QuickDOS is the new fast LOAD and SAVE DOS for the Opus
    Discovery drive system with a spectrum 48, plus, 128 or plus 2.

    The QuickDOS package contains a disc, with programs and this
manual, and the new ROM. Its versionnumber is 2.31.
Programs that work with both 2.1 and 2.2(2) ROM will run with
2.31. All your discs remain compatible.

INSTALLING THE ROM

    You will have to open your Opus. Disconnect it from the mains,
turn it over and remove the screws at the sides. Turn it over
again and carefully slide the cabinet backwards. Now look at the
PCB, the printerconnector pointing towards you. The large chip
on the left, marked 'IC1' on the PCB, is the Opus ROM.
    Carefully remove the old ROM using a screwdriver and insert
the new ROM. Check for non fitted pins, then build up your Opus.

POWERING UP

    After powering up your system again, you will notice an icon
next to the Sinclair (or Amstrad) message. This is the signal
that your Opus now runs DOS 2.31. This icon is only displayed at
powering up. LOAD-, SAVE- and MERGE commands (in BASIC or MC)
finish in about 15% of the original time. That is about up to 7
times faster! Pity VERIFY proved impossible to speed up.
    Your discs will not load and save fast just now. They need an
special format. Two methods:

FORMATTING

    The first format is one you already know by heart: a disc is
formatted using the FORMAT command. All previously stored data
is destroyed. The disc will be formatted to the Quick format
when you format it via drive 1 or 2:
        FORMAT 1;"name"   or   FORMAT 2;"name".

    Default format is 40 tracks, 18 sectors per track, 256 bytes
per sector, skew 13 and interleave 1. A disc with interleave/
skew 1/13 we call a 'QuickDisc'. It is compatible with any Opus
software.
    To provide an easy way to format a disc to standard (and slow)

format (skew/interleave 5/13), I decided drive 3 and 4 should
serve that purpose:
            FORMAT 3;"name"   or   FORMAT 4;"name".

 Default ('standard') format is 40 tracks, 18 sectors per track,
256 bytes per sector, skew 5 and interleave 13.

_____

REFORMATTING
_____

   The second method is formatting a disc without destroying its
data: reformatting. The program 'REFORMAT2' on this disk does
the job. It will reformat a disc of any size into a QuickDisc.
(actually only the order of sectors on a track is altered).
   You are recommended to check all sectors on the disc, as a
'bad sector' will stop the reformat program, leaving the disc
partly reformatted. 'CHECKDISK', on this disc, is a fast sector
checker. Should your disc contain bad sectors, then copy healthy
files to a newly formatted disc. Do NOT use REFORMAT2.

   Programmers: tables #06, #08 and #12 have been expanded; the
startaddresses of these tables in the maintable have shifted.
Any extra software for in the IC 6116's need to be re-installed!
   At address #0FF0 you will find the ASCII text 'QuickDOS' (and
QuickDOS' version number) as a way to recognize a QuickDOS ROM.

_____

WHAT PROGRAMS USE QUICKDOS?
_____

   Any program that reads and write its code and data via BASIC
commands LOAD, SAVE and MERGE work very fast.
   Programs that do not work via BASIC commands, do use the same
MC routines as the mentioned commands most times. These load and
save fast too. Examples are The Art Studio (of which you will
find a new conversion on this disk), DEVPAC 4 and more.

   Tasword 3, 128 and +2 do NOT load or save a textfile faster,
rather slower. Tasword converts the file while loading/saving.
However, Tasword 3 can save/load textfiles via BASIC, thus fast.

   Some programs load and save files by sectors. These programs
will not profit by the QuickDOS routines. An example is CHAIN.

   Random Access Files, which have no filetype, are mostly opened
by the OPEN # command. The QuickDOS routines have no effect on
channels; no speeding up here. For optimal speed, I recommend
you use a disc with a large sectorsize, say 1024 bytes, or a
standard disc, not a QuickDisc.

_____

SWITCHING QuickDOS ON/OFF
_____

   Should QuickDOS respond badly to a program (unlikely!), then
you can switch it off! Loading, saving and merging then use Dave
Corney's routines again.QuickDiscs then load and save very slow.
   A new FORMAT command is used to do the switching. As three
column CAT seems to be very popular with Opus users, I have also
added this in the new ROM, using the same FORMAT command.

   command: FORMAT "q";a

                    a   3ColCat   QuickDOS
                    0   off   off

```
                    1       off         on
                    2       no          off
                    3       on          on
```

    Only use numbers 0 to 3. Other numbers are reserved for future
use. A Spectrum reset via USR 0 (or resetswitch) or an Opus
reset via USR 14070 do not affect the "q" state.

