MILLER GRAPHIC EProms

for Corcomp Card

This NEW PROM SET enhances the usefulness of the Corcomp Double Density Disk Controller Card. The Following NEW features have now been added and can be accessed from TI Basic, Extended Basic and a Gram Kracker™ MSAVED Basic program. This will allow you to build a menu of all your favorite software and load it with a single key press. The new CALLs added to the card are:

1. CALL ILR - Loads the standard E/A utilities into Low Memory.

2. CALL LR("*device.filename*") - Loads a DIS/FIX 80, compressed or uncompressed, auto start or non-auto start Assembly language Program, from floppy diskettes. (This is the same as CALL LOAD from TI-Basic with the E/A module plugged in, including the automatic loading of the E/A utilities)

3. CALL LLR("*startname*") - This starts a non-auto start program. This is the same as option 4 - Run, on the E/A menu.

4. CALL RUN("*device.filename*") - This loads Assembly PROGRAM IMAGE files from floppy diskette like option 5 - Run Program, on the E/A menu. This CALL also automatically sets up the E/A environment in VDP Memory. (i.e. Characters, colors, registers etc.)

5. CALL RUN - This CALL without brackets or a filename automatically loads the floppy file DSK1.UTIL1.

6. DELETE "XILR" - Sets up the E/A utilities into low memory from a running Extended Basic Program. It also sets up the Link names for the above CALLS and the other Tool Shed Utilities so they can be accessed from a running program!

SOME OF THE OTHER ENHANCEMENTS INCLUDE:

1. Removed *9900 DISK CONTROLLER* Title Screen !! - which eliminates the problems with some of the modules like the lock up problem with E/A, TEII and Plato.

2. Improved Error Handling on ALL utilities.

3. Decreased Error Time Out - i.e. *Disk Not Initialized* now comes up faster.

4. The Disk Manager will now auto load if you hold down the space bar on power up or reset.

5. For the advanced user we have also added a DIRECT TO/FROM CPU RAM SECTOR I/O ROUTINE for faster loading of your programs!

6. For Gram Kracker™ Owners we have modified all of the Tool Shed Utilities to allow them to be used in a running MSAVED program! (i.e. MOVEM, VPEEK, etc.)

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might be useful for your CC controller

ENHANCEMENTS

* Removed *9900 DISK CONTROLLER* Title Screen !! - which eliminates the problems with some of the modules like the lock up problem with E/A, TEII and Plato.

* Improved Error Handling on ALL utilities. They will no longer cause your system to lock up if an improper syntax is used.

* Decrease Error Time Out - i.e. *Disk Not Initialized* now comes up faster.

* The Disk Manger will now auto load if you hold down the space bar on power up or reset and you can still use CALL MGR from Basic or X-Basic.

* For Gram Kracker™ Owners we have modified the old Tool Shed Utilities and the new CALLs to allow them to be used in a running MSAVED program. Now you can build a menu of your most commonly used Assembly software and have it displayed and loaded from the MSAVED program.

* For the Assembly language Programmer we have also added the ability to perform **DIRECT TO/FROM CPU RAM SECTOR I/O** - for faster Reading and Writing of Sectors. To use this new feature set up your parameters for the Sector I/O subprogram (>10) as follows, with the most significant bit of the drive number set.

TO/FROM VDP RAM

```
PAB   - >0110

>834A - Sector Number
>834C - Drive # (>01 - >04)
>834D - 0=Write    Not 0=Read
>834E - VDP Buffer address
>8350 - Sector Number
        Error Code placed here
        if error occurs

Set up your PAB in VDP Ram
Set up >8356 to point to PAB
Then use   BLWP @DSRLNK
           DATA >A
```

TO/FROM CPU RAM

```
PAB   - >0110

>834A - Sector Number
>834C - Drive # (>81 - >84)
>834D - 0=Write    Not 0=Read
>834E - CPU Buffer address
>8350 - Sector Number
        Error Code placed here
        if error occurs

Set up your PAB in VDP Ram
Set up >8356 to point to PAB
Then use   BLWP @DSRLNK
           DATA >A
```

SYNTAX INFORMATION FOR THE NEW CALLS

The following information applies to both the New CALLS and the old Tool Shed Utilities:

1. You can use either direct strings (i.e. "DSK1.DIAGS") or string variables such as A$ or FILE$ where A$ or FILE$ equals "DSK1.DIAGS". You can also use single dimension arrays such as A$(3). Multidimensional arrays, such as A$(1,2) are not allowed.

