



Einstein Magazine

& ALL MICRO NEWS

Number 91

Published for users of Einstein (and other) computers
by RPM Society.

Publisher and Secretary:-

A E Adams, Ivy Cottage, Church road, New Romney,
KENT TN28 8TY

EDITOR: Ted Cawkwell

9 King Street Winterton N.Lincs. DN15 9RN

SHOWS, SOFTWARE LIBRARY and USEFUL BITS

Steve Potts 85 Thorold Ave, Cranwell Village, Lincs. NG34
8DS

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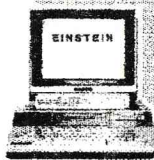
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THE EDITOR'S PAGE

The feature 'Incidentally..' on the next page, which will be vaguely familiar to Daily Express readers, is one attempt to lighten the content of the magazine. The identity of Eincomber for this issue will not be in doubt, but future issues I hope will have contributions from Members. Approximately 150 words on any subject is all that is needed and the content does not have to be factual. Anonymity will be guaranteed if so requested.

The piece on page 5 was an 'Incidentally' which got out of hand and became a short article! Well, this is the April issue.

I am currently adding more lines to my BJDRIVER program so that colour may be selected and also double size print, shadow print and other facilities offered by the Canon 4000 series. I do not know of any other inkjets which work with the Einstein in colour, but most, I believe, are OK for black and white text use. The latest 4300 is offered with a scanner cartridge for a few pounds more and must be a bargain for PC owners, but software for the Einstein is not provided. I would be interested to hear from anyone who has used the scanner cartridge. Is it any good? It is probably only useable for single sheets but even so could be very useful and save a lot of copying expense. At the moment the extra section is in the form of a stand-alone program called BJSTYLE.XBS and has proved so useful that I am keeping it as it is.

The standard 3" disk for the Einstein is now very difficult to obtain new, so I was pleased to hear from Dick Keynes that, as of Dec '98, they were on sale by CPC Tel. 01772 654455 or Email Sales@cpc.co.uk. They come in boxes of 10 Amstrad CF2 disks for £18.99, which is a good price for new disks.

It may seem that this issue is rather overimbed with switches but I think it makes sense to have both the ABBA and AABBBBAA articles in the same copy of EM because Chris's one has much more constructional detail, and illustrated to boot! The AABBBBAA thing started as a spoof, bearing in mind the month, but was eventually seen to be a viable proposition, though I freely confess to not having actually tried it!

Finally THE AMS show will be at the Stafford Show Ground on SUNDAY 18th April. Steve will be there and will have copies of the new 3.5" disks EINSTEIN DOS 3 and MY WAY WITH THE EINSTEIN by yours truly. The latter contains the latest versions of BJDRIVER and SKETCH for colour prints using a BJC4100 (or later model). There is also about 500k of programs and text from editions of EM, all brought up to date. The disk comes with DOS 3 but can easily be changed to XDOS 2.05 if you have it. Steve will also have some samples of my colour prints, plus all his usual demos and software and hardware.

ALTERING TASWORD HELP FILES

by Stan Gibbs

A very good feature of Tasword is the ability to be able to alter the help files. I have done this several times, the last time to remove subscript and superscript from the program, as I have never used these two features. The trouble is that I can never remember how I did it. The manual (like all manuals) makes sense once you have done the job. I thought perhaps a step by step explanation might be helpful. Here goes. First load Tasword. When Tasword is loaded press CTRL and ENTER. The Tasword menu appears and you press C to customise program. You then press Enter and the default settings appear on the screen. Keep pressing ENTER until you get to UNLOCK HELP Y/N. You press YES and the screen goes back to the original menu so you press R to return to the text file. Then press CTRL L and you are given the first page of help together with a flashing cursor. Make your alterations and press ENTER. Press CTRL and ENTER once again and when the menu appears press C again for customise program. Press ENTER again until you come to unlock help Y/N. Press Y once again and you are taken back to the original menu where you press R to return to original text file. Once you are back in the text file press CTRL P. Once again press CTRL ENTER and you are back at the menu where you press B for backup program. The screen then tells you it is saving Tasword as Tasword.com. The program returns to the menu and you press W for warm start to DOS. Load Tasword once again and press ESC just to check that your alterations are in the program. It does sound a long winded job to do but takes very little time. It does seem peculiar that you have to go back to the customising menu twice but I have checked these notes as I did the alterations and it does work.

INCIDENTALLY...

Two recent surveys have shown some interesting results. In the first (by Micro Monthly - 6 issues per year) the response to "Do you prefer 8 bit, 16 bit or 32 bit systems?" was 19% 8 bit. The rest ticked "Don't know" or "What's a bit?"

Prof. Einy Albertstein said, "This reveals a lot of dummies among PC and Mac users. They are probably Windows Worshippers who don't realise that the wasted memory in their systems, if placed end to end, would stretch right round Bill Gates' wallet."

In the other survey, by Tech Computing, the Einstein and Atari were voted most popular, mainly because a correction factor had to be applied to compensate for time-wasters who could not spell 'Einstein', 'Macintosh' or even 'disk' correctly. Most of the questions in this poll were not answered at all and it is believed that this was because the questions were not in True Type font or not in a dialogue box, or both.

Dr. Probesnitch, the Mensa spokesperson, who was tracked down at the darts final in his local hostelry, was quoted as saying that most of the top 10% of correct answers were probably by Einstein users.

