User's Manual

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First Edition, First printing, December, 1991

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Section 1
Preliminary Information

How To Use This Manual

Different sections of this manual describe the two different driver systems included in the the Perfect Print LQ package. Section 3 describes the Perfect Print HQ Driver Disk with interpolation drivers, and Section 4 describes the Perfect Print GEOS LQ Print System. Either part can be read independently. If you are working mainly with geoWrite and wish to achieve the best possible printout, simply follow the instructions in Section 4. If you are interested in improving the printout of your geoPaint or geoPublish documents, or quickly and simply improving geoWrite printouts, check out the description of the HQ interpolation drivers in Section 3.

Don't let the size of this manual disturb you! It is not necessary to read every section. However, the sections dealing with printer driver installation and the main program are extremely important. Refer to those sections (3 and 4) if you're interested in getting started right away.

After successfully installing the HQ drivers and/or the GEOS LQ program, Perfect Print is ready to use. The rest of this manual can be used as needed. If you should wish to push Perfect Print to it's limit, we recommend you spend time studying all the sections of this manual.

Introduction

GEOS is a fascinating and productive system. This graphic operating system, complete with mouse-driven icons, windows, pull-down menus and applications running under the same environment, has simplified the use of the Commodore 64 and 128 computers. The basic GEOS system, which includes geoWrite and geoPaint, overshadows most other programs with it's capabilities and user-friendliness. Other GEOS applications offer a wide range of functions from database management to desktop publishing, previously available only to users of larger and more expensive computer systems.

Until now, there has been one large drawback to the GEOS system - the printout. After carefully creating a stunningly attractive document in geoPaint, geoWrite or geoPublish, the inferior quality of the printout caused WYSIWYG to become WYSWMYG (What You See Will Make You

Gasp!) There were really only two alternatives. Either put up with the poor results, or turn to other, more complex programs which offered better print results without GEOS.

Perfect Print was designed to solve this problem. This package consists of the GEOS LQ Print System for geoWrite and a collection of powerful HQ interpolation printer drivers for the other applications. The Print System expands geoWrite (the most used application in GEOS) to new printout dimensions. Documents created with geoWrite can be printed out in the highest possible quality allowed by your printer. Printouts of 240 x 216 dpi (dots per inch) on 9 pin printers and 360 x 360 dpi on 24 pin printers are attainable. Special fonts are included which support the high resolution of the printer and make high quality printouts possible. While the end result does not quite reach laser printer quality, it can certainly be compared.

Naturally, you'll also want to improve the printout quality of other GEOS applications. The GEOS LQ Print System, however, only works directly with geoWrite documents. Processing geoPaint or geoPublish documents in the same manner would not be technically possible, so a different method must be used. GEOS allows the installation of different printer drivers, without which normal printing is impossible, yet the print quality produced by most standard GEOS printer drivers leaves a lot to be desired. The collection of HQ printer drivers included with this package solves this problem. These newly designed drivers use special interpolation routines to deliver substantially improved print quality. The results are not quite as excellent as those of the GEOS LQ Print System, but are equal or superior to printouts of other programs outside of GEOS. Special HQ fonts are also included which work together with the HQ printer drivers to produce the best possible quality. Normal GEOS fonts can also be used in connection with the HQ drivers with excellent results.

The installation and use of the GEOS LQ Print System and the HQ drivers are relatively simple. Problems may occur with the diversity of the printer types. Therefore, please read the installation instructions in this manual carefully, which cover most available printers and how they should be configured with this system.

How the Perfect Print LQ System Works

What is it that makes the printout quality of GEOS documents so poor? The answer is simple. The pixels (dots) which make up the monitor screen are not clearly defined, therefore, the edges and corners are not that noticeable. The printout, being more detailed and exact, makes the deficiencies visible. This problem can be masked by increasing the print density through multiple passes. This approach, however, tends to make the printout darker

and somewhat fuzzy or less defined. Perfect Print offers some better solutions.

The first improvement is to swap the normal GEOS printer driver with an interpolation driver as found on Perfect Print LQ's HQ Printer Driver Disk. This driver doesn't just deliver the print data from the computer to the printer, but examines the data to create output in an entirely different way. The inferior GEOS resolution is interpolated (changed) into a higher resolution printout by intelligently inserting extra dots to provide suitable output. This is not, however, the highest quality available from the system.

Higher print quality is attained when the GEOS LQ Print System is used in conjunction with geoWrite documents (and only geoWrite documents are handled by this system). The Print System replaces the inferior on-screen fonts during printout with high resolution LQ fonts. This way the maximum print quality is attained - just as the font designer intended - because this method does not use interpolation through which the fonts could become enlarged or distorted. On a 9 pin printer with font sizes up to 15 points, quality is reached which exceeds that of all other systems. An even better quality is reached on a 24 pin printer using fonts up to 10 points. Slight losses in the quality may be visible when using larger point sizes, though these are often easily discernable.

The GEOS LQ Print System does use interpolation routines when printing graphics in geoWrite, when normal GEOS fonts are used, and when very large point sizes in very high resolution are used.

Contents of the Perfect Print LQ Package

Perfect Print LQ is available in two versions: The standard package and the complete package. The difference in the two packages lies solely in the number of LQ fonts which are included. The standard package has 7, and the complete package has 45.

Included in both packages are the following:

- HQ Printer Driver Disk with HQ drivers for 9 and 24 pin printers
- Fonts optimized for use with the HQ drivers
- GEOS LQ Print System for geoWrite
- 7 or 45 LQ fonts for use with the GEOS LQ Print System
- Programs for modifying or creating LQ fonts

The standard package is contained on two double-sided 1541 disks. The first disk contains the GEOS LQ Print System and five LQ fonts and the second contains the HQ printer drivers with HQ fonts and two additional LQ fonts.

The complete package is contained on six double-sided 1541 disks. The first two are identical with the standard package and the other four contain the collection of LQ fonts.

Perfect Print LQ and GEOS 128

The GEOS LQ Print System operates with GEOS 128 in both 40 and 80 column modes. This is also the case with the accessories. In both modes, the 2 MHz processor mode is used, doubling the calculating speed. This is only noticeable with faster 24 pin printers.

The font utilities operate in 40 column mode only.

Backup Copies

We strongly recommend you make back-up copies of all your original Perfect Print LQ disks. The disks are not copy-protected, as both the author and the staff of CMD dislike such protection schemes which hinder the legal user's ability to make backups. Please do not abuse this service to make pirate copies. This is not only unethical but also illegal. Remember to protect your originals by covering the write-protect notch with tape before copying. Proceed with copying, following the instructions in your GEOS manual. If errors occur in copying, please contact CMD for replacement.

Acknowledgements

We wish to thank those authors and graphic designers who helped put Perfect Print LQ together. First and foremost, many thanks to author and project coordinator Thilo Herrmann, who has worked long and hard not only on the original program for Germany, but who also dedicated many long hours in translating the package for English-speaking countries.

Most of the fonts were created by Kurt Pruefer, but others by Thomas Feucht, Prof. Helmut Siebert, Denis Doehler, Heiko Lauer, Hartmut Karrasch, Thomas Breier and Thilo Herrmann.

The printer driver disk was put together by Dieter Marten.

This manual was translated from German to English by Richard Gaudet, Austria. Thanks also to Richard for bringing this product to the attention of CMD. Editing of the manual was performed at CMD by Doug Cotton.

A special thanks belongs to Florian Mueller who inspired the whole project and gave much support.

Customer Service and Support

If you should encounter problems with Perfect Print LQ, first re-read the passages dealing with your problem before calling CMD. You may find the solution and save yourself some time and expense. You may contact CMD Technical Support at 413-525-0023. CMD Technical Support may also be contacted on Quantum Link (CIN/Hardware Support Group), GEnie (Commodore Flagship), and via CMD's BBS (413-525-0148).

If you encounter mistakes in the program or manual, please let us know. When reporting bugs, please provide as much information as possible about your system and how it is configured, and include a step-by-step procedure to duplicate the problem. Without such information, problems can be very hard to reproduce, and may go undetected. When reporting errors in the manual, be sure to include the Edition and printing numbers of the manual which you have (located on the copyright page), as well as page and paragraph information. Bug reports and manual corrections should be mailed in to CMD, as these can rarely be fixed by advice from a technician and must usually be forwarded to the author. Send all such reports to:

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Section 2
Printer and Connection Types

The Differences in Printers

With the abundance of printer manufacturers comes a variety of printers and a diversity of printer models. Suitable HQ interpolation printer drivers for most of the commonly used printers are located on the HQ Drivers disk.

The GEOS LQ Print System does not work with printer drivers, but rather with it's own printer adaptation files, which are included on the disks.

Most printers, from the computer's viewpoint, are identical. Regardless if you own a 9 pin printer made by Star, Panasonic, Epson or Citizen, you will only need one printer driver made for Epson-compatible printers. The situation with 24 pin printers is similar: Most of the 24 pin printers are NEC-compatible, even if they are called Epson-compatible.

Printer Connections

Printers can be connected to your computer in different ways. Often, connections are made to the computer using the serial bus. Many printers require the use of an interface if they are to be connected to the serial bus of the computer. Due to inferior transmission speed however, this method of connection is not as desirable, but may be necessary if your printer has only a Commodore serial port connection.

For faster output, the better method of connecting the printer to the computer is to use a direct parallel connection from the user port to the printer's centronics port. The transmission is much faster, especially when using 24 pin printers for graphic printouts as is the case with the GEOS LQ Print System and the HQ interpolation drivers.

The parallel connection does have a disadvantage - it only works with about 98% of the available printers, as the user port doesn't always deliver the necessary signal power. For more on parallel connections, see Section 7.

Some printers are connected to the computer via an RS-232 serial port connection to the user port. Perfect Print does not currently support this type of printer connection.

Printer Adjustments

The DIP switches on some serial connected printers may need to be switched to an Epson, IBM or "ASCII" mode before use. If not, they may print using an inferior "Commodore" mode. (the HQ drivers and the GEOS LQ Print System do not support the use of the Commodore printing modes). Please refer to the section of your printer manual which deals with DIP switch settings before using Perfect Print.

When using the HQ drivers and the GEOS LQ Print System, the so-called "Auto-Linefeed" is meaningless, as the program switches it off. The only known exception to this is the MPS-1230. Here the "Auto-Linefeed" must be manually switched off.

If your printout is horizontally ragged, then switch off the elite or condensed style using the appropriate DIP switches. The "GC" (geoCable) and 24 pin drivers and some of the Print System adaptation files do this automatically.

Many 24 pin printers can be switched to an IBM mode. The 9 and 24 pin IBM drivers will then work properly, but the NEC/Epson 24 pin drivers will not.

The Serial MPS-1230 Printer

The serial connected Commodore MPS-1230 printer may require special adjustment before it becomes Epson-compatible. This can be changed in the following manner:

Printer Emulated:	Epson FX-80
Open Mode:	4 P.C. Commands, 5 Commodore Comm.
Character Spacing:	10
Carriage Return:	CR=CR

The adjustment of these parameters takes place in a "dialog" with the printer. Your printer manual explains how to accomplish this.