2. String expressions, such as A$&B$ or SEG$(A$,3,8) are not allowed.

THE NEW CALLS

1. **CALL ILR** - Loads the standard E/A utilities into Low Memory. This will clear out Low Memory Expansion and set it up for loading Compressed or Uncompressed DIS/FIX 80 Assembly files. (This is done automatically by CALL LR)
   Examples:
   Basic or X-Basic Command Mode:
   CALL ILR

   Running X-Basic Program:
   CALL LINK("ILR")

2. **CALL LR("*device.filename*")** - Loads a DIS/FIX 80, compressed or uncompressed, auto start or non-auto start Assembly language Program. (This is exactly the same as option 3 - Load and Run, on the E/A menu, including the automatic loading of the E/A utilities (CALL ILR) if they have not been previously loaded or if an error occurred during the previous load.
   Examples:
   Basic or X-Basic Command Mode:
   CALL LR("DSK1.DIAGS")

   Running X-Basic Program:
   CALL LINK("LR")("DSK1.DIAGS")
   or
   CALL LINK("LR")(A$) - where A$="DSK1.DIAGS"

3. **CALL LLR("*startname*")** - This starts a non-auto start program. This is the same as option 4 - Run, on the E/A menu.
   Examples:
   Basic or X-Basic Command Mode:
   CALL LLR("START")

   Running X-Basic Program:
   CALL LINK("LLR")("START")
   or
   CALL LINK("LLR")(A$) - where A$="START"

4. **CALL RUN("*device.filename*")** - This loads Assembly PROGRAM IMAGE files like option 5 - Run Program, on the E/A menu. This CALL also automatically sets up the E/A environment in VDP Memory. (i.e. Characters, colors, registers etc.)
   Examples:
   Basic or X-Basic Command Mode:
   CALL RUN("DSK2.PROGFILE")

   Running X-Basic Program:
   CALL LINK("RUN")("DSK2.PROGFILE")
   or
   CALL LINK("RUN")(A$) - where A$="DSK1.PROGFILE"

   (PROGFILE must be a Program Image Assembly File that can be loaded and executed from option 5 - Run Program File, on the E/A menu.)

THE NEW CALLS Cont.

6. **CALL RUN** - This CALL without brackets or a filename automatically loads DSK1.UTIL1.
   Examples:

   Basic or X-Basic Command Mode:
   CALL RUN

   Running X-Basic Program:
   CALL LINK("RUN")

7. **DELETE "XILR"** - Sets up the E/A utilities into low memory from a running Extended Basic Program. It also sets up the Link names for the above CALLS and the other Tool Shed Utilities so they can be accessed from a running program!

NOTE: THIS MUST BE EXECUTED BEFORE THE ABOVE CALL LINK EXAMPLES CAN BE EXECUTED FROM A RUNNING X-BASIC PROGRAM!

ADVANCED DIAGNOSTICS PATCH FOR CALL LR

The Following Patch for the DIAGS file will allow Advanced Diags to be loaded with CALL LR. After the patch is made, you will still be to load it with option 3 on the E/A menu (Load And Run). Use Advanced Diags to patch itself as follows:

Diags Command	*Comments and Changes*
FIND FILE DIAGS	(should be at sectors 178 thur 187)
EDIT SECTOR 180	
	Move cursor to Byte # 167 and change (in hex)
	F81A to BB08
	Press FCTN 9 and
WRITE SECTOR 180	
EDIT SECTOR 186	
	Move cursor to Byte # 229 and change (in hex)
	4620202020202020 to 420201420123 46
	Press FCTN 9 and
WRITE SECTOR 186	
EDIT SECTOR 187	
	Place cursor at Byte # 0 and change (in hex)
	46202020202020202020202020202020 to 39BB0C42C80142834242046042F8
	2020 1A46
	Press FCTN 9 and
WRITE SECTOR 187	

Advanced Diags can now be loaded with the CALL LR("DSK1.DIAGS") command or from a running XB program (after DELETE "XILR") CALL LINK("LR")("DSK1.DIAGS").

ADDITIONAL INFORMATION

- The CALL RUN subprogram executes entirely out of the DSR space. It is not in Expansion Memory or in the cartridge space so the Program Image file must reside on a FLOPPY DISK in drives 1 thru 4. It CAN NOT be on a Ram Disk or Hard Disk since this would require these DSRs to be turned on and the TI 99/4A can not have 2 DSRs turned on at the same time.

- You will automatically be returned to the Title Screen when CALL RUN needs to load more than 1 file and there is an error when it tries to load the additional files.

- The CALL LR subprogram sets up a PAB while the DSR is turned on and then branches to the loader which turns off the DSR and loads the file according to the PAB. This allows DIS/FIX 80 files to be loaded from a Floppy disk, Ram Disk, or Hard Disk. This loader is part of the standard E/A utilities which are loaded into low memory by CALL LR or CALL ILR.