    The "q" state is stored in the 2K RAM of the 6116 at address
10110 (#277E). This address can be found in table #12 using the
RST #30 routine. At 10111 (#277F: "q" state address+1) a '3' is
found. It determines the number of columns when CATting and can
only be altered using the "CODE" channel.
    Should the 6116 found to be not present, then QuickDOS is
always on (cannot be switched off) and the three column CAT off.
    NOTE:Tasword 3, 128 and +2 react badly to the three column CAT
routine. Use one column cat with these programs.

_____

YOURS FAITHFULLY
_____

    The versionnumber of the added QuickDOS routines is 2.17. The
Opus 2.31 ROM is the first published version.
    Sake Buwalda wrote the initial code for a 2.1 ROM. I took over
his code, converted it to 2.2 and then expanded and improved it
considerably. If you should find any error, please let me know.
You can contact me at the address below and via FIDONET mail to
address 2:285/751.0.
    The HCC-Sinclair Gebruikers Groep (The Netherlands) offers
update service when a new ROM is published.

                            Victor Vogelpoel

Write to:
          MegaSoft
          Victor Vogelpoel
          Hengelosestraat 104-21
          7514 AK Enschede
          The Netherlands

_____

APPENDIX QuickDOS INCOMPATIBILITIES
_____

    Most Opus programs use DOS via the tables. These programs will
work excellently with QuickDOS. Other programs are written
explicitly for one Opus ROM. Although the QuickDOS ROM is based
on a 2.2 ROM, some of the tables have been expanded, so ANY 6116
software should be installed again.

    I have heard of a fast CODE loader, called TURBO (or perhaps
FASTLOAD). Neither are compatible with the 2.31 ROM.

_____

ACKNOWLEDGMENTS
_____

Kees Versluis   for testing, debugging, the ideas and deadline.
Albert Hoekman   for testing and his contacts.
Roelof Koning   for his powerful fullscreen editor/assembler.

```
----------------------------------------------------------------
                     PROGRAMS ON THIS DISK
----------------------------------------------------------------


On this disk you will find some PD programs. Most of them are
accompanied with a manual in Tasword 2 format, named "s ......".

s QuickDOS - Manual with the QuickDOS ROM.
             Two utility programs are mentioned in this manual:
             - REFORMAT2 (& ref2.code) and
             - CHECKDISK (& check.code).
TRANS      - A powerful textfile conversion program. Some of its
             files are saved with CHR$ O, thus hidden. Use the
             program TRANSCLONE for copiing.
             Its manual "s trans" will clarify your questions.
s AS>DISK  - Explanation with the new Opus conversion programs
             for Extended (48k) and Advanced (128k) Art Studio:
             EXAS>DISK and ADAS>DISK. Two more files belong to
             them: "driver+" and "AS LOADER". What's new? No
             automatic verify (hardly need, slow with QuickDOS).
s 4drives  - Another text: read about 3 or 4 diskdrives on your
             Opus Discovery. The hardware is illustrated on the
             SCREEN$ "$ 4drivesD", the software can be done with
             the program "odrinst" (who complains of the User
             Interface?).
s extra 2K - This text explains the installation of an extra
             6116, upgrading your Opus to 4K RAM.
TORNADO    - Fullscreen editor/assembler by Roelof Koning. Its
             code is: "tornado ". All sources are supplied:
             "buildso", "tor-edso", "tor-asso" & "tor-inclso".
             There is also "GNS>TOR" (& GNS>TOR mc), to convert
             GENS-sources to TORNADO format.
             The text "s tornado" contains some explanation,
             but it is not a real manual.
run        - Its loads - "$ run.zp",
                       - "Cst>#2",
                       - some s-files, including "s ondisk",
                       - "*st>#2".
             Finaly you are in the text read program "st>#2", a
             fine piece and easy to use. Read "s st>#2".


                              __
```

```
----------------------------------------------------------------
                  4 PHYSICAL DRIVES ON THE OPUS
----------------------------------------------------------------
```

   Did you know the Opus Discovery can access 4 physical drives?
More precise, the 2.2(2) DOS and QuickDOS have been prepared.
This article describes the hardware modification. The software
installation can be done with the program "odrinst" on this
disk. Both hard and software are extremely simple. The 6116 must
be fitted. Ever dreamed about 3.2 MByte disk storage...