Section 3
The HQ Drivers

The HQ Driver Disk

Contained in this package is a disk with an extensive collection of newly developed printer drivers. There are interpolation HQ drivers, "mega" drivers, plus some simple but fast drivers, which print in a lower quality. There may also be a "read me" file in geoWrite format located on the disk, which explains any newly developed printer drivers. These drivers may be used in place of the printer drivers contained on your GEOS system disk.

HQ interpolation drivers give better print quality and fastest output than any other type of GEOS printer drivers. We doubt that it is possible to produce faster drivers with higher output quality than these. Moreover, the 24 pin drivers are the only GEOS drivers we know of which utilize all 24 pins when printing.

The HQ 9 pin drivers work well with all GEOS applications without difficulty. The 24 pin drivers, however, do not work well with geoCalc and geoChart due to memory conflicts. These programs destroy areas of memory normally set aside for printer drivers. We are continuing to look for a solution to this problem, but for the time being you should use 9 pin drivers for printing from these applications.

All HQ drivers allow access to draft and NLQ options, just like standard GEOS printer drivers. For NLQ printing, you should use the Commodore 10 point font to format your document.

Quick Installation of HQ Printer Drivers

If you want to get right into producing better printouts, follow the steps in the following paragraphs. Should you have trouble with the installation, refer to "Installing HQ Printer Drivers" later in this section. After a successful installation, the topic "Detailed Description of HQ Printer Drivers" offers additional information.

On the first side of the printer driver disk are 18 deskTop pages containing the drivers. Copy the printer driver appropriate for your printer to a work disk and install it using the "select printer" item under the "geos" menu on the deskTop.

9 pin Printers

For a 9 pin printer (including Seikosha SL-80VC) it is best to use a driver from page two on the desktop. If your printer is serially connected, then one of the following drivers will be correct:

HQ9 med Eps S5 — for most Epson compatible printers with an internal or external (Xetec, Cardco, Supra) serial interface.

HQ9 med IBM S5 — for most IBM compatible printers with an internal or external serial interface.

HQ9 med Eps S4 — for the MPS-1230 (see Section 2, topic "Printer Adjustments, subtopic "The Serial MPS-1230 Printer")

HQ9 med Eps S7 — for most other printers with built in serial connection including Seikosha SP-xxxVC (remember to change to ASCII mode using DIP switches)

If you're not sure which of these drivers is correct for your printer, try each until one works.

If your printer is connected with a parallel connection, then one of the following drivers should be correct:

HQ9 med Eps GC — for most Epson compatible 9 pin printers which are parallel connected (user port connection compatible with "geoCable")

HQ 9 med IBM GC — for most IBM compatible printers and the MPS-1000 printer using parallel connection.

24 pin Printers

Drivers located on page four of the desktop are for use here. If your printer is serial connected, then use one of these drivers:

HQ24 low Eps S5 — for most printers with an external or internal serial interface.

HQ24 low Eps S7 — for most other printers with a built in serial connection.

If you're not sure which of these drivers is the correct one, then try each until one works.

If your printer is parallel connected (user port connection) use the "HQ24 low Eps GC" printer driver.

Using the drivers on page 7 of the desktop will improve the print quality even more on all 24 pin printers with the exception of Epson. Those for the new Epson printers can be found on page 8. Old Epson 24 pin printers can use the drivers on pages 5 and 6.

Contents of the GEOS HQ Driver Disk by DeskTop page number:

Page	Driver Name	Description/Quality
1	HQ9 low Eps (+IBM)	HQ, 9 pin, Epson, low
2	HQ9 med Eps (+IBM)	HQ, 9 pin, Epson, med.
3	HQ9 high Eps (+IBM)	HQ, 9 pin, Epson, high
4	HQ24 low Eps (+IBM)	HQ, 24 pin, Epson, low
5	HQ24 low+ Eps (+IBM)	HQ, 24 pin, Epson, low+
6	HQ24 low* Eps (+IBM)	HQ, 24 pin, Epson, low++
7	HQ24, med NEC (+IBM)	HQ, 24 pin, NEC+comp., med.
8	HQ24 med EpN	HQ, 24 pin, spec.Epson, med.
9	HQ24 high NEC (+IBM)	HQ, 24 pin, NEC+comp., high
10	HQ24 high EpN	HQ, 24 pin, spec.Epson, high
11	MG9 low Eps (+IBM)	Mega, 9 pin, Epson, low
12	MG9 med Eps (+IBM)	Mega, 9 pin, Epson, medium
13	MG24 low Eps (+IBM)	Mega, 24 pin, Epson, low
14	MG24 med NEC (+IBM)	Mega, 24 pin, NEC+comp., med.
15	MG24 med EpN	Mega, 24 pin, spec.Epson, med.
16	Simple9 (+IBM9 & 24)	Primitive Driver for fast print
17/18		Drivers for Star SG and exotic printers

Detailed Description of HQ Printer Drivers

It is not necessary to thoroughly read through this section. If you do not wish to be burdened with a lot of technical details and would rather get on with printing, skip ahead to "Installing a Printer Driver". You can read this section later if you want to learn more about the printer drivers. The experienced user may want to read on in order to choose the exact printer driver which best suits his needs.

The printer drivers on the GEOS HQ Printer Drivers disk are arranged in a specific order to allow you to find a suitable driver more easily. That is also why the drivers have been assigned uniform names, which are described in more detail below.

Type of Printer Driver

The driver names begin with the abbreviation, "HQ", "MG" or "Simple". "HQ" stands for "high quality" which indicates that the driver works with the interpolation procedure. We recommend installing this kind of driver as it produces the best printout.

"MG" stands for "mega" and indicates a high resolution printout which is not interpolated and tends to be a bit crude. In some cases, this can be useful.

"Simple" stands for just that. These drivers are only available for 9 pin printers and the printout is the standard low resolution. They are the fastest, however, sailing over a line just one time, and are useful whenever a fast printout is needed.

Number of Pins

The number of pins which the driver supports directly follows the driver type. Use only 9 pin drivers for 9 pin printers and 24 pin drivers for 24 pin printers. It is possible to use a 9 pin driver for a 24 pin printer, but printouts in graphic mode (high) will appear 'stretched' across the page. No problems occur in the text mode, so geoCalc users may use such a driver since geoCalc does not presently work with 24 pin printer drivers.

Degree of Print Quality

Following the printer type abbreviation and number of pins is the degree of print quality.

"low" indicates the lowest degree of print quality which can still give good results. This is also the fastest of the HQ type drivers. 9 pin printers print each line twice, reaching a resolution of 240 x 144 dots per inch (dpi). 24 pin printers print each line only once, reaching 180 x 180 dpi. 24 pin printers also have a "low+" and "low*" resolution. "low+" prints a reduced 360 x 180 dpi and "low*" an expanded 360 x 180 dpi. With these drivers it is possible to get the best results from the older Epson 24 pin printers in addition to working with all other 24 pin printers.

"med" indicates a medium degree of quality giving very good results. 9 pin printers print each line three times and reach 240 x 216 dpi. 24 pin printers use two passes to reach a resolution of 360 x 360 dpi. Older Epson 24 pin printers and all LQ-400 models are not compatible with "med" drivers, therefore use the "low+" or "low*" drivers described above. The same can be said for very old Star 9 pin printers (like Star SG-10). Use the "low+" drivers for these to attain 240 x 144 dpi with four passes over a line.

"high" squeezes the highest resolution out of your printer. A higher print density on 9 and 24 pin printers is unattainable. 9 pin printers reach an unreduced resolution of 240 x 216 dpi using six passes, and 24 pin printers attain 360 x 360 dpi using four passes. The difference between "med" and "high" is not that drastic. We recommend "high" only when uncompromised print quality is demanded, as it requires the longest printing time. The print ribbon should not be brand new, or your printout may smear.

Printer Type Specifications

Following the degree of quality term is the abbreviation for the printer type, which is usually "Eps". Drivers with this name work with just about every printer (9 and 24 pin). 24 pin drivers for high resolution are named "NEC" or "EpN". "EpN" drivers only work with newer Epson printer models (not LQ-400). The "NEC" drivers work with NEC and nearly all so-called Epson compatible 24 pin printers. The "IBM" drivers are for those rare IBM compatible printers (MPS 1000 parallel). Only parallel IBM drivers are contained on the disk. Drivers for exotic printers such as Star SG are also available. Other drivers, such as for color printers, are in development.

Connection Specifications

The final specification listed in the driver's name indicated the type of connection. Here you will find the abbreviations: "S1", "S4", "S5", "S7", and "GC". The "S" stands for serial connection and is followed by the secondary address used by the driver. This is very important with serially connected printers, as a wrong secondary address leads to a useless printout! This is the reason why many of the drivers contained on the GEOS System disks do not work with some serially connected printers. The Perfect Print HQ drivers solve this problem by offering printer drivers for all commonly used secondary addresses. The next section discusses which secondary addresses to use with the various printers and/or interfaces.

All serial drivers use the device number four. If your printer is set for device number 5, please switch it to 4 to use it with any of the drivers included with Perfect Print. If you have a specific need for serial drivers which use device number 5, contact CMD Technical Support.

The abbreviation "GC" indicates a driver which has been written to use a parallel printer directly connected to the user port of your computer. These drivers are the fastest due to the higher transfer rate of data between your computer and printer. Historically "GC" stands for "geoCable" which was produced by Berkeley Softworks, but many other cables have been produced by others which are compatible. For more information about parallel cables and connections, see Section 7.

Installing a Printer Driver

Installing a printer driver is very easy, the most difficult part being the selection of the driver which best suits your printer and/or interface. What follows is an exact description of which printer drivers work best with specific printers and interfaces. Check back to the Section 2, topic "Printer Adjustments", which describes the adjustments you may need to make on your printer.

Selecting Desired Degree of Quality

For high print quality we suggest the use of an "HQ" driver. For special purposes you may naturally choose another driver type. A desktop page on the driver disk has been reserved for every driver type and every degree of quality. After opening the disk you can flip through the pages and check out the available drivers. You may also refer to Section 3, topics "Quick Installation of HQ Printer Drivers" and "Detailed Description of HQ Printer Drivers".

Selecting Connection Type

The type of connection is found at the end of the driver's name ("S1", "S4", "S5", "S7", or "GC"). If your printer is connected with a normal serial cable then use a "S" driver. In choosing the correct "S" driver, check the type of your interface and also your printer. The following table offers some help.

S5 use with printers attached via most serial interfaces

S4 use with MPS-1230 printers

S7 use with Epson printers with Epson interface as well as serial Star printers and Seikosha VC printers (i.e. SP-1200VC, SL-80VC)

Printers connected with a parallel connection do not need secondary addresses. If the correct printer type is chosen, successful printing will occur when using a printer driver labeled "GC". If your printout with a serial connected printer is too slow, we advise changing to a parallel connection. This is only possible if your printer has a centronics port. Some printers must be parallel connected if they are to produce a reasonably good printout.

Which Driver For Which Printer?

In choosing a printer type, special care must be taken to insure a usable printout. Of the normally purchased types listed below, you are sure to find a type which fits your printer. The difference between 9 and 24 pin printers is also very important. In the text mode (draft or NLQ) 9 pin drivers will certainly work with 24 pin printers, which can at times be very useful.

