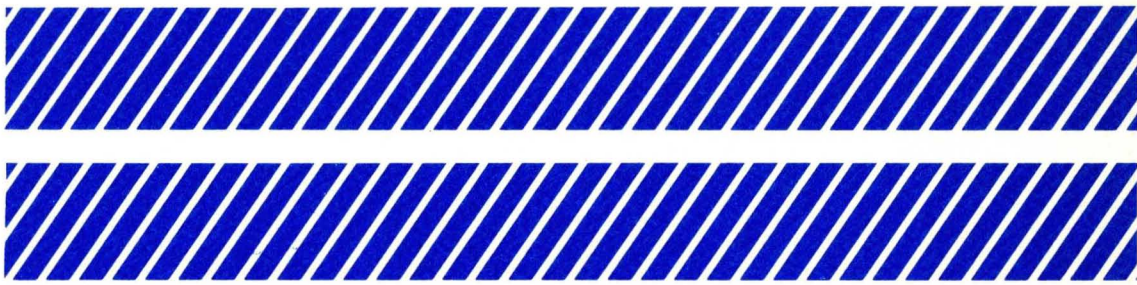
Jacquard Systems

J 500 System Generation



V1-072

J500 SYSTEM GENERATION

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V1-072-0	4/79	First edition.
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PREFACE

This manual describes the generation of a customized version of System II, for a J500 only. It is not a training manual; previous experience is assumed with the use of the AM Jacquard Videocomputer and its disk drives, with software concepts, and with standard System II utilities.

RELATED PUBLICATIONS

V1-005	System II Reference Manual
V2-005	System II Utilities
V3-005	Error Messages
V1-018	J100 System Generation
V1-065	Type-Rite Installation Manual
V1-066	Binary Synchronous Communications
V1-073	Software Guide

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Chapter 1: INTRODUCTION

System Generation is a procedure for creating your own version of System II -- a version which includes support for all the devices and features which you expect to use, either now or in the near future; a version which excludes memory-wasting support for unneeded devices and features. You may also trade off memory requirements against processing time by selecting one of the configurations with overlays.

The System Generation procedure -- often referred to as "Sysgen" -- involves the execution of certain utility programs. Here's a summary, simplified for clarity:

J500GN	Definitions for devices and features are validated, then stored in a System Table File.
RLDR	The System Table File is linked with a set of modules. The result is a System Binary File.
UNSTAL	An existing version of System II is deleted from the disk being built.
MKABS	Based on the System Binary File, a loadable system is created on the disk being built.
INSTAL	The disk addresses for the loadable system are recorded in a special Overlay Directory Sector on the same disk. This makes it possible to bootstrap the system into memory whenever necessary.
COPY	Based on some combination of keyboard requests and command files, a number of device drivers, tables, utilities, and applications are used as additions or replacements on the disk being built.

Later chapters will describe these steps in detail. But first, you'll need a strategy for the use of your disks.

SGV DISKETTE

Let's start with the two diskettes required for doing a J500 Sysgen. One is labelled "SGV181-5" -- a name which has these components:

SG	System Generation
V	Roman numeral for "5" -- meaning "J500"
1	First of a set labelled "SGI" -- in this case, the only one in that set
81	Release 8.1 of this software
-5	Contains a general-purpose version of System II which may be bootstrapped on a J500

The SGV181-5 diskette -- we'll call it simply "SGV" -- contains a special program, described later in this manual, named J500GN. It also contains more than a dozen files with names in this form:

```
Zxxxxx.RB
```

These files must be on the current primary -- not nominal -- disk while J500GN is being executed. Keep this fact in mind.

Finally, SGV contains a set of programs which may be useful before or after you run J500GN. These include --

```
CHATR
CHNOM
CHPRI
COPY
DELETE
DSKOPY
EXEC
FORMAT
PAUSE
PCRT
RENAME
SI5DEF
SORTM.SB
SPRCAT
STAD
```

-- plus all the FOxxU.SB bootstrap programs needed for FORMAT processing of J500 disks.

Finally, there's a command file, SGV181.X1, which may be used to copy everything else to a hard disk if desired.

SGF DISKETTE

The other diskette is labelled SGF181. This simply means "System Generation Support Files for Release 8.1 only." It would also be used for a J100 Sysgen.

The SGF diskette contains the RLDR utility, plus several dozen files with names in one of these forms:

```
xxxxxx.RB
SYSLFn
```

These files must be on the current nominal -- not primary -- disk while RLDR is being executed. Keep this fact in mind.