   The extra drives need not be connected, similair to the
(standard) Opus having 2 drive capacity and one drive connected.
When three drives are connected, software drive 4 can act as
secundary drive of any of the three physical drives.
   We recommend you give each extra drive its own power supply as
the Opus can barely support two drives. Modern 3.5" drives tend
to consume very little power; 5.25" drives consume a lot.
                              ──

    Disconnect your Opus from the mains and from your Spectrum.
Remove the screws at the sides and gently slide the cabinet
backwards. Remove the top plate; there is no need to disconnect
the wires to the voltage regulator connected to the plate.
However, the underside of the PCB should be within reach.

   Now what components do we need? Please look up IC15 on the PCB
(close to the disk cable connection points). Its type number
should be 7438 or 74LS38. Buy an identical type and a flatcable
and the right drive connectors. The cable must have a (female)
40 pen Shugart connector that fits the one on the Opus PCB.
   The last thing we need is about 50 cm of wire.

   Before you start to solder, you need to know which issue Opus
you own. You can find the issue letter on the PCB (component
side) close to the power switch. Issues D and E are best known.
(We are not sure about modfications on other issues.)
   The E issue differs little from D: power electronics and -more
important here- IC15 has pens 1 and 2 exchanged.

   The SCREEN$ "$ 4drivesD" on this disk shows the result of the
operation on a issue D that you have to perform. The 74(LS)38
you bought (I will name this chip IC18) will be soldered on top
of IC15. Please notice the difference when working on issue E.
                              ──

NOW PERFORM THE FOLLOWING OPERATIONS ON IC18

- Bend pins 1 (or pin 2 with issue E), 3, 5, 6, 9, 10, 12 and 13
  horizontally.
- Cut off pins 8 and 11.
- Put IC18 on top of IC15 (facing the same way).
- Solder each not bend pin to the corresponding pin of IC15.
- Connect pins 1 (or pin 2 with issue E) and 5 to pins 4 and 5
  of IC4 (6821 PIA) respectively using wire.
- Connect pins 9, 10, 12 and 13 to pin 7 (ground).
- Connect pins 3 and 6 to pins 14 and 6 of the Shugart connector
  on the PCB respectively using wire.

   Now press the connectors onto the flatcable at appropriate
distance. Connect one onto the Opus' PCB and assemble your Opus
again. The flatcable can be lead through the printer port exit.
Maybe you'll find another way?
   When connecting 2 or more drives on your Opus Discovery, each
driveselect jumper must be set uniquely. You can find them on
the disks (eg. D0 to D3, DS1 to DS4 or similair).

   Now the hardware is ready. When you should try to use drives 3
or 4, you will notice more drives are active at the same time.
With the program "odrinst" (by Ed Weijgers) you can set up the

software part. This program works completely in line with Opus
DOS 2.2 and up: it is even usefull with only one drive fitted.
   After setting up the software you can SAVE the contents of the
6116 in a familair way: SAVE *1;"name"CODE 8192,2048.
Thus you can reLOAD it: LOAD *1;"name"CODE   when you need it.
                              —

                    NOTES ON "odrinst"

```
                                          L I N E
When running the program, a scheme like   -------------
this appears. The driveselect lines are   |   | A B C D |
represented by the letters A-B-C-D;      N |---|---------|
software drives are given as 1-2-3-4.    U | 1 |         |
                                         M | 2 |         |
                                         B | 3 |         |
                                         E | 4 |         |
                                         R -------------
```

```
                                          L I N E
Assuming one's working through the        -------------
program and set up the initial state.     |   | A B C D |
Then you see this: I suppose, the meaning N |---|---------|
of P(rimary) and S(ecundary) is well     U | 1 | P - - - |
known: physical drive A can be accessed  M | 2 | - P - - |
as primary drive 1 or secundary drive 3. B | 3 | S - - - |
Swopping 1-3 prompts "Insert drive #,    E | 4 | - S - - |
then press a key".                       R -------------
```

With the present program you can change the entire set-up. It is
extremely usefull when working with 3 or 4 physical drives. But
it can also be used with only one drive. Play around and see.
                              —

FOLLOW THESE STEPS ACCURATELY

1. First you must link each driveselect line to a primary
   number. Enter 0 for lines that are not connected to a drive.
2. Each yet unused number should act as a secundary drive;
   now you can adjudge the free numbers to one of the lines
   selected in step 1.
3. When you are confident at least enter 0 (OK). Then you can
   save the 6116 contents.
   When you make a mistake give 1 (REPEAT) and try again.
                              —

Now an example:
You did the hardware configuration as described and want to set
up a 3-drive system. You decide to use them as drives 1-2-3. The
remaining drive 4 should become a secundary drive of drive 1.