9 pin printers, Epson-compatible

Practically all 9 pin printers such as Epson FX/LX, Commodore MPS (from 1200 up), Star, Panasonic, Citizen, Fujitsu, new Okidata, and Seikosha (from SP-1200VC up, also SL-80VC and SP-xxxAI)

Most 9 pin printers behave just like those produced by Epson and are referred to as Epson-compatible. Check your manual or your dealer if there is any question concerning your printers compatibility or simply try out an Epson printer driver to see if your printer is compatible. If you own one of the above printers choose a driver designated "9" and "Eps". We recommend "HQ9 med Eps".

Some SP-1200VC printers have a defective operating system EPROM which needs to be replaced before they will run properly.

9 pin printers, IBM-compatible

MPS-1000 (parallel only), some Panasonic, Okidata, Tandy and other, often older printer models. Also some Star models when in certain modes.

Some older printers are not Epson-compatible, but rather IBM-compatible. This is the case with the MPS-1000, which must be parallel connected. In addition, other, older printers may be IBM-compatible. A printer driver with the abbreviations "IBM" with "GC" (because of the parallel connection) must be used here.

Some newer 9 pin Epson-compatible printers can be switched to an IBM mode and will work fine with an IBM driver, but this may not be practical.

9 pin Printers, old Star printers (SG and others)

These printers are not, or not completely Epson-compatible and can only reach a vertical resolution of 144 dpi. The main difference is in the paper feed mechanics. When using Epson drivers with these printers, horizontal white lines occur between printed lines. Using an "SG" driver will correct this problem.

Other 9/8/7 pin Printers

This includes Seikosha SP-180VC, SP-1000VC, very old Star printers, MPS 801-803, Epson GX-80 (serial)

If you own one of these printers, you may not be able to use Perfect Print at all. There are simply too many insufficiencies which do not allow a higher resolution printout than with the normal GEOS printer drivers. We recommend that you consider purchasing a new or used Epson-compatible

printer with a parallel connection. If your printer is incompatible with Perfect Print, we will allow you to return the package for a refund, as long as it is returned complete and in original condition within 30 days of receipt. Please contact CMD to obtain a Return Authorization Number and instructions.

24 pin Printers, NEC-compatible

This includes printers from NEC and practically all so-called Epson-compatible and NEC-compatible printers like Star, Panasonic KXP, Seikosha, Fujitsu, and Okidata (except SL-80VC - see 9 pin printers).

Most so-called Epson-compatible 24 pin printers are in reality NEC-compatible. Use, therefore, primarily NEC drivers and fall back to "Eps" only if needed. Do not use the "EpN" drivers, as they only work with the very newest Epson and Epson-compatible printers.

The SL-80VC is a specially constructed Seikosha printer which has a 24 pin print head but otherwise behaves like a 9 pin printer.

24 pin Printers from Epson (original Epson printers)

The Epson printers present some problems due to the lack of a software command in their operating system. Old Epson 24 pin printers and LQ-400 models cannot use "med" or "high" drivers. Best results can be obtained by using "Eps" "low", "low+" and "low*" drivers.

If you are a fortunate owner of an LQ-550 or a new LQ-850/860 (or 1050/2550) you can use the "EpN" drivers. The "Eps" drivers also work with these printers.

24 pin Printers, IBM-compatible

A few 24 pin printers are IBM-compatible (usually very old 24 pin printers). Use the "IBM GC" drivers and a parallel connection in these cases. Many new 24 pin printers can be switched to IBM mode. It is usually better, however, not to use these printers in such modes.

Problems which may occur

If the printout is horizontally ragged, make sure that the condensed print mode on your printer is switched off.

If you are unable to produce quality results with these drivers, or are unable to get your printer to work with this package, please contact CMD Technical support for help. Let us know the exact printer make and type, and how the printer is connected to your computer (serial, parallel, interface,

etc.). You might also supply us with some sample printouts, if possible. We will try to solve the problem, but we may require a copy of your printer and/or interface manual(s) if the printer and/or interface are less common.

Installing the Driver

Installation is relatively simple. Copy the chosen driver on to a work disk or system disk (GEOS 128). Choose "select printer" from the "geos" menu. Choose the driver from the dialog box and click "OK". The driver is now installed and ready for use in every application. If you are using gateWay, make sure the driver is the first to appear on your disk, or use the chooser to select it.

HQ Fonts

The best results with the HQ drivers are obtained using specially designed fonts. These fonts are primarily designed with vertical, horizontal and diagonal lines which are more easily interpolated by the HQ drivers. The quality attained with these fonts is very close to that of the GEOS LQ Print System. Fonts and graphics with curves and slightly slanted lines do not interpolate as well, and this can be seen in the printout.

HQ fonts are located on the back side of the driver disk and give optimum results when used with the HQ drivers.

Section 4
The GEOS LQ Print System

About the GEOS LQ Print System

The GEOS LQ Print System expands geoWrite's printing capabilities and allows adjustment of the print quality. The system is usually started from within geoWrite by first clicking "update" in the file menu and then "StartLQ" in the geos menu. Remember that only text which has been formatted with an LQ font will be printed out in the maximum quality. You'll need, therefore, at least one LQ font on your work disk.

Simplified Installation

If you want to get right into producing better printouts, follow the steps in this topic. Should you have trouble with the installation, refer to the topics "Making a Work Disk" and "Printer Adaptation". After you have installed the system successfully, see the topic "Using the GEOS LQ Print System" for additional information on system usage.

Perfect Print's GEOS LQ Print System requires much more disk space than an HQ driver. We recommend that you format a new work disk for the Print System, especially if you're using a 1541 disk drive. On this work disk you'll need "geoWrite", "deskTop" (or an alternate user interface) and the following files from the GEOS LQ Print System disk:

- "GeosLQ"
- "StartLQ"
- at least one LQ font (i.e., "RomaLQ")

Depending upon your printer and how it is connected, you may also need one or two additional files to adapt the system to your printer. If so, make sure that you place only one "LQConnect" and one "LQA" file ("A" for printer Adaptation) on your work disk.

Please note that the Print System is entirely independent from the HQ drivers, and does not use them or any other GEOS printer drivers.

If the Print System appears to lock-up when tested, it may possibly be waiting for a parallel printer which is not connected. Pressing the "q" key on your keyboard will remedy this situation.

9 pin Printers

If you are using a serially connected 9 pin printer, no additional files are normally required, and you can begin to print. If the printout results are incorrect, then it is likely that you will need one of the following files which are located on page two of the GEOS LQ program disk:

LQConnect S7	for use with many of the serially connected Seikosha SP-xxxVC printers. Check to make sure the printer is switched to the ASCII mode using the DIP switches.
LQConnect S4	for use with the MPS-1230. (see Section 2, topic "Printer Adjustments")
LQConnect GC	for parallel connected 9 pin printers (user port to printer).

Note: In addition to the file "LQConnect GC", parallel connected MPS-1000 printers also require the file "LQA IBM 9" located on page 3 of the deskTop.

24 pin Printers

24 pin printers (the Seikosha SL-80VC falls under the 9 pin printer category) need one of the following files, which are found on page four of the GEOS LQ program disk:

- "LQA Epson Q" for Epson printers ("LQA NEW Epson Q" is only for the newest Epson printers and not usable on the LQ-400.)
- "LQA NEC 24" for most all other 24 pin printers.
- "LQA IBM 24" for IBM compatible printers (rare).

If your 24 pin printer is serially connected, you probably won't need any other files. If your printout is incorrect you will probably require an additional "LQConnect" file located on page two of the program disk. Try out "LQConnect S1", "LQConnect S4" and "LQConnect S7" to find one that works.

Parallel connected 24 pin printers need to have the "LQConnect GC" on the work disk.

Making a Work Disk

Before you begin, you should take time to read the "Read Me" file located on the GEOS LQ Print System disk. This file contains additional information which might not be contained in this manual. After reading the file, create a work disk by copying the following files to an empty GEOS-formatted disk:

- "GeosLQ", the Print System application program
- "StartLQ", a desk accessory which allows you to enter the Print System from within geoWrite (this will appear in the "geos" menu)
- at least one LQ font ("RomaLQ", "UniversityLQ", etc.) from the GEOS LQ Print System disk:
- geoWrite, the GEOS word processor
- deskTop (or an alternate user interface)

The back side of the GEOS LQ Print System disk contains more LQ fonts, plus utilities for creating and revising LQ fonts. There are also two small programs for using a parallel connected printer with commodore BASIC on the C-64. A font editor is located on the back side of the HQ Drivers disk.

The simplest thing to do is to copy all the needed files onto one disk. It is also possible to spread the files around by copying them onto different drives. This is practical if you use several 1541 drives or wish to use a lot of fonts. Please note that geoWrite, StartLQ and any fonts you wish to use from within geoWrite must be on the same disk. "GeosLQ", connection file, parameter file and the printer adaptation file must also be on a disk together. The LQ fonts are usually placed on the "GeosLQ" disk. If you copy the parameter file "LQP FontDisk" to your "GeosLQ" work disk, then fonts may also be placed on the document disk (see Section 4, topic "The Configuration Files"). Documents may be saved on any disk you have room on. The "Read Me" file contains more information about configuration possibilities.

You can quickly run out of space if you are using a 1541 disk with only 170 kilobytes. To save space, you could use an alternative user interface, such as gateWay or QwikTop. You can also "create" room on your disks by deleting some of the point sizes of the LQ fonts (see Section 6, topic "About the Font Utilities").

Printer Adaptation

Most all printing programs have problems with printer adaptation and the GEOS LQ Print System is no exception. This is mostly due to the diversity of available printers and their connection possibilities. Most of the newer printers present no problems, especially newer 24 pin printers. If you've already successfully installed an HQ driver, you probably won't have much difficulty with the GEOS LQ Print System. The Print System should not be confused with the printer drivers, as it works completely independent from them, channeling data directly to the printer. It doesn't really matter which GEOS or HQ printer driver is installed. The only purpose they serve is that of determining the page length in geoWrite. This is the only practical reason to install a printer driver, but it isn't really a necessity. The GEOS LQ Print System uses it's own exclusive printer adaptations, which are found on the program disk.

If you've put together a work disk as described above you are still missing a printer adaptation and a connection file for the Print System. The printer adaptation gives the system information concerning the printer being used. The connection file determines how the printer is connected to your computer (parallel or serial).

The following information will let you know if you need adaptation or connection files and if so, which ones. If these files are needed, be sure to copy them to the work disk on which "GeosLQ" is located. Its important that only one printer adaptation and one connection file be found on your work disk. If several are located together on the same disk, the program will only recognize the first one.

Please check the topic "Printer Adjustments" in Section 2 to see if any special printer adjustments are needed.

The configuration files (adaptation and connection files) can be erased after the first use of the save operation in the print menu, as they will no longer be needed (see "save" description in Section 4, topic "Printer Adaptation", subtopic "Optional Parameter Files").

Connection File Selection

If your printer is serial connected, you should not need any connection file. The following information is only of interest to those whose printers are parallel connected or whose serial connected printers do not work properly. In this case one of the connection files, located on deskTop page 2 (front side of the Print System disk), will be needed. The names of all these files begin with "LQConnect" and end with one of the following abbreviations:

"S1", "S4", "S5", "S7", "GC" "GCSlow" or "GCFast." "GC" indicates a parallel connection. A parallel connected printer should use the "LQConnect GC" file. If this does not work, then try "LQConnect GCSlow".