Asked about IQ levels he is believed to have said, "120 to 180" but this is in some doubt due to the venue, and not helped by his pronounced lisp and even worse stutter, plus several pints of strong ale.

EINCOMBER

An AABBBBAA Switch for the Einstein

The TC01 was designed to run up to four drives and probably the ultimate configuration is to have the original two 3" drives supplemented by a couple of 3.5" DD drives plugged into the rear socket. This setup means you can avoid the annoying 'insert destination disk' and 'insert source disk' about 50 times when copying or backing up.

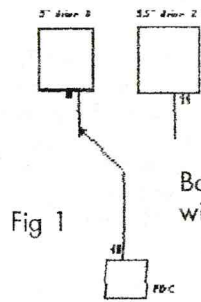


Fig 1

The one disadvantage is that it is not possible to boot the micro from a DD disk, and it was this problem that got me thinking about switching the drives around to suit the configuration required at any one time.

Basically, the switching is quite easy, consider Fig 1. The wiper or moving contact of a simple double-throw switch is connected to Pin 10 of the electronics lead from the Ein. and the poles connect to Pin 10 of the 3" drive and Pin 14 of the DD drive. When the floppy drive controller (FDC) issues a signal by taking line 10 to a Low potential, with the switch in the left position, the 3" drive is activated as drive 0. However, if the switch is in the right position then the signal goes to Pin 14 of the DD drive, and notwithstanding that the drive is configured as drive 2, it is activated and Albert's little brain thinks it is drive 0!

This principle is easily extended to using four such switches to switch from the AABB to the BBAA configuration. The four switches are operated by one push button (Fig.2). These switches are easily obtainable and have long been used for band switching on portable radios. At the push of a button you can convert your normal setup (0: 3", 1: 3", 2: DD, 3: DD) to 0: DD, 1: DD, 2: 3", 3: 3"

The switch has two rows of six pins, each set of three being a changeover switch with the wiper in the middle. In the unoperated position the pole nearest the pushbutton is the one connected. The pins extend through both sides of the switch body to enable soldering to a printed circuit board. Although at first sight a large number of wires appear to be involved in the switching process, there are only eight required for four drives when connected as shown.

Installing such a switch, one must make sure that it is BETWEEN THE FDC AND THE DRIVES. This does mean that it is not quite such a simple job as might be thought. For example, if the switch is inserted between the PCB socket and the 3" drives with the DD drives plugged into the rear drive socket, then the DD drives will

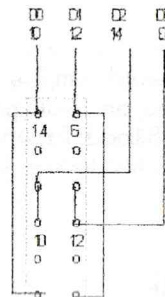


Fig 2

be OUTSIDE the circuit. Likewise, if the switch is in the DD circuit then the internal drives will not be affected. What is needed is to make up a fresh lead with all the drives on it. This means threading the lead through the slot above the rear drive socket before attaching the DD drive plugs. In this way there will be two plugs inside the casing for the 3" drives and two plugs outside for the DD drives. I have checked my four TC01s and they all have room to do this, albeit with a bit of a squeeze in one case.

The switch is small enough to be fitted to the right of drive 1/B on the front panel, but if you don't want to drill holes in your micro, the eight lines needed could be extended from inside, through any convenient slot to the box you are using for the DD drives (Epson, homemade or whatever) and the switch fitted there. There will be four lines from the FDC, which I suggest should be marked clearly, and go to the wipers of the switches. The other four go to the points where two poles have been joined together on the switches. It is important to get them the right way round.

The switch parts are available from Maplin as follows:

FH68Y Latchswitch 4-pole 90p

FH75S Latchbracket single 18p

For a switch button I can recommend:

FH89W Magiclight Btn Orng 60p Normally black this goes a glowing orange when pressed.

The bracket may not be needed as the switch can be soldered to a bit of Veroboard if desired, which can then be fixed as required.

In use, Boot disks will have to be configured for the arrangement in use and this is easily done with XDOS 2 or DOS 80. However there is also the possibility of using each arrangement as a two-drive system, the 2 x 3" drives as 0 and 1 with XDOS 1.31 and the 2 x 3.5" drives as 0 and 1 with DOS 3, and no fiddling about with DOS tracks will be necessary. It will not be possible to work from 3" to DD drive in this case, however.

The arrangement described above has the advantage of keeping the 3" DOS 1 system separate from the 3.5" DOS 3 system while being able to operate normally in both.

It is not essential to have a total of four drives, the arrangement would work with just one of each type as long as they were both in the correct part of the drive chain. Admittedly, it would be less work to wire up for two drives but doing the whole thing would make fitting further drives a cinch.

Chris Coxall's article (page 17) has much constructional detail to help with the job, but I confess that I favour soldered and sleeve insulated joints on the drive cable rather than the 'choc block' connectors.

MORE OF THE BLETCHLEY STORY

Excavations at the old Bletchley site have unearthed documents that seem to indicate that the world's first computer EINIAC was actually developed here and even more surprisingly, that BASIC was also invented here.

The papers clearly show that BASIC was an abbreviation, or possibly code, for Bletchley Acronomic Supplies Inventories and Constructions and was developed by Michael S Doss the Head Storeman who, entering into the prevailing spirit of secrecy, decided that he would encode his store ledgers to make things difficult for the enemy. He was aided by his assistant, Crystal Sinclair, a brilliant engineering and mathematics graduate, who obtained her position by parental influence.

