

# MICRODRIVE EXCHANGE ①

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Welcome to MICRODRIVE-EXCHANGE. The purpose of an info exchange is to exchange the useful hints/tips, etc, most of us discover accidentally or by sheer determination. Since I only use my Spectrum whilst I am awake, I expect I will be the major contributor of such info. Your contributions would be most welcome. ALL would be tested prior to printing.

## WHY MICRODRIVE GIVES PROBLEMS.

1/. An additional 58 Bytes are used for the Microdrive System Variables. This means that your User Memory area, which previously started at location 23755, now starts at 23813. Any program using Data held in a REM statement is unlikely to work since all addresses referred to by any RANDOMIZE USR xxxxxx will be out by 58 Bytes. Simply adding on 58 to these commands most likely will NOT solve the problem since if the Data in the REM is machine-code, all the CALL instructions (equivalent to GOSUB in Basic) would also require changing...not an easy task. (This is why my LISTFILE program will not work on the Microdrive. A new version will be available about mid-March).

2/. Whenever a LOAD/SAVE/MERGE/VERIFY Microdrive command used, a buffer of 593 Bytes is created. This effectively temporarily moves up start of User Memory area. When command has finished, the buffer is deleted and any Basic which was in the way, is restored to usual position. This moving of User memory start point will seriously corrupt any machine-code in the way. Basically this means that any machine-code which has a starting address of between 23755 to 24500 will give problems. For example; TRANZ-AM has main machine-code starting at location 24320. Simply transferring this to Microdrive would not work.

Long programs such as Chequered Flag cannot even be RAN in Spectrum with Microdrive if in Microdrive mode. A very powerful instruction to use is RANDOMIZE USR 0 this is better than NEW as it totally resets Spectrum AND it acts as if no microdrive unit is fitted, hence Chequered Flag will Load & RUN. My Spectrum appears to be a bit deaf & I have to issue the direct command RANDOMIZE USR 0 three times to ensure works properly.

Alternatively, to ensure Microdrive mode IS enabled, you must issue a Microdrive command. Obviously the usual Save/Load command would do this, or simply use CLS#. Why? If you don't, it is possible that part way thro' Loading a program the Spectrum jumps into Microdrive mode & corrupts the program. DO NOT DISCONNECT YOUR INTERFACE 1 UNIT as constant plugging & unplugging will ruin the edge connector.

You do NOT have to use a special cassette to transfer the few programs which will go onto Microdrive O.K., but such a cassette can save a lot of time. You WILL need a Header-Reader to obtain the CODE START & CODE LENGTH of machine-code programs. Having obtained these values, the 'relocating' method can be used. If you had a machine-code program with CODE START=24320 & CODE LENGTH=8000, then if you used LOAD "" CODE the Bytes would Load into location 24320 onwards. If instead you used LOAD "" CODE 30000 then the Bytes would Load into location 30000 upwards instead. One important use of this method is for the copying of Bytes which are normally in the System Variable area (23552 to 23733). Suppose code was starting at 23634 & 50 Bytes long. Could Load from tape by LOAD "" CODE 30000 then Save to Microdrive by: SAVE""m";1;"name" CODE 30000,50. Since program has been Loaded into 'wrong' area, we MUST Save it from this 'wrong' area. Note that when SAVEing Bytes you MUST put the Code Start & Code Length in the command. To Load from the Microdrive, use LOAD""m";1;"name" CODE 23634 which pulls the Bytes back to correct position. This method is essential when transferring System Variables. Note that we only put the Code Start after the Load command. It is good practise in the Microdrive commands to ALWAYS put the code start address as occasionally Microdrive refuses to Load CODE without this included. Possibly this 'fault' is unique to my old Version 1 Spectrum with a bad edge connector?

Another very important but regrettably not appreciated action of the Spectrum, is the use of LINE. By this I refer to the Keyword LINE on button 3. If you SAVE a Basic program by SAVE "name" it will Save to tape but will NOT autostart. If instead you had used: SAVE "name" LINE 30 it will autostart at line 30 when ever it is Loaded. Basic programs on tape, which autostart, can be STOPped by using the Keyword MERGE instead of LOAD. I.E. MERGE "". Basic programs on Microdrive, which had been SAVED using LINE cannot be Merged, thus cannot be STOPped by this method. Because of this, I rarely make the first Basic bit of programs I transfer to Microdrive autostart.

Basic programs which aren't excessively long can be STOPped so can

can transfer to Microdrive, by using the Keyword MERGE in MERGE "" instead of LOAD "".