The number following the "S" in the serial connection files is the secondary address. If you've successfully installed one of the HQ printer drivers then use one of the connection files which uses the same "S" number. You may also check the following table to see which file is the correct one. Pay special attention to the interface and/or printer type. Choose and then copy the fitting file to your work disk. If you're trying out several files, remember that the program will use the first of these files it finds on your work disk.

Most serially interfaced printers use the secondary address number five. These printers will not normally need any connection file as the Print System is programmed to use this secondary address. Printers with a regular serial interface will not generally require an "LQConnect" file.

LQConnect S4	MPS-1230
LQConnect S7	Epson printers with Epson Interface, as well as printers with built-in serial interfaces such as Star printers, and Seikosha-VC model printers (i.e., SP-1200VC, SL-80VC)
LQConnect S5	All Xetec and Cardco (Supra) interfaces

As mentioned, most interfaces use 5 as a secondary address for Transparent mode, but that number does vary. Consult your interface manual.

If your printer uses a different device number than four, simply open the "LQConnect" file under geoWrite and make the change in the document (all configuration files of the Print System are geoWrite documents). Changes are rarely necessary and should only be done when you're absolutely certain (please keep a back-up of the original - just in case!).

If the printout with the serial cable is too slow, we recommend a parallel connection to the user port. This is, of course, only possible if your printer has the appropriate parallel (centronics) jack. Some printers MUST be parallel connected in order to achieve improved print quality (MPS 1000).

You may try out the "LQConnect GCSlow" file, if you're having problems with the parallel connection. "LQConnect GCFast" speeds up data transfer a bit, but doesn't work with every printer.

Which Adaptation for Which Printer Type

The choice of the printer adaptation is extremely important. The most widely purchased printer types are listed below. The adaptation files for the printer types begin with the letters "LQA" and can be found on the desktop pages three (for 9 pin printers) and four (for 24 pin printers). When choosing an adaptation file, it is very important to discern between 9 and 24 pin printers. If you own a 9 pin Epson-compatible printer you shouldn't need any adaptation file at all. If you do need one, then copy that one only to your work disk. This completes installation of the adaptation file. If you have more adaptation files on your work disk, the program will only recognize the first one found. If you've already read the section about the HQ printer driver disk you shouldn't have any trouble finding the right file.

If you do encounter difficulty, you can contact CMD Technical Support for help. Let us know the printer and connection types.

9 pin printers, Epson-compatible

Practically all 9 pin printers such as Epson FX/LX, Commodore MPS (from 1200 up), Star, Panasonic, Citizen, Fujitsu, new Okidata, and Seikosha (from SP-1200VC up, also SL-80VC and SP-xxxAI)

Most 9 pin printers behave just like Epson printers and are thus referred to as Epson-compatible. You can check with your printer manual or dealer if you're not sure. You can also try out a few, which usually brings instant success. If your printer is Epson compatible, you will not need a "LQA" file on your work disk. The program takes care of this itself.

Some SP-1200VC printers have a defective EPROM in their operating system which needs to be replaced before they will run properly.

9 pin printers, IBM-compatible

MPS-1000 (parallel only), some Panasonic, Okidata, Tandy and other, often older printer models. Also some Star models when in certain modes.

Some older printers are not Epson-compatible, but rather IBM-compatible. This is the case with the MPS-1000, which must be parallel connected. In addition, other, older printers may be IBM-compatible. Use the adaptation file "LQA IBM 9" for these printers.

Some newer 9 pin Epson-compatible printers can be switched to the IBM mode and will work fine with an IBM driver, but this is not practical.

9 pin Printers, old Star printers (SG and others)

These printers are not, or not completely Epson-compatible and can only reach a vertical resolution of 144 dpi. The main difference is in the paper feed mechanics. When using the Print System without an adaptation file with these printers, horizontal lines occur between printed lines. Using a "LQA Oldmechanics" adaptation file for most Epson-compatible printers or "LQA Star SG" for a Star SG printer will rectify this problem.

Other 9/8/7 pin Printers

This includes Seikosha SP-180VC, SP-1000VC, very old Star printers, MPS 801-803, Epson GX-80 (serial)

If you own one of these printers, you may not be able to use GEOS LQ at all. There are simply too many insufficiencies which do not allow a higher resolution printout than with the normal GEOS printer drivers. We recommend you purchase a new or used Epson-compatible printer with a parallel connection. If your printer is incompatible with Perfect Print, we will allow you to return the package for a refund, as long as it is returned complete and in original condition within 30 days of receipt. Please contact CMD to obtain a Return Authorization Number and instructions.

24 pin Printers, NEC-compatible

This includes printers from NEC and practically all so-called Epson-compatible and NEC-compatible printers like Star, Panasonic KXP, Seikosha, Fujitsu, and Okidata (except SL-80VC - see 9 pin printers).

Most so-called Epson-compatible 24 pin printers are in reality NEC-compatible. Use, therefore, primarily the "LQA NEC 24" adaptation and fall back to "LQA Epson Q" only if needed. Do not use the "LQA NEW Epson Q", as it only works with the very newest Epson and Epson-compatible printers.

The SL-80VC is a specially constructed Seikosha printer which has a 24 pin print head but otherwise behaves like a 9 pin printer.

24 pin Printers from Epson (original Epson printers)

The Epson printers present some problems due to the lack of a software command in their operating system. All old Epson 24 pin printers and all LQ-400 models must use the "LQA Epson Q" adaptation file. The resolution on these models will only reach 360*180 dpi.

If you are the fortunate owner of an LQ-550 or a new LQ-850/860 (or 1050/2550) you can use the "LQA NEW Epson Q" file. This adaptation functions only with these newer Epson printers. The "LQA Epson Q" will also work with all these printers.

24 pin Printers, IBM-compatible

A few 24 pin printers are IBM-compatible (usually very old 24 pin printers). Use the "LQA IBM 24" adaptation file in these cases. Many new 24 pin printers can be switched to IBM mode. This will, however, normally bring disadvantages to the C-64/128 user.

Problems which may occur

If the printout is horizontally ragged, make sure that the condensed print mode on your printer is switched off.

If an exotic 9 pin printer neither functions without adaptation nor with "LQA IBM" then try out the "LQA Oldmechanic" and the "LQA Epson Half" (half-compatible) files.

If you are unable to produce quality results with this software, or are unable to get your printer to work with this package, please contact CMD Technical support for help. Let us know the exact printer make and type, and how the printer is connected to your computer (serial, parallel, interface, etc.). You might also supply us with some sample printouts, if possible. We will try to solve the problem, but we may require a copy of your printer and/or interface manual(s) if the printer and/or interface are less common.

Optional Parameter Files

Besides the connection and adaptation files you can also install a parameter file on to your work disk. This file can be changed within geoWrite to alter the page size, enlarge or reduce the whole document, etc. More on this in Section 4, topic "The Configuration Files". The default parameter file is "LQP Standard" located on page 5 of the deskTop.

Using the GEOS LQ Print System

The Print System is very user-friendly. The information contained in this section may help you better understand some of the options available.

The Documents to be Printed

Generally, any geoWrite document (but not geoPublish documents) can be printed with the Print System. If LQ fonts are used, then the best possible print quality will be produced. You may also use standard GEOS fonts, but these will be interpolated by the Print System during the printing process. The supplied font utilities will allow you to create your own LQ fonts (but this can be difficult and very time consuming!).

We do not recommend using the space bar to tidy up the lines of your document, but rather the formatting functions (justification, tabulation, etc., especially numerical tabulations which may also be used as right-aligned tabs). Remember to switch to left justified if you want to use tabs. If you need horizontal separation lines, use those in BSW-9, as this font is transferred to the printer without any changes.

Starting the Print System

The Print System can be started either directly from a geoWrite document by clicking on "StartLQ" in the "geos" menu (see Section 4, topic "Entering the Print System from geoWrite") or from the deskTop. If you click "print" in the "file" menu within a document or drag the ghost file over the printer driver on the deskTop, the Print System will not be used and the document will be printed out in the quality of the currently installed printer driver.

From the deskTop you can activate the Print System by double-clicking the LQ icon. The program then reads the connection file, the printer adaptation file, and the parameter file (if one is present). If the program encounters an error, an error message will be displayed and you will be returned to the deskTop. Appendix B lists the possible error messages and also offers additional help.

If everything runs smoothly, a file selection box appears with it's options. "Drive" lets you switch drives, "Disk" informs the program of a newly inserted disk, and "Cancel" takes you to the End Menu. Click on one of the documents and then choose "Open". Then the print menu appears.

The Print Menu

If you've mistakenly arrived in the print menu, simply click "Return" and you can select a different file. "Cancel" brings you to the End Menu. "Print" allows you to do just that. If this is your very first printout, just click on "Print" to test things out, and to make certain that the correct files have been installed. If problems occur refer to Appendix A, "Problems and Solutions".

From Page - To Page -

With these options you are able to print one, some, or all of the pages of the document. Clicking on the arrows moves the page number up or down. You may also directly write the page numbers into the broken-lined boxes beside the arrows by using the numbers and the DEL key on the keyboard.

Single Sheets / Copies

If you click on the "Single Sheet" box, this becomes filled in. The program will then ask you to insert a sheet before it begins to print a new page. With "Copies" you can determine the total number of copies of this file you wish to print out.

24 pin Mode

If you choose this box, your printer will print with all 24 pins, otherwise only eight pins are used. This box is not visible when a 9 pin adaptation file is being installed.

Print density X and Y

The most important function in the print menu, and the very heart of the GEOS LQ Print System, is the regulating of the resolution (or print density) with X and Y. The number value of X extends from 1 through 9 and determines the horizontal print density. Y values extend from 1 through 3 to control the vertical density.

The values X=3 and Y=1 are equal to the normal GEOS resolution (80 x 72 dpi) on a 9 pin printer. The highest resolution is X=9 and Y=3, reaching a print quality of 240 x 216 dpi. With a slow serial connected printer we recommend a X/Y setting of 6/2 (120 x 144) or 8/3 (240 x 216). With a 24 pin printer we recommend a setting of 4/1 (180 x 180). For even greater demands we suggest a setting of 6/2 (360 x 360) and recommend using a parallel connection (new ribbons tend to smear at 6/2, so use an older one or adjust the print head spacing away from the paper). More on this in Section 4, topic "Quality, Speed and Serial Printers".

Not all printers are able to reach the highest print density. Some older 9 pin printers cannot print higher than the Y value of 2, while older 24 pin printers are limited to the Y value of 1. Sometimes different X values produce the same results. The 24 pin mode box switches between 2 different X/Y values and should be set prior to making changes in the X or Y values.

With low resolution settings, best results are reached using the University LQ font. More on fonts in Section 5. A slight improvement in print quality may be reached if you set your printer transport to friction feed instead of tractor. Adjusting the print head gap may also help.