SGF also contains three special programs which are used to convert RLDR output into a loadable version of System II:

```
UNSTAL
MKABS
INSTAL
```

Finally, there's a command file, SGF181.X1, which may be used to copy everything else to a hard disk if desired.

RECOMMENDED PROCEDURE

After reading the rest of this manual, you may generate a system by following the procedure given below.

There are, of course, many other ways to use the programs on the SGV and SGF diskettes, based on the information in this manual and in the Utilities Manual.

This general-purpose procedure, however, is appropriate for almost all hardware and software configurations. Exceptions should be discussed with your AM Jacquard representative.

01. Make sure that no jobs are running.

02. Put the SGV diskette for the new release in FP00.

03. Bootstrap the version of System II supplied on the diskette.

    FP00 will become the primary disk. It will also become the nominal disk for CRT1. These assignments are necessary for the commands given below.

04. The STAD utility will be executed automatically; answer its two messages with the current date and time. Example:

```
ENTER DATE (YY/MM/DD):  80/03/01  <RETURN>
ENTER TIME (HH/MM/SS):  13/45  <RETURN>
```

05. At this point, note that the FORMAT program is available on FP00 if you want to format either a diskette or a hard disk. The DSKOPY program is also on FP00 if you want to make duplicates of any diskettes. Details on both programs appear in the Utilities Manual.

06. You'll need an already-formatted diskette later; make sure that it's available.

07. If you intend to build your system on an already-formatted hard disk, spin it up on Drive 0.

08. For the rest of this procedure, we'll use the term "pbb" to represent the drive containing the "primary being built" -- typically FP01, FD01, DA00, DD00, DE00, or DP00.

    We'll use the term "Fx01" to mean either "FP01" or "FD01" -- depending on whether you chose single or double density when you previously formatted the diskette in the righthand drive. But when we use "FP01" specifically, so must your commands.

09. Now you're ready to define your new system.

10. Put the SGF diskette in FP01.

11. Run J500GN, as detailed in Chapter 2. To fit our procedure, enter this for an Interactive Sysgen:

```
$J500GN  B=FP01:SYSTBL.RB
```

Or, for a Batch Sysgen, enter --

```
$J500GN  I=disk:fn  B=FP01:SYSTBL.RB
```

-- in which "disk:fn" gives the disk drive and specific file name of the input.

This step will add a System Table File, SYSTBL.RB, to the other modules which are already on the SGF diskette in FP01.

12. Remove SGI from FP00. You won't need it again.

13. Remove SGF from FP01, and put it FP00.

14. Now you'll need an already-formatted diskette in Fx01. If you're building your system on a diskette, insert that diskette in Fx01. If you're building a hard disk, insert a scratch diskette in Fx01.

15. Note that at this point, SYSTBL.RB and the other modules are on the diskette in the nominal drive -- still FP00. A diskette suitable for RLDR output is in Fx01.

16. Run RLDR, as detailed in Chapter 3. To fit our procedure, enter:

```
$RLDR/A  P=8000  B=Fx01:SYSBIN  SYSLFn/I
```

17. Refer to Chapter 4 for details on the following steps.

18. If you already have a loadable version of System II on your "pbb" disk, you must delete it at this point by entering:

```
$UNSTAL pbb:SYS
```

19. Convert the System Binary into a set of memory-image files:

```
$MKABS Fx01:SYSBIN pbb:SYS
```

20. Set up the Overlay Directory Sector:

    ```
    $INSTAL pbb:SYS
    ```

21. Remove SGF from FP00.

22. If you've built the system on a hard disk, bootstrap from it. The SYSBIN file on the diskette in Fx01 may be kept or cleared, as you choose.

    If you've built the system on the diskette in Fx01, move it to Fx00 and bootstrap from it. The SYSBIN file on this diskette may be kept or deleted, as you choose.

23. Install new software, especially drivers and utilities, on your primary. See Chapter 5.

24. This concludes System Generation.

Chapter 2: J500GN

The J500GN program is used to generate a System Table File. This file will contain encoded definitions for all the devices which you expect to use with your system; it also contains various limits, table sizes, and other options.

Once a System Table has been converted into a System II configuration, as described in later chapters, most of this information can be changed only by performing another complete System Generation. However, there are utility programs -- including ACUP, BCUP, CHBUFS, CHNOM, CHPRI, and STAD -- which can alter certain features later.