- First you must assure that the driveselect jumpers (on the
  drives) are set to DS0, DS1 and DS2.
- Connect all drives to the Opus PCB and avoid to use drive 3
  for this moment.
- LOAD the "odrinst" program from drive 1 or 2.
- Now enter the following numbers in order: 1 - 2 - 3 - 0. The
  primary drives are now set.
- Enter "A" to designate drive 4 as your desired secundary
  drive.

```
- The next scheme should have been build      L I N E
  up for this example:                        -------------
- Being satisfied you enter 0 for OK.         |   | A B C D |
- You can save the contents of the 6116     N |---|---------|
  as a CODE block by:                       U | 1 | P - - - |
      SAVE *1;"...."CODE 8192,2048           M | 2 | - P - - |
  This CODE block must be loaded            B | 3 | - - P - |
  every time when you start working         E | 4 | S - - - |
  or after an incidental USR 14070.         R -------------
```
                              —

If you err there will be internal conflicts: more drives acting
at the same time, error messages, and so on.

When only one drive is fitted (the original state) it can have
up to three secundary drives. A four drive system cannot have a
secundary drive, as all available drive numbers are occupied.

It is also possible to swop drives in this way. This knowledge
can be useful, for most software assumes 1 or 2 drives. For that
purpose you can compose a new set-up and save it for future use.

—

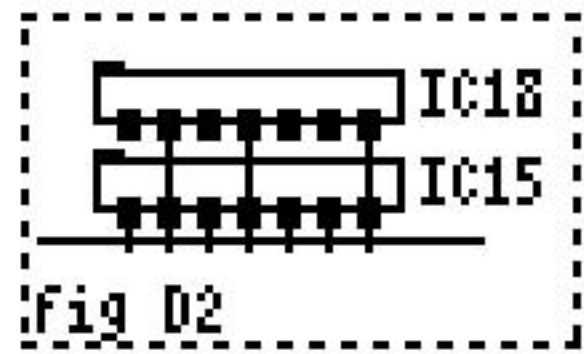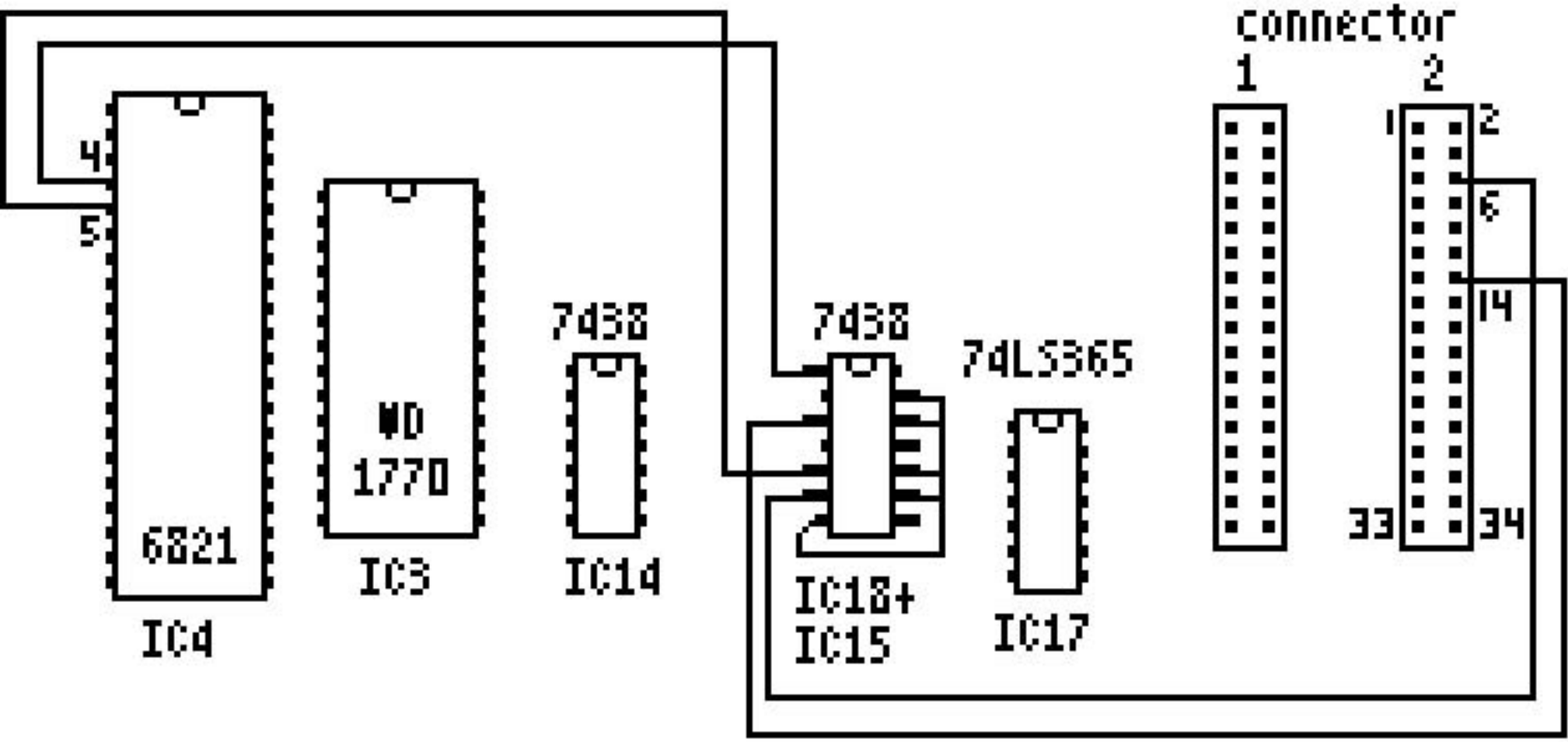Victor Vogelpoel   --   Kees Versluis   --   Ed Weijgers