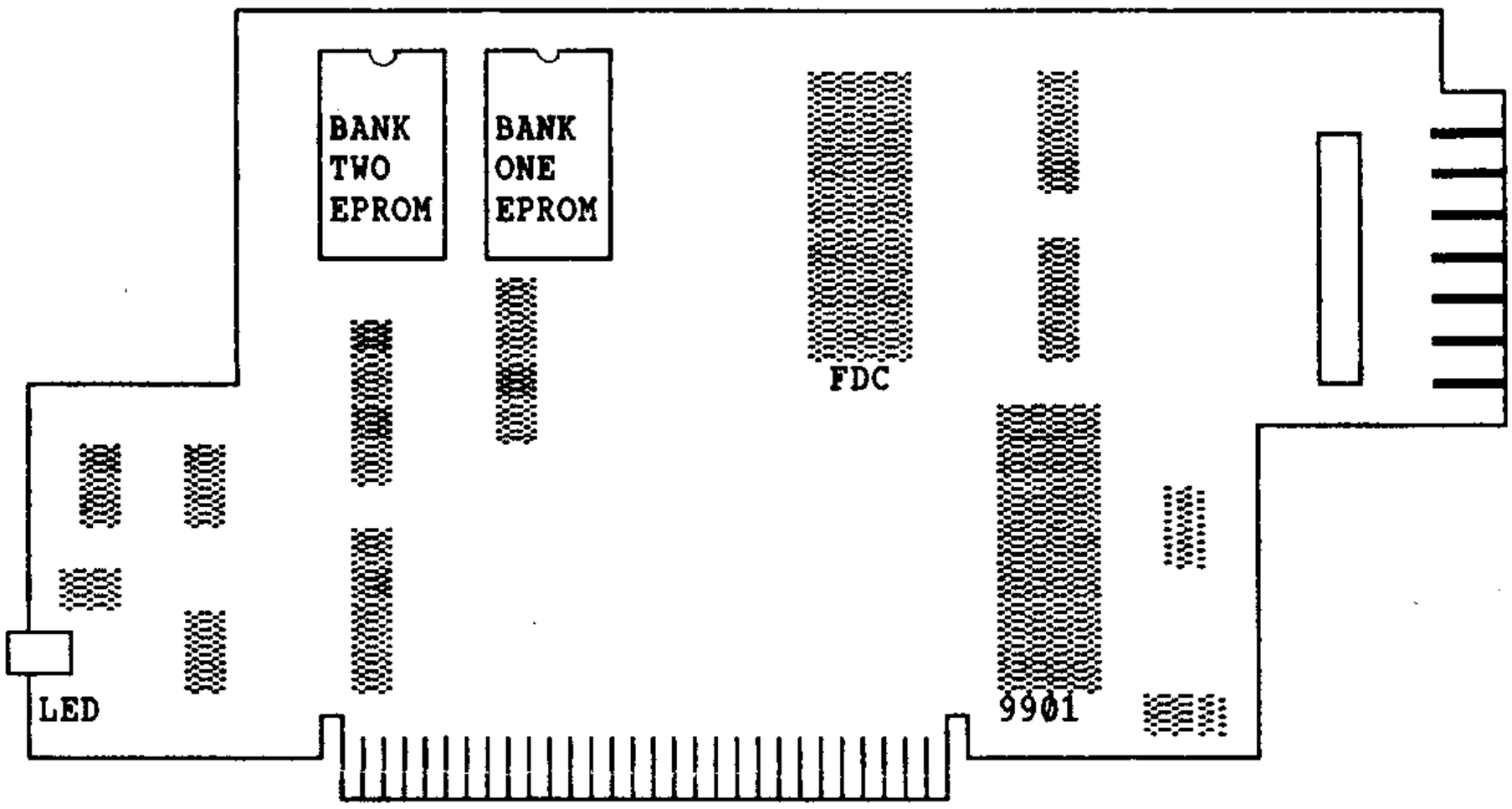
- GPLLNK which is loaded by CALL LR or CALL ILR has been modified to our Universal GPLLNK which was published in the Smart Programmer. This allows it to be used without regard to the module, if any, plugged into the module port. This GPLLNK DOES NOT require any special adjustments for Auto Start or Non-Auto Start DIS/FIX 80 programs. (see EXPLORER Manual page 69)

- Programs that return to the cartridge or TI-Basic MUST use RETURN instead of B @>6A or B @>70. All that needs to be done is to save R11 of the GPL Workspace when your program first starts, then when you want to return just restore the GPL Workspace Pointer and R11 and execute RT. If the CALL LR program tries to return to Basic via a B @>6A or B @>70 it will not return properly and it will most likely lock up.

- The DELETE "XILR" Loads the E/A Utilities into Low Memory Expansion with a couple of pointers modified so that CALL LINK will work properly. (i.e. The Name Link Pointer and Validation flag are in their proper place). Once the program starts to run these pointers are automatically restored to there proper E/A values.

NEW EPROM INSTALLATION

Install the two new Eproms into your Disk Controller as per the diagram shown below:



NOTES ABOUT INSTALLATION

On ***1985 REV A*** cards the Bank 1 & Bank 2 Proms are swapped. Bank 1 goes into the socket labeled U1 and the Bank 2 Prom goes into the socket labeled U2. The ***1985 REV A*** cards use a Western Digital 1773 Floppy Disk Controller chip that is mounted directly to the main circuit board instead of being on another circuit board that is plugged into the main board.

If you are not sure what type card you have, just put the new EPROMS in the same location (Banks 1 & 2) as the old PROMS.

If the EPROMS are put in with the Banks swapped the Disk Controller WILL NOT be recognized by any software, but the computer will appear to power up correctly.

With the EPROMS installed properly you will see ***DOS (c) 1986 MILLERS GRAPHICS*** at the top of your TI Title Screen.