Interpolation

The rest of the switch boxes can be ignored if you wish to start printing. Three special functions can be switched on and off with these boxes. An activated Interpolation box makes sure that graphics and very large point sizes are printed in fine quality (identical to HQ printer driver quality). LQ fonts will normally be printed in a much higher quality. Even if normal GEOS fonts are used, activating interpolation will give you good results (HQ quality). Printing will, however, take more time, especially with 24 pin printers. If you're interested in a fast printout and are using big point sizes, then deactivate the Interpolation switch box. Deactivating interpolation can also be helpful when you want your graphics printed just as they appear on your screen, as they will not be interpolated.

geoWrite-Format/Gradual Sizing

If the print resolution deviates from the normal GEOS resolution of 80 x 72 dpi, GEOS LQ will not use the point size in the text, but one that better fits the chosen resolution. Often the font chosen from the disk is not the exact size. For example, GEOS LQ might need Roma 27 point, but because this font size is not available, Roma 24 will be used and slightly enlarged. This slight enlargement and reduction can be switched off using the "Gradual Sizing" box. Now the font size will be changed in whole number factors. The results are a slightly improved print quality but also changed font size. Therefore, use caution, as the printout can be larger or smaller. Watch the space between tabs and the end of the page. The Print System may even re-format the text, which might lead to awkward spacing between words. This happens because the system is trying to format the text the same way geoWrite formats text, which is extremely difficult when using whole number factors. By switching off the "geoWrite-Format" this problem is alleviated but the words printed on the paper generally won't be in the same lines as those on the screen.

Saving the Print Parameters

By clicking on the save icon, all print parameters will be saved to the disk and automatically read the next time you use the Print System. If you click once on this icon, you may delete any connection, adaptation or parameter files stored on your disk, because the whole configuration of the system is saved. This allows you to create your own versions of "GeosLQ" and to save space on your disk. Additionally the Print System will come up faster.

The parameters are saved directly to the "GeosLQ" file. If you need to have the default parameter settings again, you must copy the "GeosLQ" file from the distribution disk to your work disk.

Print

Clicking once in the Print box starts the printing process. Please ensure that your printer is online. It may be a few seconds before the printer actually begins printing. In 40 column mode, the screen will change colors. When the screen is dark, the program is "thinking" and arranging the data. A light screen lets you know the data is being transferred to the printer or the program is waiting for the printer. Printing can be stopped by holding down the RUN-STOP key. Parallel printers can also be stopped immediately by pressing the 'Q' key if RUN-STOP doesn't work. Remember to clear the buffer on your printer by turning the printer off and then on again. If you want an immediate stop on a serial printer, just turn the printer off.

The End Menu

Upon completion of the printout (or interruption), the GEOS LQ Print System moves to the End Menu. You will also arrive in the End Menu when you choose "Cancel" from the file selection window. In the End Menu you can choose between five options. "Print same document again" takes you back to the print menu. If you choose this option, but haven't really printed a document, the program takes you to the file selection window. "Print another document" takes you to the beginning of the program and the file selection window. "Open document with geoWrite" takes you back into geoWrite and to the document you are working with. "Enter geoWrite without document" will take you to geoWrite where you will have to select another document yourself or create a new document. If the program can not locate geoWrite on any of the drives, you will be brought back to the deskTop. "Return to deskTop" will do exactly that.

The present text is always the one chosen from the file selection window, even if this was left with a cancel command. This way, you can always return with the document to geoWrite for editing or text entry.

If you should find yourself back in the deskTop for no apparent reason, something has gone wrong during a disk access. Check your disk for the presence of corrupt files or disk errors. If you cannot locate the cause of the problem, you may want to create a new work disk.

Entering the Print System from geoWrite

Its a bit awkward having to leave geoWrite, and return to the deskTop in order to start the Print System. For this reason a desk accessory named "StartLQ" has been created. After "StartLQ" has been copied to your geoWrite work disk, it will appear under the "geos" menu in the upper left hand corner of the command menu in geoWrite. After clicking "StartLQ", the Print System is loaded and started. The document you were working on will be carried over into the Print System and you will find yourself in the print parameter menu. Unfortunately, the actual page of the document in geoWrite is not saved when a desk accessory is chosen. Therefore, "update" your page using the file menu, before you choose "StartLQ" from the geos menu. If you fail to "update", "StartLQ" will refuse to run and remind you to to update first.

When launched from geoWrite 1.3 (or 1.2), StartLQ cannot determine if a document has been updated. Therefore, a warning message is displayed which allows cancellation. This also happens if "StartLQ" is mistakenly chosen from another application or from the deskTop.

Sometimes a document is loaded from the wrong drive. This occurs when StartLQ cannot determine the disk drive and the same document is on two separate drives. In some rare cases, the document's name cannot be extracted from geoWrite.

If the Print System cannot be found on any drive, you will automatically be returned to the deskTop.

On the back side of the system disk you will find another version of "StartLQ" called "LoadLQ". This version does just about the same thing as "StartLQ", but differs in that it always takes you to the file selection window of the Print System, instead of to the print parameter menu.

An alternative possibility to start the Print System is the printer driver "DriveLQ" on the back side of the system disk. This driver is installed like an ordinary printer driver (copy it onto your work disk and install it with the DeskTop). Instead of driving a printer, it automatically launches the Print System. If you have it installed and choose "file/print" in geoWrite, you will be prompted with the usual dialog box. Just ignore it and click "OK" and the Print System will be loaded. It isn't necessary to "update" your document when using this method to launch the system. The disadvantage is that you'll have to install another driver if you want to print with any other GEOS application.

Quality, Speed and Serial Printers

The Print System is an optimized and very fast assembly language program. Still, a printout in the highest resolution does take some time. 9 pin printers tend to slow down the C-64/128. 24 pin printers push both the computer and printer to their limits. The serial printer connection really puts the brakes on! Due to this, you probably won't want to print in the highest resolution every time. Best results in low resolution printouts are achieved with the University font.

The highest resolution with 9 pin printers is reached with X=9 and Y=3 values (240 x 216). If the values are slightly reduced to X=8 and Y=3 the speed of the printer is doubled. X=6 and Y=2 is even faster, but the print quality suffers, due to an unfavorable reduction factor. This can be adjusted by copying the "LQP 1.3 wide" parameter file onto your work disk and erasing all other "LQP" files. The geoWrite 1.3/2.0 documents are then widened and the Print System prints the fonts without reduction or enlargement. Texts that use the entire width, and text in geoWrite 128 must set the right margin at 6 inches.

24 pin printers reach their highest resolution of 360 x 360 dpi at X=6 and Y=2. A faster printout can be had with a density of X=5 and Y=1. An even faster printout can be produced with X=4/Y=1, but here again, the print quality suffers. This can be rectified with the parameter file "LQP 24 ideal". With this file, the font point sizes 9, 12, and 18 do not undergo a size adaptation. A small border on both sides results, and the page is taller. If the GEOS printer driver "24ideal geoWrite" is installed in the normal way ("select printer" in the "geos" menu) geoWrite will be able to use the full page length.

Transferring Existing Documents

If your existing documents were written using either University, Roma or California, the Print System will automatically convert these to their equivalent LQ fonts, once the documents are copied to your work disk. Barrows LQ replaces LW Barrows. But the text will be re-formatted by geoWrite and the Print System. Be sure to check your document before printing to make sure the text is properly positioned.

The Configuration Files

You can influence the way the Print System operates by altering the configuration files, of which there are three different types. Two of them have already been mentioned: the connection file ("LQConnect...") and the printer adaptation file ("LQA..."). The third configuration file is called the parameter file ("LQP...").

All of the configuration files are simple geoWrite documents which can be opened and modified as you wish.

A configuration file is installed by simply copying one to your work disk. If you have several configuration files of the same type on your disk, remember that the Print System will choose the first of these files as it's configuration file.

Parameter Files ("LQP...")

Contained in the parameter file are parameters which can be altered to change the appearance of the printout. These changes range from the position of the underlining function to the height of the page. One of these parameter files may be copied on to your work disk (it is not a requirement).

The Supplied Parameter Files

A few parameter files are included on the disks which can be used to serve different purposes. If you wish to use one of these, simply copy it on to your work disk.

"LQP 24 ideal" is useful when you want a 180 x 180 dpi (X=4/Y=1) printout on a 24 pin printer. The text is slightly reduced, resulting in an excellent printout when using point sizes 6, 9, 12 and 18. Installing the printer driver "24ideal geoWrite" for geoWrite allows the use of the entire page length.

"LQP 1.3 wide" enlarges geoWrite 1.3 or 2.0 text to fit the entire width of the page, eliminating unwanted left and right margins. This is useful when printing narrow geoWrite documents and especially meaningful when using a 9 pin printer with a X=6/Y=2 print density, as the fonts will not be reduced.

"LQP FontDisk" informs the Print System that the fonts are not located on the Print System disk, but are instead located on the document disk.

"LQP Labels" sets the page height at 1 1/2 inches, which is the normal height of disk labels. Altering this file will allow the use of labels of other sizes. The number of copies is determined in the print menu. A sample file is located on the disk.

"LQP Standard" contains the standard parameter, which the Print System will use if no parameter file is found on the disk. Use this file as a pattern when modifying or creating your own files.

"LQP 11 inch" is only useful if you encounter problems with the formfeed on your printer. This file guarantees a page length of 11 inches, but cannot be used with single sheet operation.

"LQP Nooptimize" switches off the optimizing function of the Print System. That function reduces the print head motion. The printer will become slower without that function, but it is meaningful to switch it off if the printer is in the elite mode and delivers incorrect results.

"LQP Pixelcorrect" switches on the "pixel correction mechanism". This improves the printout quality a little when printing thick fonts.

If you wish to combine the features of several of these files, compare your changes with the "Standard.par" file. The following points are important: page size/additional factor, other/additional margin, pages/paper/paper length.

The Structure of the Parameter File

A parameter file contains important parameters which are independent from the type of printer being used. This allows you to creatively influence your printouts. You will hardly have to change a parameter file, as those included will usually suit the normal user (see Section 4, topic "The Configuration Files", subtopic "The Supplied Parameter Files"). Making changes in the files will require a working knowledge of how the Print System functions.

Using the "LQP Standard" parameter file as an example, let's examine how parameter files are structured.

Print density

```
;*** Parameter file for GEOS LQ: Standard ***
Yes    ;24 pin mode (meaningless for 9 pin printers)
8      ;(1-10) X print density for 9 pin mode
3      ;(1-3) Y print density
4      ;(1-10) X print density for 24 pin mode
1      ;(1-2) Y print density
```

These values set defaults for the print menu options (see Section 4, topic "Starting the Print System", subtopic "The Print Menu"). Generally speaking, 24 pin mode can always be on (yes). The Print System will detect the presence of a 9 pin adaptation file and switch automatically.

Page size

```
;** Page size
Yes, Yes      ; Automatic page sizing (X/Y)?
```

This should always be left as "yes, yes". The Print System then works out the correct enlargement factors for the chosen print resolution and multiplies them with the following factors.

```
1.0,1.0       ; (0.1-20.0) Additional factor (X/Y)
              ; with automatic on
```

With these factors you are able to enlarge or reduce the printout using other factors. If, for instance, you replace the first value with 2.0, the printout will be twice as wide.

```
1.0,1.0       ; (0.1-20.0) Factor (X/Y) with
              ; automatic switched off
```

If the automatic page adaptation value is set to "no", the Print System uses the factors here and does not care about the resolution. The result is a reduction in higher resolutions.