Opus Discovery Issue D   Fig. D1

drive
connector
1   2

4

5

WD
1770

6821

IC4

IC3

7438

IC14

7438

74LS365

IC18+
IC15

IC17

1   2

6

14

33   34

fig D2

IC18

IC15

VV July 91

```
----------------------------------------------------------------
                     EXTRA 2K ON YOUR OPUS
----------------------------------------------------------------
```
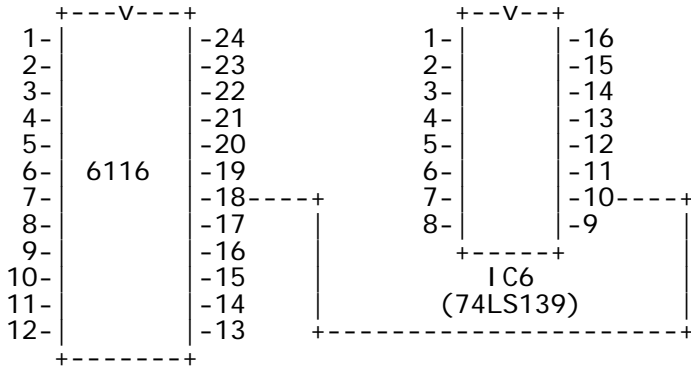
   This article describes how 2K of static RAM can be added
to the Opus, resulting in 4K RAM.
   Studying the Opus electronic scheme, I found an unconnected
pin at the address decoder. Tracing it, I discovered this pin is
(low) active when addresses 14336 - 16383 are placed onto the
addressbus. I connected another 6116 to this pin and came up
with two more K's. This extra RAM can be used in exactly the
same way as the 2K at 8192-10239.
   You need an 6116 (2K static RAM chip) and 7 cm of wire.

   Disconnect your Opus from the mains; remove the screws at the
sides, then slide back the cabinet. Unscrew the top plate too,
but don't disconnect any wires.
   Find IC2, it is the second large chip from the left. It gives
the Opus the 2K of RAM. We are going to solder al pins of the
6116, that you have just bought, onto IC2 exept for pin 18 (see
figure).

```
            +---V---+              +--V--+
        1-|         |-24       1-|       |-16
        2-|         |-23       2-|       |-15
        3-|         |-22       3-|       |-14
        4-|         |-21       4-|       |-13
        5-|         |-20       5-|       |-12
        6-|  6116   |-19       6-|       |-11
        7-|         |-18----+  7-|       |-10----+
        8-|         |-17    |  8-|       |-9     |
        9-|         |-16    |    +-----+         |
       10-|         |-15    |      IC6           |
       11-|         |-14    |   (74LS139)        |
       12-|         |-13    +--------------------+
            +-------+
```

   Pin 18 is connected to pin 10 of IC6 (the middle IC close to
the drive cable connection points) using the wire.
   Build up your Opus. Test the presence of the second 6116 using
the next program:

```
 1 OPEN #4;"CODE ": POINT #4;14336: PRINT #4;"Here is life"
 2 POINT #4;14336: INPUT #4;a$: CLOSE #4: PRINT A$
```

   You will have 4K of RAM in your Opus if the text "Here is
life" is shown. If not, check all connections again.

   I have added the extra 2K to both a issue D and E issue Opus.
I cannot give you any directions with other issues. The presence
of the extra 6116 is NOT noticed by DOS.

                        Victor Vogelpoel