Much of their work is still being unravelled but what has emerged so far is most revealing;

ATN was code for Alan Turing's Newspaper.

CLS Crossword Liaison Centre

COS Crossword Owners Sittingroom

DRAW Design Reports to Allocate Windows

HSX Cunning code to hide the famous Hut 6, believed corrupted later to HEX\$

INT Installation Network Timetable

LOAD List Of All Discrepancies (Nil return)

NEW Number of Executive Windows

POKE Price Of Kitchen Extension

PEEK Price of Extra Equipment for Kitchen

PTR Pot of Tea Ready

RUN Run like hell - it's going critical.

RAD Richtea And Digestive

REM Register of Einiac Modules

SAVE SAIVagE

SQR Sale of Quartermasters Reserves

VAL Value acquired - Loot

WAIT Write-off And Initiate Transfer

There is much more to decipher and many files are missing. The REM file is one such and was last signed out by one Thomas A Tung. At the end of hostilities Government Inspectors were investigating a reputed fraud but by then Mike and Crystal Doss, who had married, had disappeared (with the VAL file). It was believed that they had gone to America, and entered under an assumed name, possibly Dors or something similar. It is a pity that there appear to be no clues in the papers to indicate what (if any) later developments they might have made.

PLAYING WITH THE RUBBER BAND

by Steve Potts

As several of you know I try to keep a few items of consumables in stock more as a favour to friends than anything else. One item seems to be popular, this is the replacement drive band for three inch disk drives. Now there are several variations of three inch disk drives, most use the same drive band so in reply to several requests here is my version of the rubber band game.

Firstly recognising the drive. Hitachi made some and Teac made super silent drives these have a central eject button below the disk slot, these are direct drive and therefore do not benefit from any attention, in fact usually the reverse.

The next type is Matsushita EME 150 and its derivatives these fall into two main types single sided as used normally in most home computers and the odd double sided as used in the Amstrad 9512.

The single sided drives use a felt pad as the backup support to the read head so it is unwise to use a cleaning disk too liberally or without cause as this can rough up the pad.

There are several problems that can give drive read failure such as ADDRESS MARK MISSING but as my fix is a low cost option and given the age of the belt, if original, this is a good place to look first.

There are kits available from various sources at various prices. I sell only the basic part required at the minimum cost. You don't need to be an expert to revive a drive but you do need to be careful. So armed with a screwdriver no matter whether you have EINSTEIN AMSTRAD or SINCLAIR you can do it...

Many moons ago when the cost of a simple word processor was well over £2,500 and nine inch discs were the norm, thoughts of small business computing let alone home computing were Jules Verne type predictions of the future. Several companies had tried in the USA, IBM and and NORTH STAR, these were big cumbersome desk size units. While in Japan several manufacturers clubbed together to agree a new standard, MSX type machines with disk drives and 80 column screens etc. The UK went its own way with the SINCLAIR SPECTRUM and BBC followed by the AMSTRAD 464. The DECCA television factory was sold to TATUNG who brought out the EINSTEIN; this was the first truly usable home computer complete with three inch disk drives and running a form of CP/M. These were successful and lots of small businesses started to use them, from garages to newspaper shops to football clubs. The next generation was to be two hundred and fifty six kilobyte ram and higher resolution graphics. The EINSTEIN 256 was released but just as it started to sell the company got the rights to produce IBM PC clones so everything was switched to this

band wagon.

Enter at this point ALAN M SUGAR with the success of his CPC 464 games machine giving him a base to work from. He sees an opportunity for a small business machine that all could afford and handle.

With a shrewd eye for a bargain he goes to the far east and whilst there buys a warehouse full of three inch drives intended for the 256, then on the return flight sits next to a representative of DIGITAL RESEARCH and during the flight gets the rights to CP/M and the basic layout was there. He had a session with JOYCE his secretary and then due to a letdown by a software company calls in LOCOMOTIVE SOFTWARE. Mix the ingredients together with the people he had at that time and the PCW was born with the three inch drives at rock bottom price of £500 including software and printer, as opposed to the thousands for the next equivalent. The next step was to graft the bargain drives onto the 464 making the 664 but this was a disappointment because of the memory size and only lasted a few months until the CPC6128 was to take over. The government invited Mr SUGAR to take over the TIMEX SINCLAIR factory in Scotland and the SPECTRUM PLUS THREE was introduced. So there you are, an insight into how three inch drives became so widespread. In fact, I believe that versions of these drives should have been used in the PC instead of the five and a quarter inch drives, as the disks are far more robust and less susceptible to damage than the five and a quarter and even the three and a half SONY disks as developed for APRICOT and used by all PCs now.

OPERATING THEATRE

To start the electricity must be disconnected and the drive must be removed from its housing. On the EINSTEIN, AMSTRAD AND SINCLAIR, the top and bottom cases need to be separated. After unplugging the connections undo the eight or so cross head screws. Now separate the two halves but be very careful of the keyboard connections as these tend to be delicate. Un-plug any other bits and bobs noting where from. Then remove the screws holding the drive in place.

PCWS lay the monitor face down on a soft cloth after unplugging all connections. There are four main screws and two small ones next to the expansion port. The back lifts off in one piece. The drive is held in by four two inch long crosshead screws through a carrier case.