COMMAND LINE FORMAT

To execute J500GN, enter a System II command in one of the following formats. The fields are described on the next page.

```
$J500GN  [L=listfile]  [B=systbl]  [P=words]
$J500GN   I=input      [B=systbl]  [P=words]
```

The first format, without an "I=" field, is used for an Interactive Sysgen -- that is, a System Generation process in which the J500GN program asks questions on the screen, and expects answers from the keyboard. An unacceptable answer is diagnosed immediately; after corrections are made, it is entered again.

The second format, with an "I=" field, is used for a Batch Sysgen -- that is, a process in which both the questions and the answers have been set up in advance on a file.

Command Fields

To repeat, the command formats are:

```
$J500GN   [L=listfile]  [B=systbl]  [P=words]
$J500GN    I=input      [B=systbl]  [P=words]
```

The square brackets indicate optional fields; the brackets themselves would never appear in an actual command. The command fields have these requirements:

L= List File. The name of a disk file, which must not already exist, to record an Interactive Mode session.

In theory, an on-line printer could also be specified. However, note that printer drivers and wheel tables (supplied on the GEN2nn and TBL1nn diskettes, respectively) are not available during this manual's recommended System Generation procedures; only a disk file may be used in this case.

B= Binary File. The name of the System Table File to be generated; any existing version is automatically deleted. If this field is omitted, "nominal:SYSTBL.RB" is assumed.

Note that during this manual's recommended procedures, some diskette switching in involved; "B=FP01:SYSTBL.RB" is used for this field to override the default.

P= Partition Size. The hexadecimal number of memory words to be used as workspace by this program. If this field is omitted, a value of hex 0200 is assumed; this should be sufficient. If the error message "WORK SPACE EXHAUSTED" appears, a larger value must be specified.

I= Input File for a Batch Sysgen -- a complete set of questions and answers, created in one of two ways:

1. Perform an Interactive Sysgen, creating a List File on a disk with the "L=" field. Then modify that file as needed, with the EDIT utility or with Type-Rite. Note that any unacceptable answers, and the corresponding diagnostic messages, will appear on the file, and must be edited out before the file is used as input to J500GN.

2. Execute the SI5DEF utility under any configuration of System II which has the latest release level. The configuration on the Sysgen diskette itself may be used. Request output on a disk file:

```
$SI5DEF L=filename
```

Then modify that file as needed. Comment lines -- starting with semicolons -- will be ignored by J500GN.

COMMAND EXAMPLES

1. Interactive Sysgen, resulting in a System Table File named SYSTBL.RB on FP01, and no List File:

```
$J500GN  B=FP01:SYSTBL.RB
```

2. Batch Sysgen, in which FP01:Q123 already contains a complete set of questions and answers:

```
$J500GN  I=FP01:Q123  B=FP01:SYSTBL.RB
```

Q & A EXAMPLE

Perhaps it would be helpful to see a typical set of J500GN questions and answers before you read the rest of this chapter, which explains how and why the answers would be entered.

This is not the version of System II on the Sysgen diskette. That unusually generalized version may be inspected by bootstrapping from the diskete, entering this command --

```
$SI5DEF
```

-- and pressing <RETURN> again each time the message "CONTINUE?" appears.

The system shown here is more realistic. It supports single-density and double-density diskettes, a cartridge drive, a line printer, and a character printer.

```
SYSTEM DATE?
80 2 13

BUFFER POOL SIZE (HEX)?
1400

MAX BUFFER SIZE (HEX)?
0200

DISK SECTOR MANAGEMENT TABLE SIZE?
4

MAX NUMBER OF PROGRAM PARTITIONS?
64

MAX NUMBER OF JOBS?
32
```

```
FLOPPY DISKS: SINGLE DENSITY?
FP00 14
FP01 15

FLOPPY DISKS: DOUBLE-DENSITY 1-SIDED?
FD00 14
FD01 15

FLOPPY DISKS: DOUBLE-DENSITY 2-SIDED?

PERTEC D3441, 100-TPI DISKS?

PERTEC D3441, 200-TPI, 256-WORD SECTOR,  9744 USABLE SECTOR DISKS?
DE00 18 0
DE01 18 1

PERTEC D3441, 200-TPI, 256-WORD SECTOR,  9144 USABLE SECTOR DISKS?

PERTEC D3441, 200-TPI, 512-WORD SECTOR DISKS?

PRIMARY DISK?
DE00

DEFAULT NOMINAL DISK?

J500 TERMINAL?
CRT1 FP00

CHARACTER OUTPUT DEVICES/CENTRONICS/PRINTRONIX PRINTERS?
LPT1 0080 132 66  FF TS LC LU FB

DIABLO/QUME PRINTERS?
DPR1 0080 132 66  8 12  FF FS TS LC FB

INPUT/OUTPUT DEVICES,  ASYNCHRONOUS COM LINES?

GENERAL SILA COMMUNICATION LINES?

BSC COM LINES (POINT-TO-POINT, EBCDIC CONTOL CHARS)?

BSC COM LINES (POINT-TO-POINT, ASCII CONTROL CHARS)?

BSC COM LINES (MULTIPOINT, EBCDIC CONTROL CHARS)?

BSC COM LINES (MULTIPOINT, ASCII CONTROL CHARS)?

UNIVAC REMOTE JOB ENTRY LINES?

AUTO-DIALER?
```