Autostart programs on Microdrive CANNOT be Stopped by MERGE. For this reason I seldom make my Basic autorun on Microdrive.

There is little point in a 'copier' which dumps Basic directly onto Microdrive since the Basics nearly always contain several LOAD "" CODE statements which will require to be changed to the Microdrive LOAD\*"m";1;"NAME" CODE xxxxxx. In most cases you'll have to re-locate the machine-code, so it is good practise to always put the true CODE START value after the Keyword CODE. The addition of the \*"m";1; in all the Load Code instructions will mean you are making the Basic longer. This can be compensated if necessary by taking out daft parts of the Basic, such as the POKE 23659 and/or POKE 23613 commands which are only there to make program 'crash' if stopped. (Most programs will still crash if stopped by these commands being duplicated in the machine-code sections).

CLEAR xxxxxx will appear in most of the Basics at start of games programs. In most cases it will be necessary to delete this command or program will give OUT OF MEMORY. PLEASE CAN WE START PUTTING PROGRAMS ONTO MICRODRIVE? In a moment. Sit down & wait. Some programs transfer to Microdrive easily. LUNAR JETMAN, PSION'S FLIGHT SIMULATOR, THE HOBBIT & PENETRATOR are easy (but some sections will require the re-location technique). JETPAC will NOT transfer....I'm working on it, neither will SCRABBLE or CHEQUERED FLAG as they are far too long, BUT, by issue two I expect to describe how to put SCRABBLE fully onto Microdrive.

Headerless-Files CANNOT be transferred as they are normally pulled off a TAPE by a previous program on the tape which is a machine-code routine. The HORACE tapes are a bit naughty as they consist usually of three sections of Bytes, yet you'll only find two of the LOAD "" CODE in the Basic part. The 2nd machine-code part includes a routine to pull the third part from off the tape...no use to a Microdrive unless you can alter this routine. The ULTIMATE people usually call ALL their Bytes programs 0, 1, 2, etc. Obviously must take care that you only use the name once on each cartridge.

I am working on a method of turning Headerless-Files into 'normal' Bytes programs. This still presents the problem that you have to find-out location the 'file' was to go to by looking at the original 'loader' in earlier section of the program. For the benefit of the Machine-Code people, routine to Load a Headerless-File starts with LD IX,xxxxx and LD DE,xxxxx etc, etc. The value in IX is the START location for the File, and value in DE is the Length of the machine-code in the File.

The programs I have had the most enquiries about have been VU-FILE & VU-CALC. A Header-Reader shows that these two programs are virtually identical in locations they use. I have the VU-FILE and transferred it to Microdrive....The method used is sent in by Mr Goswell Halifax, W. Yorkshire.

At first glance, and using a Header Reader to get necessary info, VU-FILE would appear to present no problems, but if made to Load from Microdrive in original order, it most definitely will NOT work. Surprisingly, the answer is to arrange for the machine-code section to be Loaded-in first, then load-in the Basic. Since it is a 'business' program, the use of a SCREEN\$ is ridiculous and time wasting, so the SCREEN\$ part is omitted. In order to load in the VU-FILE in desired order, a small Basic program has to be made up & for brevity we'll call the sections VUC,VUB, etc. You call them what you like, but do use basically same name for each part so that a CAT 1 would list them together. Enter this program:

```
10 LOAD*"m";1;"VUC" CODE 25088: LOAD*"m";1;"VUB" Save by: SAVE*"m";1;"VU" LINE 10
```