ALL TYPES OF MACHINES

You should now have the unit free and be able to see the ribbon data cable. Note the coloured line at one edge to remember the way around it fits. I mark the connector and the drive with Tippex and then slide it off. The power to the drive is usually by a smaller four pin connector and sometimes has a locking tab that has to be eased up with a flat bladed screw driver.

NOW IS THE TIME to look at the diagrams, have a good cup of tea, lock

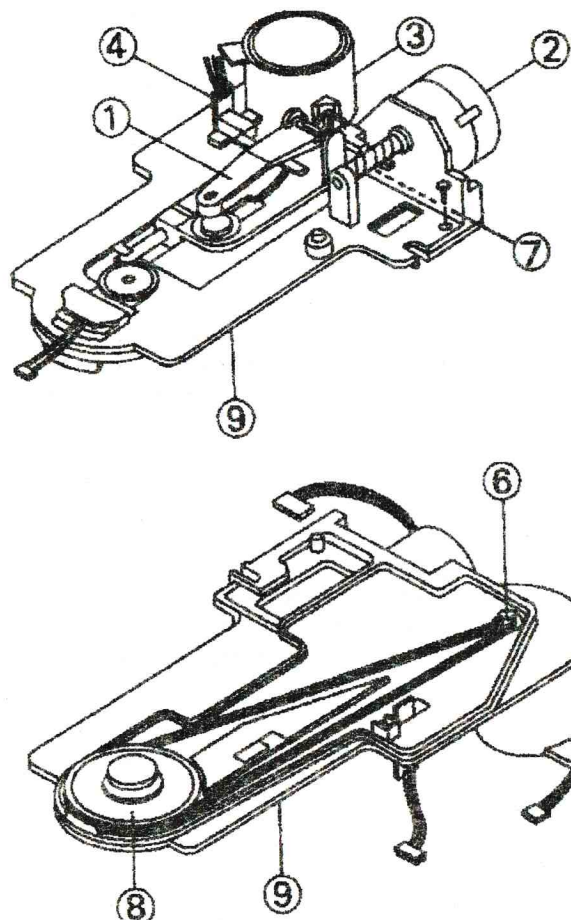
out the kids and clear the decks. Get hold of the new drive belt and feel it, there should be some give in it, an elasticity to give tension. When you get the old one out try it next to mine !!!

If you lay the drive on the table with the connectors towards you the main parts are visible. You can even slot an old disk in and out to see the carriage working. The large motor is the rotation or spin motor and the smaller is the tracking or stepper motor, this works a worm screw to move the pick up head in and out..

DO NOT touch this or the sensor that sets the start point for the forty tracks. Along the centre line there is a index sensor on a green circuit board, this must also not be altered. Luckily the settings are usually locked with a sort of fluid like nail varnish. With the circuit board uppermost use a small crosspoint screwdriver to remove three screws, one has a star bonding washer, make sure this goes back in its correct place as it can short out the tracks on the circuit board. If you look along the sides you will see some white connectors these can be eased out to give some room for manoeuvre. Now lift the circuit board slightly and you will see a twist of wires running from the pickup head under a wire clip. This is a strain relief, un-hitch it to give a little more room. Now look for the write protection detection pin fitted to only some drives. It is a little brass pin about ten millimetres long. This matches the hole in the disk so it's at the top edge; if you drop it you will need tweezers to put it back in place... After about an hour or two on your hands and knees searching the carpet.

Now you should see the drive belt around a large black fly wheel and the small brass motor spindle. Hook the drive band off and replace it with the new one after comparing it with the new one. The wheels could be cleaned with cassette cleaning fluid and a bud if you like. Make sure it runs well as it has been known to jump off on reassembly. Some people recommend a little light oiling at this point but I believe this to be counter productive. Make sure the write protect pin is in place and then tuck the wire twist under the strain relief. Refit the main board taking care with the star washer and plug in the white connectors. Turn the drive over, you may want to oil the stepper motor worm and bearing with a match stick dipped in a drip of oil. Clean the pickup heads with a bud and cassette cleaning fluid DO NOT touch the felt pad on a single sided drive as this provides backing to the read head by rubbing on the disk surface opposite.

You may now re-fit the drive into its holder. Connect the data ribbon cable taking note of the way around it is marked then plug on the power line. Screw the drive into its mounting and assemble the case. If you are careful with the cables and connectors there should be no problem. I would like to say that static electricity can blow chips so don't go fingering the circuit boards unnecessarily, in fact, professionals wear wrist bands to earth themselves. I normally wear rubber surgical gloves available from garages



So that is it. Plug in all the normal bits of your computer and test with an old disk. First catalogue it then format both sides. All should be well as I have found this sorts out nine out of ten drives, the others tend to have alignment problems that require major re-setting or speed spin settings; costly jobs indeed. I hope you have success and this extends the useful life of your machine. I have tried to do this subject justice as I have never seen a full explanation. This may be due to the number of variations of drive models. I count eight different types at present. Don't forget I carry a stock of drive bands and other bits and bobs. You can get collect from me at the STAFFORD SHOW GROUND AMS COMPUTER SHOW or by post for #1.50 plus a postage stamp.

DISK LABELS AGAIN

After reviewing Stan Gibbs' label printing program for the last issue I remembered a program way back that printed labels for the actual disk, including upside down printing for the flip side. I decided to look it up and see just what it was all about. After all, we have indexes for all the mags now don't we? Clearly a 5 minute job!