Fonts

```
;** Fonts:
Yes           ; Allow use of larger fonts?
```

GEOS LQ can only use larger point sizes if this question is answered with "yes". A "no" answer only allows the use of the original font point size. The printout is then similar to that of an HQ printer driver.

```
No, No        ; Allow only a whole number enlargement
              ; (X/Y)?
No, No        ; Allow only a whole number reduction
              ; (X/Y)?
0.5, 0.5      ; Correction amount for rounding font
              ; factors if "yes" is chosen
```

The enlargement or reduction of fonts in whole number factors is hereby forced. This is very similar to the sizing option in the print menu, but is separated from the X/Y values. The correction amount (they are the same for

the print menu adjustment) are used for rounding up or down the font factors. The correct value here is 0.5. This function will rarely be needed.

```
Yes      ; text-formatting according to geoWrite
         ; (geoWrite-emulation) ?
```

This is the preset adjustment for geoWrite-format in the print menu. A "yes" answer allows the line makeup of the Print System to be the same as that of geoWrite (if possible). "No" allows for a balanced printout, especially if the "Gradual sizing" option is chosen in the print menu.

```
No       ; Fonts on the document disk?
```

Fonts are always loaded from the same disk from which "GeosLQ" was loaded. This is normally the way the Print System operates, the exception being if "yes" is the answer. The system will then search for the fonts on the document disk.

```
64       ; Dummy value for the compatibility with
         ; older GEOS LQ Versions
0        ; Ditto
```

These two values (above) are ignored by the current system.

```
1.2      ; Underlining relative to base line
```

This value determines the vertical position of the underlining. At 1.2 the underlining is slightly under the letters. At 1.0, directly under the letters and at 0, above.

Pages/Paper

```
;** Page/Paper:
1        ; Number of copies
1,999    ; From page, to page
No       ; Single sheet mode?
```

These are the defaults for the menu options in the print menu.

```
2.0      ; Line pitch in GEOS pixels
```

geoWrite uses an additional line pitch of 2 pixels. BSW-9 point font is, therefore, 11 pixels high. With the Print System, that value can be regulated.

```
1.5     ; Distance, in inches, between footer and
        ; edge of paper
```

This distance can be made larger or smaller by inserting an inch value.

```
Yes     ; Perform form-feed?
```

If the Print System is to perform a formfeed after every page, a "yes" is required here. A "no" will cause the pages to print without a formfeed.

```
No      ; Use GEOS LQ's software form-feed?
```

With "No" here the system just sends a form feed command to the printer, so the printer has to know the right form length (you may modify that setting with DIP switches on most printers). "Yes" tells the Print System to perform the form feed itself. So a "Yes" here allows you to use any form length you want, independent from the printer. This is helpful when printing labels, as the page length can easily be adjusted by just altering the value below (see "LQP Labels").

```
11      ; (0.0-255.99) Page length in inches
```

This value determines the page length in inches. This is important for setting the bottom line and for the form feed if the previous value is set at "yes".

Other

```
;**Other
80      ; (0-639) Additional left margin for narrow
        ; text (V1.0-2.0)
0       ; (0-639) Additional left margin for
        ; full-width text (V2.1)
```

Both of these values regulate, in pixels, the left margin for the printout. The first value is for narrow documents, the second for those in which "make full page wide" in geoWrite has been chosen.

```
Yes     ; Blank screen while printing?
```

If you're bored with a blank screen during printing, then insert "no" here. In 40 column mode you will then see the system work. This slightly prolongs the printing with GEOS 64. With "No" here, on GEOS 128 the 2 MHz mode will not be used when printing.

```
1       ; Number of identical pin strikes
```

When using a worn out ribbon, the number of identical pin strikes can be regulated. This will, of course, result in a much longer printing time and is not practical when printing in high resolution.

```
Yes     ; Optimize printing for the left margin?
```

The unprinted part of the left margin is cut off and replaced with spaces. This saves time and unnecessary print head movement. If your printer has trouble with this setting, switch the optimizing to "no".

```
No      ; Pixel correction
```

"Yes" delivers better results when printing thick fonts in the second highest resolution.

```
Yes     ; Interpolation of graphics and normal GEOS
        ; fonts.
```

Yes interpolates graphics, normal GEOS fonts and very large LQ fonts. This is just the default for the print menu Interpolation option.

The Connection File ("LQConnect")

The Print System reads the manner in which the printer is connected from the "LQConnect" file. Parallel or serial information, device and secondary address numbers are contained in this file. It is normally not necessary to modify this file. You may have cause to change the device number from 4 to 5 if you're working with two serial printers.

On the system disk are 3 "GC" variations of the LQConnect file. "LQ Connect GCSlow" can be tested out if "LQConnect GC" does not work. We recommend the use of "LQConnect GCFast" only if your printer works with "LQConnect GC". That file causes the Print System to use the fastest possible data transfer method which may not work with all computers and printers (especially with GEOS 128 in 2 MHz mode).

The Printer Adaptation

Like the other configuration files, the printer adaptation file is a normal geoWrite document. In most cases it is not useful to alter this file, as an adaptation file for practically every available printer is supplied. You should only attempt to alter the adaptation file if you're well versed in printers and printer codes. Even then, care should be taken, as the structure of the adaptation file is very complicated.

If you should have problems, it is best to turn to us for help. Let us know your exact printer type and we will see if an adaptation file exists for it.

Most of the time, problems with the printer are not in the adaptation, but rather in using the wrong "LQConnect" file or incorrect DIP switch settings. Therefore, read through those sections again.

Section 5
LQ Fonts

Depending upon which package you've purchased, either 7 or 45 LQ fonts have been supplied with Perfect Print LQ. These fonts, when used with the GEOS LQ Print System, provide the best possible printing results. These fonts can also be altered with the supplied font utilities. More information concerning these programs is given in Section 6. Please read these sections before attempting to alter or create your own LQ fonts.

How the LQ Fonts Work

The GEOS LQ Print System requires larger point sizes than geoWrite in order to deliver improved results. If you're using, for instance, the normal University 10 point in your document (not University LQ), the Print System will use University 24 point. The printout, however, will be in low resolution. If you're satisfied with these results and only work with smaller point sizes, then 24 point will be sufficient. The Print System, however, was developed to produce high resolution printouts with the best possible quality. In order to accomplish this, the system needs larger fonts. These LQ fonts are contained on the supplied disks. When possible, use the LQ fonts with the larger point sizes of 30, 36, and 45 in your documents. These ensure the highest resolution as the letters will be smoothed and rounded. If your text is written, for example, in 12 point, the printout in triple density fits the LQ point size 36 exactly. This replacement of point sizes may change the position of the text in the printout slightly. Therefore, care should be taken with tabulations and page breaks, especially if the gradual sizing option in the print menu is switched off.

You should not attempt to use the point sizes 30, 36, or 45 for normal text, even though some may appear in the font menu. geoWrite doesn't handle these sizes very well. They are, however, good for titles. They appear on the screen in BSW 9 point, but print out in the correct font and point size. We advise care when using these sizes in your text as the page end in the printout will be different than it appears on the screen.

Installing LQ Fonts on your Work Disk

You only need copy the LQ fonts on to your work disk. The Print System expects the fonts to be on the same disk drive as the "GeosLQ" file and geoWrite. If you use "LQP FontDisk" or if you replace "no" with "yes" in your currently installed parameter file as an answer to the question "Fonts on the text disk?" (see Section 4, topic "The Configuration Files", subtopic "The Structure of the Parameter File") the system searches the fonts on the document disk.

It can be helpful to have several work disks, each equipped with it's own LQ fonts for a special purpose (letters or greeting cards and so on). You can also copy a complete disk and then modify it to suit you current needs. Work is also made much easier if you own an REU, or one of CMD's mass storage devices (HD Series hard drives, RAMLink, or RAMDrive).

Information Concerning the LQ Fonts

The fonts included in GEOS LQ were initially created for the German market, but most have been converted. The Gothic LQ font, however, still contains some German letters and characters which replace some seldom used characters on the U.S. keyboard. This applies to the following characters: [, \,], {, |, }, ~, @.

Paragraph Font

The font "Paragraph" is really not a font at all. It allows small spaces to be placed between paragraphs or under titles. To use this font, set the cursor at the beginning of the paragraph. Chose the "Paragraph" font and a point size larger than the current text. A space will appear when you type any letter. The space can be slightly enlarged if you type the letter in outline. There is one catch to this procedure. If the font of the whole paragraph is later altered, the "invisible" space changes to the letter or character you typed in the Paragraph font.

Gothic LQ

This is a font which you may find in old German newspapers or Bibles. It is divided into 3 font parts: "Gothic 7 LQ", "Gothic 12 LQ" and "Gothic 15 LQ". Each of these fonts contain the given font size plus the triple point size, which guarantees top quality on a 9 pin printer. There are also additional point sizes included, which give good results on 24 pin printers.

Uncial LQ

This font is divided into two sections: "Uncial 7 LQ" and "Uncial 15 LQ". This font contains only small and capital letters as well as the period, comma and slash.

Ring LQ

The letters in this font were all created from circles. Ring LQ contains only capital letters, numbers and some special characters.

Keyboard LQ

With this font you are able to produce text resembling computer keys. The letters are typed using the SHIFT key. The small letters are reserved for the special keys. They are:

```
q+w     = CTRL          t+z = SHIFT
u+i+o   = RETURN        a+s = DEL
l+|+{   = SPACE         y+x = TAB
c       = CBM           g   = F1
j       = F5            h   = F3
k       = F7            e   = Shift Lock
r       = Run Stop      b   = Inst/Del
v       = Clr/Home      d   = Cursor Y
f       = Cursor X
```

Arabic LQ

With this font you can write Arabic text with geoWrite. This is a bit difficult as Arabic script is written from right to left. While there is a program available for German GEOS which reverses input accordingly, we're not aware of such a program for U.S. versions.

Section 6
Modifying and Creating LQ Fonts

About the LQ Fonts

By using the font utilities supplied with Perfect Print, you can easily revise, adapt or create LQ fonts to suit your needs. You can, for instance, erase unwanted point sizes, create required sizes, copy sizes from one font to another, or change normal fonts to LQ fonts.

You can also create a completely new LQ font by using a font editor (one has been supplied). This is, however, very difficult and requires much time. Be sure to mark such fonts using "FontDistance", otherwise the Print System will treat them as standard GEOS fonts.

It is extremely important that at least one - but not more than seven - visible point sizes be contained within a font. If not, geoWrite will crash and your current document page may be lost (FontHide allows you to "hide" additional point sizes from geoWrite to avoid this). Special care should be given when modifying fonts. Save often to your work disk. Working on fonts (VLIR files) under GEOS the system tends to be rather error-prone. geoFont, especially, tends to crash and if you are using a ram disk your fonts may be lost. GEOS sometimes produces additional pseudo point sizes that cause geoWrite to crash and which cannot be deleted. The only solution is to move all point sizes of the font to a new font with "FontMove".

Existing fonts can be changed to LQ fonts with "FontZoom" and eventually "FontAdjust". If a large point size is available, but no small size, create the small size using "FontZoom" and a reduction factor of 3. You can then clean up the font using a font editor. If a small point size is available, but no large one, create the large one using "FontZoom" and an enlargement factor of 3. Cleaning up large fonts can be very time consuming.

At least two point sizes must be present in an LQ font. One is needed for the screen and geoWrite and one for the Print System. If you're using point size 12 for the screen, then a point size of 36 is recommended for GEOS LQ (9 pin printer set for X=8/9). If there is point size 40 available instead, the system will reduce the font slightly, causing a reduction in print quality.