New out Spectrum, then Load the Basic from tape by using; MERGE "" Delete line 50 as we don't want the CLEAR statement or the old LOAD "" CODEs, and unless we change the col statements, final VU-FILE will always start with weird coloured squares on the video. All line 100 to be:

```
100 CLS#: DIM f$(32): LET A=29785: BORDER 1: GO TO USR 29721
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Change lines 1005, 1100 & 2000 by adding in the appropriate \*"m";1; as necessary. Note the strange command SAVE \*"m";1; g\$CODE s, is correct syntax.

Save to Microdrive by; SAVE\*"m";1;"VUB" LINE 100

Load the main Bytes from tape by; LOAD "C" CODE .Spectrum will ignore the SCREEN\$ section  
Save to Microdrive by; SAVE\*"m";1;"VUC" CODE 25088,5640

In future, can now Load VU-FILE from Microdrive by: LOAD\*"m";1;"VU"

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\* NO APOLOGISES if you don't have VU-FILE or VU-CALC. Main point is it shows that in some  
\* cases, SAVEing program in different order can solve Microdrive problem.  
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The method described in the 'Microdrive News Flash' will most certainly, & dramatically increase the number of programs you can transfer to the Microdrive AND will ensure that they work when Loaded from Microdrive. It is ESSENTIAL for programs such as TRANZ AM. Note that the figures quoted are for example ONLY. The 'Newsflash' was printed before the page. Obviously we CANNOT allow our 'relocated' program to overwrite the machine-code w load by the DATA statement. In example 2 this would happen if our 'JAMES' was put into 36384 & was 18000 long. Simply change the 36384 to 30000 in this case would solve problem.

CANNOT BE PUT ON MICRODRIVE. ADDRESS MANAGER & HUNGRY HORACE will NEVER work on Microdrive as they are both made to RUN part of their Machine-Code from 23760. The Address Manager program could be made to Load using the 'Newsflash' method, but when we Load by the usual M/drive command it could NOT RUN as the various machine-code actions would keep trying to go to locations too low. (Same applies to Hungry Horace, but more so as we'd need to alter the 'loader' drastically). Machine-Code people could try altering all the absolute values but apart from being a long job, end result is very unlikely to work.

DISSASSEMBLERS. Some are totally unsuitable for Spectrums with Microdrive. If purchasing a Disassembler it is essential that it is truly Microdrive compatible. I believe that both the ZEUS & the HISOFT programs are. The INFRARED disassembler CAN be made to work on Microdrive by first MERGE "" from the tape. Change line 12 to be RANDOMIZE USR 29814. Now SAVE to Microdrive by: SAVE\*"m";1;"INFRA" LINE 11. Infrared is most definitely NOT the best Dissassembly program but is the one I use and prefer since it is very simply to use without having to read thro' a thick book of instructions. (Warning: Infrared will NOT work if your Machine is in lower-case mode)

TIP from M.S.Scott of Newcastle. If saving several parts of a program to Microdrive, if you use VERIFY after each section, program will go onto Microdrive in correct physical locations so in future will Load faster. Your SAVE (simplified here) would look like:  
SAVE xxxxx:VERIFY xxxxx:SAVE yyyyy:VERIFY yyyyy:SAVE zzzzz:VERIFY zzzzz etc, etc.

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Programs with Machine-Code which start below about 24500 and/or occupy the area reserved for Microdrive Map CAN be transferred to Microdrive provided that they are re-located when Loaded from the Microdrive, and put back to correct location just prior to starting actual program. This can be done extremely fast using a short machine-code routine held in a DATA statement. This method should NOT be used for SCREEN\$ or programs occupying the Printer Buffer only as they do NOT give problems. Examples shown below:

EXAMPLE 1. Assume a program called "BOND" & Machine-Code part has CODE START=24300 and CODE LENGTH=8000. Assume original basic is as shown.

Original Basic.

Change Basic to be:

10 LOAD "" CODE  
20 RANDOMIZE USR 24300

10 LOAD "\*" ; 1; "BONDC" CODE 25300  
15 DATA 17, A2, A1, 33, B2, B1, 01, C2, C1, 237, 176, 201: FOR J=50000 TO 50011: READ A: POKE A, A: NEXT J: RANDOMIZE USR 50000  
20 RANDOMIZE USR 24300

Line 10 ensures Load into a 'safe' location & extra line 15 moves it Back to correct place. Values for A, B & C must be calculated as follows (Use Spectrum to do the 'sums'):

A1=INT(TRUE CODE START/256)    A2=TRUE CODE START-A1\*256  
B1=INT(OUR CODE START/256)    B2=OUR CODE START-B1\*256  
C1=INT(CODE LENGTH/256)    C2=CODE LENGTH-C1\*256

EXAMPLE 2. Assume a purely machine-code program. Assume called "JAMES" and LENGTH=18000. CODE START=16384. We have to make up a Basic Loader such as:

10 LOAD "\*" ; 1; "JAMES" CODE 36384  
15 DATA 17, A2, A1, 33, B2, B1, 01, C2, C1, 237, 176, 201: FOR J=50000 TO 50011: READ A: POKE J, A: NEXT J: RANDOMIZE USR 50000

Program would automatically self-start when line 15 puts it back correctly. Calculate A, B & C as stated before. The DATA is put into 50000 for convenience but can be put anywhere in memory. In some programs the Basic has a CLEAR xxxxx. This may need adjusting, in majority of cases, simply delete the CLEAR xxxxx statement.