Two days later after scanning all the indexes under L and finding zilch, I stumbled across it after reading something else that caught my interest. I did eventually find it indexed under "DISK label prog."! Now who would think to look under D for a label prog. I ask you!

Having found it and noted that it was by Stuart Marshall, I knew it would be good, so I flexed the two typing digits and got down to entering the listing. For the actual printing Stuart used GDUMP1 embedded in the DOS tracks as detailed in the Compendium (pages 84 to 86), but as I was using Dos 2 I changed his CALL &E270 to PRINT CHR\$(2) as Dos 2 has the facility to do a graphic dump as well as the usual text dump using PRINT CHR\$(1).

I had no trouble with the listing and, having saved it, I entered RUN. There is a short wait (it seems long but is only 40 secs.) whilst the entire 40 column text characters are stood on their head and poked into the VRAM in place of the graphic characters. You can check this when in Text mode by holding down GRAPH and typing a few characters. Then you insert the disk you want a label for, A side up and press Space then the same for the

other side. Note that, if you have many files on a disk you may have to hit any key to finish the DIR, as usual.

At this stage you should seriously consider getting your printer on line! If you are too late, no sweat, the GDUMP1 machine code checks for a live printer and goes to the next line if it is missing. So, no hang ups! DD-DUMP also does this.

The resulting print was fine until I tried to fit it on the disk and found

```
XBAS 4 Autoboot
XDOS 1.31
BBC Basic
MBASIC
XBAS80
Sil Disk on 0:
```

```
↑A System Master                                ↓B
B1STYLE.XBS                                     LABELLER.XBS
COM.XC                                          FACTORS.XBS
XB1LABELLER.COM                               COM.XC
XB1EASTER.XBS                                COM.XC
XB1MORSE.XBS                                 COM.XC
XB1SHADES.XBS                                COM.XC
XB1SCRNMAKR.XBS                              COM.XC
XB1DDUMP.OBJ                                  FACTORS.XBS
TO+CHGHEAT.XBS                                LABELLER.XBS
HELP2
```

that it was too wide. I presume the printer Stuart used was probably set up for Pica size letters as standard i.e. 12 characters per inch. Most modern printers use 10 cpi giving a longer line. The Tatung TP80 is 12 cpi but the later TP100 is 10cpi. As the text is copied from the screen and the printer is set in Graphics mode, which transfers pixels from screen to paper, there doesn't seem to be much we can do about this. Shame.

Time to read the instructions, I think. Sure enough, there are several graphic commands for the BJC4100 and these include a variety of line lengths. The simplest change would be to choose double density, ESC L instead of ESC K. You might think 'double density' means thicker print, a bit like Emphasised but no, it means squashed up to half the length. There is obviously scope for my favourite pastime - poking about with DUMP programs!

When I got my head above the covers again I had DDDUMP.OBJ which is GDUMP1.OBJ with a couple of changes. I had tried ESC L which was OK, half the width of the original, but a bit too narrow really, so I changed to ESC * which gives a big choice of all the graphic modes going by just changing one byte.

The one I have settled on is called '8 bit CRT graphics II'. What's CRT? Don't ask! I don't know, but it gives a nice spread of the text which fits nicely on the disk. I am pretty sure this is a standard EPSON command to the LQ2500 standard, if that helps anyone. Those with a DMP may have to use ESC L, depending how old it is. The TP100 certainly has this escape code and it is not a youngster any longer.

I tried changing the CLS32 in line 1000 (now line 640) to CLS40 as noted in the original article but, although the width was now OK the length was too great, so no help there.

Having played about with the program for a while, it occurred to me that it would be very useful if one could type in something more apt than a load of filenames, so I set about programming in an option to type your own stuff too. The sample prints show the effect. You now have the option of DIR or TEXT for either side.

I have also included the option to put a Disk Label along the spine of the disk.