INTERACTIVE MODE -- KEYBOARD INPUT

During an Interactive Sysgen, each question must be answered -- and completed with the <RETURN> key -- before the next question appears. Each answer consists of one or more fields, separated by any number of blanks. The order of the fields is fixed for each question.

An unacceptable answer may result in an error message; the program allows the corrected version to be entered immediately. Such messages are described later in this chapter.

Once a valid answer has been completed, it is not possible to go back and change it. Instead, the program would have to be aborted with the <CANCEL> key, then executed again.

When the very last question has been answered, there is a pause. The System Table File is generated at this time. When the cursor reappears, the program has terminated itself, and you are ready for the RLDR step described in the next chapter.

Standard Device Names

For each device type covered by a separate question, there is a standard device name pattern, implied by the default answers described below. A standard pattern consists of some letters to indicate a device type, followed by some numerals. For example, FP00 and FP01 are single-density diskette drives; FD00 and FD01 are double-density diskette drives; LPT1 is a line printer. Each device name must be unique in a given version of the system.

The use of these patterns is strongly recommended, because they are used as examples in all Jacquard reference and training manuals. Also, if you ignore this recommendation, the names and functions of some programs supplied by AM Jacquard may cause inconvenience later.

Most of the questions about device types will allow multiple answers -- one line and one <RETURN> for each device definition. The next question appears only when you press <RETURN> on a blank line.

It is legal to define no devices at all for most types; just press <RETURN> after the question appears. You must, of course, define at least a CRT and some disk names. You may also define devices which are not currently attached to your system, but which you expect to need eventually.

Default Values

When a question expects just a value -- a date, a number, or a letter -- as an answer, entering only <RETURN> is equivalent to entering the specific value shown as the default under that question. If you need some other value, enter it, then <RETURN>.

When a series of device definitions are expected, one or more complete lines are listed in this manual as defaults. If you want to include such a line -- with no changes at all -- then it's sufficient to enter just the device name given at the start of that line, followed by <RETURN>. This saves a lot of error-prone typing.

If you want to include a device definition line which differs from a default line in any field -- the name or any of the values which follow it -- then you must type in the whole line yourself, followed by <RETURN>.

Here's an example. The question for Diablo/Qume printers printers is described to have two default answers:

```
DPR1 80 132 66 8 12 FF FS TS LC FB
DPL1 80 132 84 8 12 FF FS TS LC FB
```

If you will never use your system to access such a device, just press <RETURN> to continue with the next question. No printers of this type will be defined.

You can define a printer named DPR1, with exactly the other fields shown, by entering simply --

```
DPR1  <RETURN>
```

Or you can define a printer, still named DPR1, with a full set of customized fields, like this --

```
DPR1 nn nnn nn n nn xx xx xx xx xx  <RETURN>
```

If you must use a non-standard name -- perhaps NSN1 -- then again, you would need a full set of fields --

```
NSN1 nn nnn nn n nn xx xx xx xx xx  <RETURN>
```

What you can not legally enter is this --

```
NSN1  <RETURN>
```

-- because the program doesn't know what fields to assume for any name except one of the listed defaults.

Similarly for DPL1 -- just the name and <RETURN>, to include the entire default line; or the name, a full set of of your own fields, and <RETURN>; or simply <RETURN> alone to indicate that you have no more definitions for printers of this type, and that you want to proceed with the next question.