If you want to modify an existing LQ font or create an entirely new one please follow this rule: The characters which make up one point size within a font should not differ in anything other than size when creating other point

sizes of that same font. GEOS LQ swaps the chosen point size with another at it's own discretion. If you wish to insert a special character in a font, be sure this character is present in all point sizes. You must at least make sure that the character is present in the point size which the Print System will use (36 if you're using 12 point in your document.).

When modifying or creating LQ fonts it is also important to match the proportion between width and height in the different point sizes. If, for example, the letter "N" in 12 point is 8 pixels wide, then the "N" in 36 point should be 24 (8x3) pixels wide. This is not always the case with the supplied LQ fonts, and need not always be. It is, however, a rule which should be followed as closely as possible. Slight differences will tend to balance each other out. "FontAdjust" and "FontDistance" are of help here.

GEOS LQ cannot handle point sizes requiring more than 14,500 bytes, and no font editor we're aware of can handle sizes requiring more than 8 Kbytes. In order to work with large point sizes, the use of "FontZoom", "FontCreate" and "FontSplice" is recommended. With "FontZoom" larger fonts can be separated into two halves. With "FontCreate" you can create two empty fonts. The two halves of the large font are then placed into the two new empty fonts. You can then use a font editor and work on them. The two halves are then placed back together using "FontSplice". The font is then saved under the original LQ font name and ID. Section 6, topics "FontSplice" and "FontDistance" offer more information.

The larger point sizes of the supplied LQ fonts are not saved in the usual GEOS format. The difference lies in the spaces between letters, which are normally saved in the GEOS format. The LQ fonts do not contain these spaces, but pack all the letters together. When they are used, GEOS LQ places the spaces between letters itself.

If, when modifying or creating your own fonts, you wish to have these fonts packed, you must mark them with the appropriate values using the help program called FontDistance. This program allows you to adjust the space between the letters of your font. But even if you don't want to pack your fonts you should mark your font with FontDistance. Otherwise the Print System will handle the font like a standard GEOS font.

About the Font Utilities

Some of the font utilities allow you to save a font to another point size than it was loaded from. This is useful when working with mega-fonts and should only be used there.

Single drive users can also use these programs without restrictions, as the request for the font file is made directly before saving or loading. You then have the option to choose a font from another disk.

Make sure that you never have less than one and never more than seven point sizes in a font. geoWrite will crash if it encounters an empty font or a font with eight or more point sizes. If you still wish to have more than 7 point sizes in a font, you will have to hide some from geoWrite using the program FontHide (Section 6, topic "FontHide").

If you encounter error messages when using the font utilities, you can look up the error and solution in Appendix B, "GEOS LQ Print System Error Messages". Any error messages which are not included in that listing are usually self-explanatory.

If you wish to leave a program, click Cancel or fill in no value and click Cancel in the appearing dialog box.

OK can always be chosen by simply pressing return.

FontScratch

"FontScratch" is a simple program which erases point sizes. This is useful if you do not need some of the point sizes in a font and want to create additional disk space. If the GEOS LQ Print System needs a point size you have erased, you will notice a loss in print quality. If you own a 9 pin printer and work mainly with 12 point, you may certainly erase point sizes 30 and 45 without any loss of print quality. When using a 24 pin printer in high resolution, you should always keep the largest point size.

You can also erase the point sizes 14, 18, and 24, and with "FontZoom" create other point sizes. The procedure is easy. Simply follow the prompts to erase and create the point sizes you want.

FontMove

FontMove can transfer a point size from one font to another. That way, you are able to create an entirely new font. When doing this, remember to include any type of smaller point size for geoWrite (They don't have to be identical to the larger point sizes) and at least one larger point size for the Print System to use. In case you want your smaller point sizes to be exact reproductions of the larger ones, use "FontZoom".

Using FontMove should not pose any problems. You choose the source font and pick a point size. You then choose either a destination font or create a new font. The point sizes between source and destination fonts must

be the same. If the point size in the destination font already exists it will be written over. Take care in choosing an ID number for the newly created fonts. Never chose 0, as that is the ID number for BSW-9.

FontCreate

This program simply creates an empty font file. Using "FontSplice" and "FontZoom" you can then save single point sizes to this font. NEVER open an empty font under geoWrite, as GEOS will crash and your text may be lost. After starting the program you will be asked for the disk drive, a name for the new font and the ID number. Be careful not to duplicate the ID numbers. If you're using this font simply as a storage area for "FontSplice" and "FontZoom" the ID number isn't very important.

FontZoom

FontZoom serves two completely different purposes. You can both split a point size in half and re-size a font.

If you wish to split a point size, proceed in this manner: First create two dummy fonts using "FrontCreate". Then start "FontZoom". When the program asks for the source font, answer with the proper name and then the proper point size. The program then asks which point size it should create. Answer with the same point size as that of the source font. The next question is answered by pressing the return key. FontZoom will now ask if you wish to work on the whole font. Answer no. The next question (first half?) can be answered with "yes". After a few moments you'll be asked for the destination font. Enter the name of the first dummy font. Next, you will be asked for the point size. Press the return key again and the first part of the procedure is finished. When the program asks if you would like to perform another operation, answer "yes". Follow the same procedure, this time allowing the program to work on the second half of the font and saving the font to the second dummy font. Now you can work on both halves with a font editor if necessary. Afterwards the two halves can be combined with "FontSplice".

FontZoom's primary function lies in it's ability to re-size a font. This is extremely useful for creating new point sizes for geoWrite and first draft point sizes for the Print System. These point sizes will require some editing with a font editor to make them look good. To use this function, follow these procedures: The program will ask for the source font and it's point size. Then the point size to be created. The font will then be reduced or enlarged. If you answer "100" to the next question (Size relation X in percentage) the proportions of the newly created font are correct. With "200"

the width will be doubled, and "50" halves it. Then the font is loaded. If the font is to be reduced, two additional questions will be asked, which deal with the reduction process. There are actually two reduction processes. The simpler process reduces the a font by simply dropping some pixels. This can lead to unpleasant results such as the loss of the cross line in the letter H. The second process eliminates this defect, collecting all of the black pixels. When the program asks if it should collect all the black pixels you should normally answer "yes" to both questions. An additional question will ask if the whole font should be worked on. Answer "yes" only when the resulting font will be smaller than 8 Kbytes. If the file will be larger than 8 Kbytes, answer "no" and then decide which half of the source font you wish to copy to the destination font. The zoom process follows, followed by the creation of the final font file.

FontSplice

The two halves of a font which were separated with FontZoom can be placed back together as one file with FontSplice. FontSplice can also unite a mega-font into one point size. When joining fonts with FontSplice all characters wider than a pixel are carried over from the first source font. Characters which are only one pixel wide are carried over from the second source font. The results are then saved to the destination disk under the real point size. If this size exists on the destination disk, the old point size will be replaced by the new size.

This program is relatively easy to use. It will first ask for the source fonts and their point sizes. After both are loaded and put together they can then be saved to the destination font. The graphic garbage on the screen when the second font part is loading is normal.

During the joining of the two font parts you may run into the error message, "Font too large!". This will occur if the first font part is larger than 12000 bytes or the second larger than 8000 bytes. With "FontAjust" you can eliminate the spaces between letters, thus reducing the number of bytes. If you're working with mega-fonts, which contain 6 point sizes, you will have to make 5 passes with "FontSplice. Try to make the two halves during the last pass the same byte size. Otherwise you may receive the above mentioned error message.

FontHide

"FontHide" serves one purpose - it hides single point sizes from geoWrite, which can only recognize seven point sizes, thus preventing a system crash. We recommend only hiding the larger LQ point sizes. The use of this

program is very simple. Simply follow the instructions in the windows. The Print System will recognize and use these hidden point sizes.

There isn't a program to restore the hidden point sizes. If this should be necessary, simple copy the point size back to itself using FontMove.

FontDistance

This program serves two purposes - it marks a font as an LQ font, making it acceptable for the Print System, and it adjusts the distance between the characters in a font. As already stated, some of the larger LQ fonts are packed, taking up less space in a font. This is done by removing the distance between characters. During printout, the Print System automatically adds the missing spaces. This distance differs from one font to another. FontDistance allows you to change this distance in existing LQ fonts or in LQ fonts you've created yourself. The program can also be used to check the distance values of a font.

After starting the program, the font is chosen. "FontDistance" then shows the limit point size. That point size (if existing) and all larger ones are packed and need additional space between the characters. The limit point size is normally 30. If you wish to have no distance at all between characters, type in the number 64. After pressing return, you'll be asked for the point size factor. This factor must be smaller than 1 and is used by the Print System as a multiplier. This determines the pixel width of the distance between characters. If the factor is, let's say 0.164, then every character in the point size 36 will be followed by a distance of 5.904 pixels (0.164 x 36). Inserting more than three numbers after the point is not necessary. When you press return again the values will then be saved to the font.

FontAdjust

This program will hardly be used and is really only for experienced users. It can, however, save you a lot of time. FontAdjust is used to alter the distance between the letters of one or more fonts. The distance between letters of a mega-font can be removed as well as standardizing the height/width relations of different point sizes within an LQ font. FontAdjust is used differently than the other font utilities. Information is inserted into the program via the geoWrite document "Adjust.txt".

In the first line of the file a font name within quotations is expected. In the next line the number values, wherein a set of three numbers belong to a point size. The first number determines the point size to be worked on, the second the pixel width of the number characters and the third determines the pixel width of the additional distance for every letter. These numbers are

separated from each other with commas. You can insert as many of these sets in a line as you wish. The next line marks either the end of the document or an additional font name with it's number values.

All fonts have to be on the same disk with the files "FontAdjust" and "Adjust.txt". After the program starts, the "Adjust.txt" file is read. The program then works on the point sizes, whereby the space left and right of each letter is removed. The new distance is then inserted to the right of each letter. Numbers are handled differently - they are given all the same width and are then centered. The point size is then saved back to the original font. This process is then repeated for the other point sizes and fonts found in the "Adjust.txt" document.

Instead of the second set of numbers you also may insert "N". Then the numbers are treated like the other characters. If you fill in "A" instead of the third number, all characters get the same width (defined by the second value) as the numbers.

There is an example on the disk which you may want to examine. This should only be used as an example.

"Adjust.txt" must not contain more than 255 elements. Each file letter counts as an element.

Garbage on the screen during adjustment is normal.

FontSize

This program shows the size of a point size in bytes. If the value shown is over 14500, the font should be in some way reduced (just delete two or three seldom used characters and set their width to one). Otherwise an error message from the Print System will some day inform you that the font is too large.

Section 7
The Parallel Printer Connection

Most printers purchased today are equipped with a centronics jack. This type of connection is normal for most computers. The C-64/128 are connected to the printer via the serial port, usually to the disk drive. In order to use a centronics printer, commodore users must hook up their computer first to an interface. These interfaces are little computers in themselves. This explains why every print program you own must be suited to the printer and interface before use. In fact the serial connection isn't efficient at all for GEOS users, as it slows down the system drastically. Its much better to connect the computer to a centronics printer with a cable from the user port. This type of cable is not very commonly available in the U.S. as it is in Europe, but we at CMD are aware of some sources and can supply you with this information at your request.