The listing is pretty straight forward with no tricky bits, and is as follows:-

```
10 REM :AUTO DISK LABEL PRINTER
20 REM Ted Cawkwell Dec 1998
30 REM Original prog by Stuart Marshall 1990
40 CLEAR &A000:LOAD"DDDUMP.OBJ"
50 CLS40:PRINT@4,10;"Please wait, setting Chr$ set"
```

```
60 FOR F=6400 TO 7152 STEP 8
70 C=0
80 FOR G=0 TO 7
90 A(G)=VPEEK(F+G)
100 A$=BIN$(A(G),8):B=0
110 IFMID$(A$,1,1)="1" THEN B=B+4
120 IFMID$(A$,2,1)="1" THEN B=B+8
130 IFMID$(A$,3,1)="1" THEN B=B+16
140 IFMID$(A$,4,1)="1" THEN B=B+32
150 IFMID$(A$,5,1)="1" THEN B=B+64
160 IFMID$(A$,6,1)="1" THEN B=B+128
170 A(G)=B:NEXT G
180 FOR G=7 TO 0 STEP-1
190 VPOKE (F+1024+C),A(G)
200 C=C+1
210 NEXT G,F
220 BEEP 2:DIM L(26,9),B(26)
230 CLS40:INPUT"Disk Title;Type up to 16 chrs or ENTER to bypass:-";DT$
240 CLS40:PRINT "DIR,or TEXT Side A Max 26 Chrs/9 Lines.Empty line to Quit.D/T?"
250 Y$=CHR$(INCH AND &DF):IF Y$="D" THEN 420
260 CLS:FOR T=1 TO 9:PRINT@4,T;:INPUT"";X$(T)
270 IF X$(T)="" THEN 290
280 NEXT T
290 CLS40:PRINT "DIR,or TEXT Side B Max 26 Chrs/9 Lines.Empty line to Quit.D/T?"
300 Y$=CHR$(INCH AND &DF):IF Y$="D" THEN GOSUB 450:GOTO 360
310 CLS:FOR T=1 TO 9:PRINT@4,T;:INPUT"";Z$(T)
320 IF Z$(T)="" THEN 340
```



```

330 NEXT T
340 GOSUB 590:GOTO 360
350 GOSUB 530
360 GOSUB 640
370 CALL &A000
380 CLS40:PRINT@4,10;"Print another label Y/N?":A$=CHR$(INCH AND
&DF):IF A$="N" THEN 410
390 PRINT #1:PRINT :PRINT :PRINT #0
400 RUN 220
410 CLS40:END
420 CLS40:PRINT@6,10;"Please insert disk side A";@9,12;"then press
SPACE"
430 A$=INCH$:IF A$<>" " THEN 430
440 GOSUB 480:GOTO 290
450 CLS40:PRINT@4,10;"Please turn over disk to side B";@9,12;"then
press SPACE"
460 A$=INCH$:IF A$<>" " THEN 460
470 GOTO 530
480 CLS:DIR
490 FOR A=1TO9
500 X$(A)=MID$(SCRN$(A),4,12)+" "+RIGHT$(SCRN$(A),23)
510 NEXT A
520 RETURN
530 CLS40:DIR
540 FOR A=1TO9
550 Z$(A)=MID$(SCRN$(A),4,12)+" "+RIGHT$(SCRN$(A),23)
560 FOR B=1TO26
570 L(B,A)=ASC(MID$(Z$(A),B,1))+128:NEXT B,A
580 RETURN
590 REM
600 FOR A=1TO9

```

```

610 FOR B=1TO26
620 L(B,A)=ASC(MID$(Z$(A),B,1))+128:NEXT B,A
630 RETURN
640 CLS32:FOR A=0TO9:PRINT@0,A,X$(A):NEXT A
650 PRINT@0,11;"^A ";DT$
660 PRINT@24,11,CHR$(66+128);CHR$(94+128)
670 A=1: FOR S=21 TO 13 STEP-1:D=-1:FORB=26 TO 1STEP-1:D=D+1
680 PRINT@D,S,CHR$(L(B,A)):NEXT B:A=A+1:NEXT S
690 RETURN

```

On Line 250 is the construction `Y$=CHR$(INCH AND &DF)` which may not be familiar. This was a tip from John Briggs and responds to both upper and lower case letters, thus saving the necessity for 'IF Y\$="D" OR Y\$="d"', a good saving when more than a few choices are given. It is worth using to avoid those annoying occasions when you KNOW you said 'Yes' but the program refuses to react.

The DDDUMP.OBJ machine code is as follows:-

```

0100 DB20E61CFE10C02A
0108 9AFBE52A9CFBE521
0110 BF00229CFB210000
0118 229AFBE5DDE1E5FD
0120 E1DDE506092171A0
0128 7ECF9F2310FAFDE5
0130 0E01C5CFC7C12801
0138 37CB11FD2B30F379
0140 CF9FFDE1DD23DDE5
0148 F1B728E2DDE101F8
0150 FFFD093E0ACF9FFD
0158 E5E101BF000938C1
0160 3E1BCF9F3E40CF9F
0168 E1229CFBE1229AFB
0170 C90D1B41081B2A06
0178 0001.

```

The above is shown as it should appear when typed into MOS, don't

forget the final full stop! Go to DOS and save it as DDDUMP.OBJ. The changed bytes are 0124 (number of bytes to send to printer) and 0176 to 0179 (printer control bytes).

As above the printer bytes, which start at 0171 (0D), are changed at 0176 to 2A060001 which are the codes for Select Image Graphics Mode, the 06 selecting 8 bit CRT Graphics II. 01 here would choose 8 bit Double Density bit image which is the same as ESC L. As this series is nine bytes long the byte at 0124 needs to be changed to 09.

If you have to use ESC L the byte at 0124 remains 08 as in GDUMP1 and the one at 0176 becomes 4C followed by 0001. If all that is as clear as mud I suggest closer acquaintance with your printer manual!

As it is clearly an advantage to print the labels on sticky labels, I have looked at the possibilities with Avery labels. The actual label size needed is 70 x 72 mm. but there is nothing very close. The best bet would appear to be Avery L7166M at about #10 per pack of 40 sheets. Each sheet has six labels 99 x 93 mm. so there is a bit of waste to trim off. It is possible to print 3 down the left and then rotate 180 deg. and do three more down the other side.

The other, and possibly easier choice is to use plain A5 paper and rely on Pritstik or the like, but I have to admit that the result is less edifying. With A5 sheets it is easy to get two labels down each side, by making a second pass with the edges swapped round.

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AN ABBA SWITCH FOR THE EINSTEIN *By Chris Coxall*

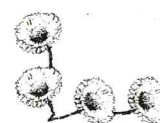
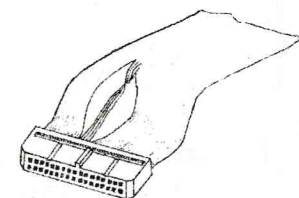


The Einstein Floppy Disk Controller can operate up to four drives daisy chained on one 34 wire ribbon cable. By sending a signal along wire 6 to use drive 3 or D, or wire 10 for 0/A, 12 for 1/B or 14 for 2/C it chooses the one drive it wants to operate

at the time. As long as all drives on the chain have different jumper settings for drive select every thing works OK. Only one drive can be the boot drive and Drive 0 or A has to be the boot drive which loads up the disc operating system (DOS). If a 3 1/2" drive which does not have drive select jumpers is added to the external port an internal 3" drive will have to remain the boot drive.

From EM88 the Bomb 2 article by Ted Cawkwell

it was shown that by twisting cable wires 10, 11 and 12 a 3 1/2" drive permanently fixed to drive select 1 or B could be set to drive 0 or A; a boot drive. If instead there was a switch to make this twist we could change the boot drive between a 3" and 3 1/2" at will. The switch would have to be on the cable after the Einstein IDC connector and before the first drive on a chain for three drives. At the same time of switching A to B or back to AA it would have to switch B to A or back to BB.

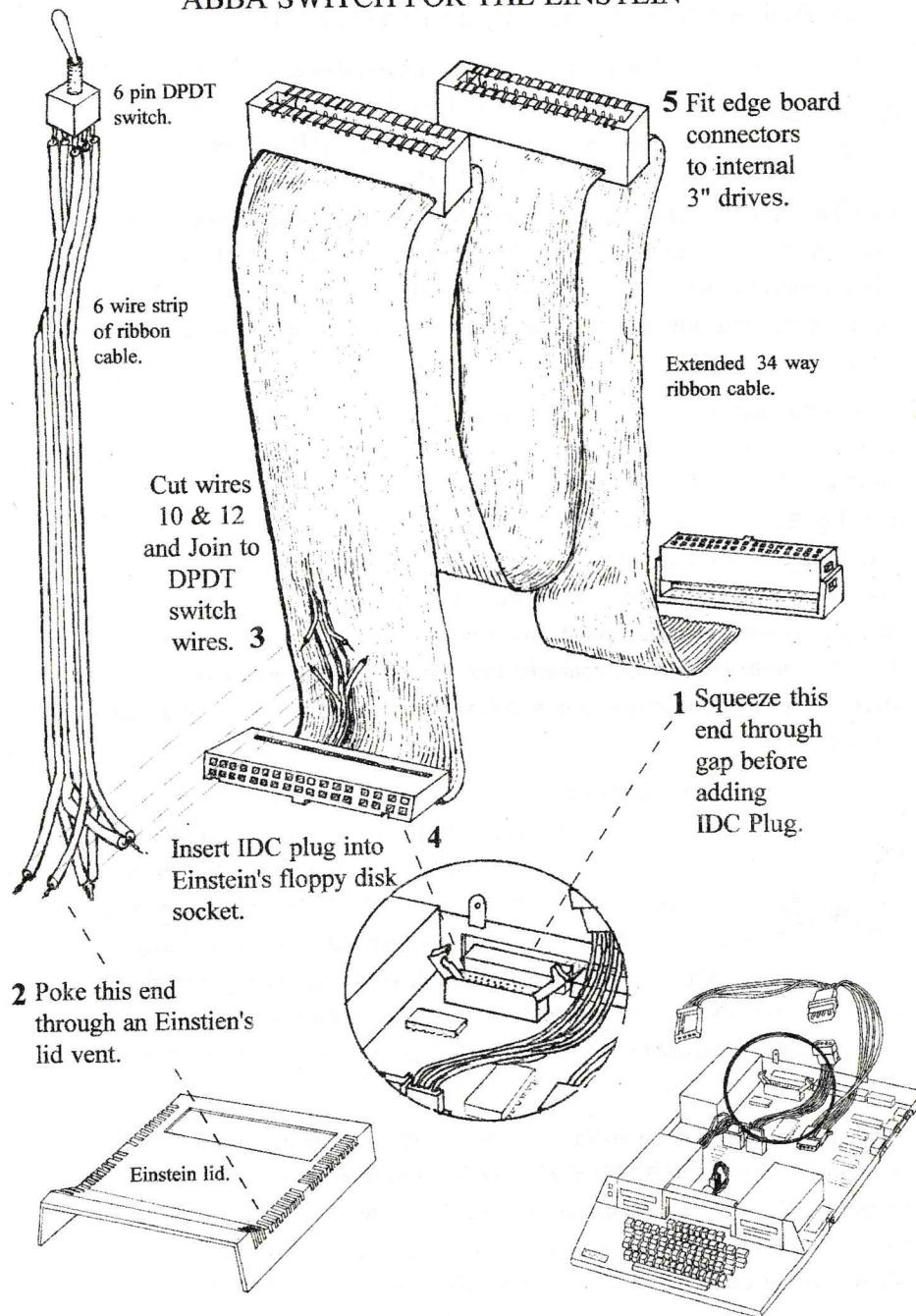


A Double Pole Double Throw (DPDT) switch will make an ABBA Switch but for a problem to be overcome. The Einstein does not have one daisy chain for all four drives. Instead it is branched on the mother board before the IDC socket for the internal three inch drive cable and the external IDC socket for additional drives. Using the switch on the internal cable could only swap the two internal 3"

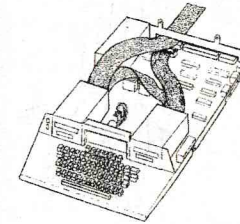
drives. Not much advantage in that. Alternatively removing the three inch drives from inside the Einstein and adding them to make a four drive external cable would be a waste of space.