If you have a bit of experience in soldering you can probably make your own. In any case, make sure the interface is removed before using your computer. If not, serious damage to the printer, computer and/or interface could occur. The user port was not intended to serve as a printer connection, and can, in rare cases, cause some problems. This may often be solved by using the file "LQConnect GCSlow" for the Print System. If this does not work, check your cable and user port. They may be defective. The only other alternative is to hook up the printer with the serial connection.

The one disadvantage to having your printer parallel connected is that this connection is not supported by the operating system of the computer. Some programs, however, do support the parallel connection.

If you wish to print using a parallel connection from within basic programs, then use the program "INTERFACE" located on the back side of the LQ program disk. It is loaded with LOAD"INTER*",8,1 (then type NEW) and started with SYS51000. You can also find a smaller version on the disk, which is loaded with LOAD"CEN*",8,1 and started with SYS828. It is then possible to communicate to the printer using basic commands. Both programs only run in 64 mode. More information is contained in the "READ ME" file on the back side of the program disk (it's a BASIC program).

Purchasing a Parallel Cable

CMD Technical Support can provide you with information on where to purchase a parallel cable (we have not printed such information in this manual in case sources change). If you are thinking of purchasing your cable elsewhere, make sure the connections listed later in this section are identical with the cable you wish to purchase.

When inserting the cable into the user port, make sure the computer is turned off and the user port plug-in card is inserted right side up. Otherwise the user port can be damaged.

Making Your Own Parallel Cable

Those of you with experience in soldering can easily make your own parallel cable. Be sure to follow the connection directions below. A false connection will destroy chips in the computer or printer.

You will need the following parts: a C-64 user port plug, a centronics plug, a not too long cable (up to 6 ft.) with at least 11 wires (preferably shielded cable, though we have seen ribbon cable used), a soldering iron and solder.

The connection must look like this:

USER PORT			CENTRONICS	
A	GND		16	GND
B	Flag		11	Busy
C	PB0		2	Data in 0
D	PB1		3	Data in 1
E	PB2		4	Data in 2
F	PB3		5	Data in 3
H	PB4		6	Data in 4
J	PB5		7	Data in 5
K	PB6		8	Data in 6
L	PB7		9	Data in 7
M	PA2		1	Strobe

Make sure you mark the top side of the user port plug! The user port assignments can be found in the back of you computer manual. You can also connect pin 14 (auto-linefeed) and 31 (printer reset) from the centronics plug via switches to ground (pin 16). Then you are able to switch the auto-linefeed and start a reset. These connections have been tested out on many 9 and 24 pin printers without complications.

Appendix A
Problems and Solutions

The most common problems which may occur when using Perfect Print are listed here, together with possible solutions.

The Printer fails to respond.

Check to see if the printer is connected correctly. It may be parallel or serial connected (but not both). Make sure the printer is plugged in, turned on and on line. You may be using the wrong connection file or a printer driver with the wrong kind of connection. If you're using a Seikosha printer make sure that you use an "S7" LQConnect file or printer driver. It is also possible that the cable is defective. Turn the printer off, then on and try again.

The printer prints garbage.

Its possible that the serial connection is using the wrong secondary address. Try using a different "LQConnect" file or a printer driver with another "S" number. Read through the appropriate sections again and consult your interface manual. Make sure you're using the correct printer adaptation or printer driver. You may also have a defective printer cable.

You may be using a 9 pin printer which is behaving as a 7 pin printer. Switch the printer to the "ASCII mode" using the DIP switches (see Section 2, topic "Printer Adjustments"). Some printers just won't work with the Print System.

If you use a Panasonic KXP series 24 pin printer, it might be set to IBM mode. So try the "LQA IBM 24" adaptation file.

The printer might also print garbage if a printout is stopped with "Q", and an attempt is made to print again without first clearing the buffer (shut the printer off, then on). Stop the printing process using RUN-STOP to avoid this problem.

The printout is horizontally ragged or disarranged.

More than likely your printer can not handle the print optimizing function. This occurs mainly when the elite mode has been switched on using the DIP switches. Switch this off and try again. You may also try turning off the print optimizing function by using the parameter file entitled "LQP Nooptimize".

Parts of the text are printed too far to the left.

Your printer is having problems with the print optimizing factor. The solutions in the previous point can be used here as well.

Wide blank spaces between unrecognizable print lines.

The problem could be an extra formfeed. This problem occurs especially with the MPS-1230. See Section 2, topic "Printer Adjustments", which explains how to switch off the form feed. Perhaps your printer is set to IBM mode, so you may try "LQA IBM 9" (9 pins) or "LQA IBM 24" (24 pins).

Small blank spaces between good print lines.

You may be using the wrong printer driver or the wrong printer adaptation. Try a "SG" driver or the printer adaptation file "LQA Oldmechanic".

No form feed. Everything prints on the same line.

You're probably using a printer driver or an adaptation for the newest Epson 24 pin printers, which won't work on your printer. So don't use "EpN" drivers (new Epson), use "Eps" or "NEC" instead. With the Print System, use the adaptation file "LQA Epson Q" or "LQA NEC 24" instead of the "LQA NEW Epson Q" file.

Minimal horizontal movement of the print line.

Your printer is probably printing bi-directional. Turn this option off using the DIP switches.

The end of the page is not on the perforation.

Using the DIP switches, set the printer to 11 inch page length. In the Print System you may also copy the parameter file "LQP 11 inch" onto your work disk.

Headers and footers of the first page are not printed.

You've chosen the "title page" option in geoWrite. The Print System will not print the headers or footers in the first page if this is the case. Go back to geoWrite and turn this option off.

Slow printing speed

There are many causes for this. It could be normal, as high density printouts do take time. We highly recommend you connect your printer to the computer via the parallel user port. If your printer has a buffer of under 4 Kbytes, or no buffer at all, GEOS LQ is required to wait. Different fonts and font styles (especially Outline) in a document also slow down the system.

Your document does not appear in the Print System's file selection box.

Re-arrange your document's location so that it is among the first 15 geoWrite documents on the work disk.

Read/Write errors show up on the GEOS LQ Original disk

If you are not able to copy the files over to another disk, contact CMD to arrange for replacement.

Appendix B
GEOS LQ Print System Error Messages

The GEOS LQ Print System will let you know if it has encountered an error by showing an error message. Here you will find a list of possible errors with explanations.

The following errors can show up prior to display of the file selection box. They refer to errors in a modified parameter file or printer adaptation. If these errors show up continually, it might be best to erase the file and replace it with a supplied file, which can then be re-modified. You might want to take a look at Section 4, topic "The Configuration Files" for more information. Together with the error message, the filename and text line are also given.

Number expected

A number is missing, possibly in the given text line.

Number out of range

The number exceeds the allowed value range.

Yes or No expected

Only "yes" or "no" (capital letters allowed) can be used, and something other than this was found.

Unexpected character

A valid parameter is followed by an unexpected character.

"..." too many characters

There are too many characters within the quotation marks, for instance, by printer commands.

End of line expected

There are probably too many parameters in this line. Check for extras.

End of File expected

You no doubt have included one parameter line too many.

Note: The following errors can show up during normal program operation:

Disk error!

During disk access an error has occurred. The file in which the error occurred will be shown, as well as an error number. The error numbers, together with their meaning, are listed below. Unlisted numbers suggest either structural, mechanical or magnetic damage to the disk.

```
0         Meaningless
3,1       Not enough space on the disk
4         Too many files on the disk
5         File not found
13        Device not present
38        Disk is write-protected
```

File not found

The selected file can not be found. This error occurs when no file is chosen from the file selection box.

Too many fonts on disk!

Reduce the number of fonts on the disk. The Print System is only able to cope with a certain number of fonts and point sizes. geoWrite can only manage seven external fonts at a time anyhow.

Error while reading fonts

A disk error has occurred while reading a font. The error number is described under Disk errors!

Font too large!

The font is larger than 14,500 bytes.

Printer inaccessible!

The serial connected printer is either not turned on or is disconnected. Check your switches and cables.

Line buffer overflow!

This error may occur when using extremely small fonts and high print resolution. Reduce the resolution a bit.

Internal error!

This indicates an error in the Print System itself which cannot be displayed.

Appendix C
Contents of the Disks

Disk 1, side A: Perfect Print LQ Print System

GeosLQ	-	The Print System
Read Me	-	additional information
Start LQ	-	accessory to start the Print System from geoWrite
LQDemo2.1	-	demo text, geoWrite 2.1
RomaLQ	-	Print System font
UniversityLQ	-	Print System font
LQConnect S1	-	connection files for the Print System
LQConnect S4	-	connection files for the Print System
LQConnect S5	-	connection files for the Print System
LQConnect S7	-	connection files for the Print System
LQConnect GC	-	connection files for the Print System
LQConnect GCFast	-	connection files for the Print System
LQConnect GCSlow	-	connection files for the Print System
LQA Epson X	-	9 pin printer adaptation file
LQA IBM 9	-	9 pin printer adaptation file
LQA Epson Half	-	9 pin printer adaptation file
LQA Star SG	-	9 pin printer adaptation file
LQA Oldmechanic	-	9 pin printer adaptation file
LQA CP-80X	-	9 pin printer adaptation file
LQA NEC 24	-	24 pin printer adaptation file
LQA IBM 24	-	24 pin printer adaptation file
LQA Epson Q	-	24 pin printer adaptation file
LQA NEW Epson Q	-	24 pin printer adaptation file
LQP Standard	-	optional parameter file
LQP 24 ideal	-	optional parameter file
LQP 1.3 wide	-	optional parameter file
LQP 12 inch	-	optional parameter file
LQP Nooptimize	-	optional parameter file
LQP Labels	-	optional parameter file
LQP FontDisk	-	optional parameter file

Disk 1, Side B: Perfect Print LQ Print System Utilities

CaliforniaLQ	-	Print System font
BarrowsLQ	-	Print System font
OrnamentLQ	-	Print System font
OrnamentCapsLQ	-	Print System font
FontScratch	-	font utility
FontMove	-	font utility
FontCreate	-	font utility
FontZoom	-	font utility
FontSplice	-	font utility
FontHide	-	font utility
FontDistance	-	font utility
FontAdjust	-	font utility
FontSize	-	font utility
Adjust.txt	-	example command text for FontAdjust
LoadLQ	-	desk accessory to start GEOS LQ
Read me	-	CBM BASIC text program, describing "INTERFACE" and "CENTRONICS"
INTERFACE	-	program to control a parallel printer from BASIC (NEW + SYS 51000)
CENTRONICS	-	mini-program to control a parallel printer from BASIC (NEW + SYS 828)
Labels.Example	-	example labels for "LQPLabels"

Disk 2, side A: HQ Printer Drivers

Here you will find around 100 printer drivers. An exact explanation can be found in Section 3.

Disk 2, side B: HQ Fonts, LQ Fonts, Font Editor

Additional LQ fonts, plus HQ fonts developed especially for use with the HQ Printer Drivers. The GEOS application program "Font Editor" and it's associated documentation can also be found on this side of the disk. This program is "shareware". It is copyrighted by Jim Collette, and has been supplied with his permission. The version supplied is an older version, and a faster new version which also operates in 80 column mode on the 128 is available from Comm-Plex Software. See the 'Editor Updates' file for more information.

Disks 3 to 6: Additional LQ Fonts for the Print System

These disks are only part of the complete package. They contain additional LQ fonts. These can be ordered separately from CMD.

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PP-300001
12/91
Printed in USA