To overcome the problem on my Einstein I have made up a new cable with the same connectors for the internal 3" drives but extending the cable beyond the last edge board connector. After squeezing the free end through the Einstein's casing above the external drive port socket I have added connections for a 3 1/2" drive. I have then soldered a strip of 6 wire ribbon cable to a DPDT Switch and poked the free ends through a vent in the Einstein's lid to join to the drive cable. The five basic steps are illustrated next page.

ABBA SWITCH FOR THE EINSTEIN



THE DRIVE DATA CABLE



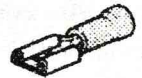
The 34 wire ribbon cable for the drives will need to be 4ft. long to connect the 3" drives and to get it squeezed comfortably out of the computer's casing. How much longer it needs to be depends on where the external drive or drives are situated. Where and how external drive can be fitted and powered is covered in EM 88 "The Bomb 2" article.

WIRING THE SWITCH

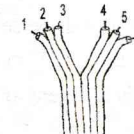
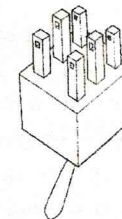


The DPDT switch I bought at Tandy's is very small and not much thicker than a pencil. This is so I can later fix it into the Einstein's face plate by drilling a small hole.

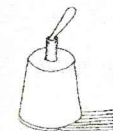
Skilful soldering was required. For those content to push wires through an Einstein's lid vent, and not want to solder, larger switches are available. Crimp on female blades could then be used for connections. Look for the "DPDT" initial and the diagram when buying a switch.



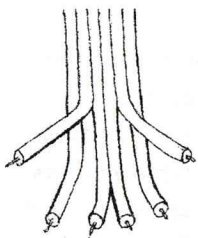
The 6 wire strip of ribbon cable needs to be long enough to go from where the switch is to be situated, through an Einstein's lid vent, to the position of the IDC cable socket for internal drives with a lot of additional slack. The slack is so the lid can be held aside while connections are made or broken. The end to be connected to the switch will need to be divided down the middle 3 wires either side for a 1/4" to 1/2".



The underside of the DPDT switch has two rows of 3 parallel pins. Number the left hand pins down 1 to 3 then the right hand pins up 4 to 6. Number the six wires of the ribbon cable from left to right 1 to 6. Connect 1 to 1, 2 to 2 and so on for the six wires. Later at the other end the cross over wires will be connected. First the switch needs to be housed in some kind of box.

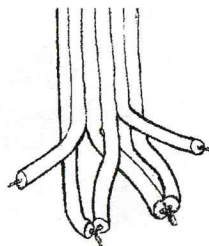


According to the switch you have chosen your own ingenuity will be required for the housing. I have used a plastic bottle top from a kitchen cleaner. A drilled hole allows the toggle arm to poke through from the inside. I then closed the bottom with plastic padding.

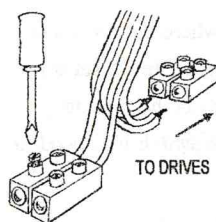


FIXING IT TOGETHER

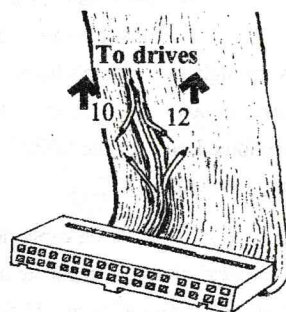
Once the switch ribbon cable has been pushed through a lid vent lay the end flat. Number the wires left to right 1 to 6. Peel wires 2 & 5 up out of the way for the moment and twist together the bare wires of 1 & 4, then 3 & 6. This creates the cross over wiring.



An ABBA switch is made by cutting lines 10 & 12 on the drive data cable before any of the drive connectors on the daisy chain. Two pairs of polythene wire connectors can be used to connect the switch wires to the drive cable. These can be bought in most DIY stores in strips of ten to twenty and cut into blocks as required.



The two single wires need to be connected to cut lines 10 & 12 of the data cable going towards the IDC plug and the pair with two wires twisted together to the ends of 10 & 12 going towards the drives.



An external 3 1/2" drive can be attached to the new cable after adding an IDC plug. Then there will be 3 drives on one daisy chain. The third and last daisy on the chain will be a 3 1/2" drive set to drive select 1/B. Therefore the right hand 3" drive (daisy 1) will need it's drive select jumper set to 2/C. The left hand drive (daisy 2) will be set to drive select 0/A. Power up the Einstein and external drive. Put a disc into the 3 1/2" drive. Test the switch by making directories of drive 0. If the directory listing is different after using the switch it is working correctly. Replace the lid to finish.

Note: I have used the ABBA switch successfully for some time now and it is ideal for 3 drive working. For four drive working using twisted cable lines 10, 11 & 12 an ACCA switch would be needed. For this cut and connect the switch lines to 10 & 14.

Note: A 36 way centronics male & female connection on the cable between the computer and external drives is helpful. The external drives can then be disconnected and reconnected for portability and modification. These are in the Maplin's catalogue FJ62S & FT74R.

EINSTEIN MAGAZINE and All Micro News

TONY'S BACK PAGE TIDY UP

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