DEVICE OPTIONS

Many device definitions end with a set of two-letter codes which called "options" or "characteristics." They are charted at the end of this chapter, under "Device Options." It is legal to omit all options, or to specify, in any order, those which are valid and desired for each device.

For example, a printer might have all these options --

    FF FS FB TS LC

-- or some of them, or none at all.

MODULES

The System Table File will include some modules, with names like $ZUVDSK.RB, which handle I/O for various types of disks. These modules are copied from files which must be on the primary disk during the execution of J500GN. This manual gives module names right after the relevant questions.

If a module file is missing, a fatal System Error 34 will occur while the System Table File is being built. This should not happen unless you've replaced the Sysgen diskette (and the recommended procedure) with an incomplete disk of your own.

DRIVERS

Except for the CRT and keyboard, all non-disk devices, such as printers and communications lines, are handled by System II subprograms called "drivers." These are not built in during System Generation; instead, they are automatically loaded from the current primary disk whenever they're needed to operate a device. For example, the driver $CDODRV.SB is loaded into memory, if it's not already there, every time that a line printer is opened.

When you review the contents of a primary disk you've built, intending to save space by elimination of unneeded Jacquard software, you'll need to know which drivers go with your defined devices, and which will never be needed. Therefore, this manual gives driver names right after the relevant questions.

QUESTIONS AND ANSWERS

The interactive questions and answers will now be detailed. Note that the default values under the questions also serve as examples of the correct formats for the answers.

Question: SYSTEM DATE?

Default: 79 12 1

Enter a year, a month, and a day, in that order, separated by spaces, and <RETURN>. The current date is recommended.

Each time that this version of System II is loaded into memory, the date given here, and the time 00:00:00, are displayed as the initial values of the System Date and System Time. The correct date and time should then be supplied immediately by executing the STAD utility, because many programs, especially Type-Rite, use the System Date in print-outs and catalog entries. Typically, an STAD command is made part of the System Initial Command File ($SYSICF), as demonstrated by the Sysgen diskette itself.

For details on SYSICF, STAD, and the related utilities GTAD and CHBUFS, see the Utilities Manual.

Question: BUFFER POOL SIZE (HEX)?

Default: 0C00

Enter <RETURN> to accept the default value, or another hex number -- minimum 0400 -- and <RETURN> to override it.

This value sets the memory words allocated to the System Buffer Pool, which is described in the System II Reference Manual. The appropriate size depends on application mix, disk types, and the size of the Sector Management Table described below. Memory is wasted by setting the pool size too high; efficiency is reduced by setting the pool size and the SMT size too low. The trade-offs should be discussed with your AM Jacquard representative. If necessary, this value may be changed later with the CHBUFS utility.

The pool size should be 1400 hex for a system with double-density cartridge disks in the 512 words/sector format (standard name DAnn). For other systems, the default value is recommended. Certain application packages, such as Type-Rite, may also need an allocation larger than the default value. See the Installation Manual for each package.

The pool size is automatically rounded up to a multiple of the maximum buffer size (set in the next question). In memory, the pool will always be preceded by an additional area, 1/16th the size of the pool itself, called the Buffer Control Table.

Question: MAX BUFFER SIZE (HEX)?

Default: 0200

Enter <RETURN> to accept the default value, or a hex number -- limited to 0100, 0200, or 0400 -- and <RETURN> to override it.

This value sets the maximum size of each buffer in the pool. It must be large enough for one sector from any defined disk device; 0200 is always enough to fit this rule. Other requirements may be imposed by specific application programs.

Question: DISK SECTOR MANAGEMENT TABLE SIZE?

Default: 4

Enter <RETURN> to accept the default value, or another decimal number -- between 2 and 16 -- and <RETURN> to override it.

This value sets the number of entries allowed in the Sector Management Table (SMT), a queue which consumes part of the System Buffer Pool. Each entry contains the hardware address and the data for one recent disk I/O request. If another program needs the same sector, then the SMT data can be reused (under certain conditions) without another device access.

The larger the SMT, the more efficiently the system will run; this will be particularly evident during Type-Rite scrolling. But the smaller the SMT, the more memory will be available for other purposes. A value of at least 3 is recommended; the maximum is 16.

Question: MAX NUMBER OF PROGRAM PARTITIONS?

Default: 64

Enter <RETURN> to accept the default value, or another decimal number -- between 8 and 100 -- and <RETURN> to override it.

This value sets the maximum number of program partitions which can be active at one time. Note that a single program, as seen at system command level, may actually require a large number of partitions for data and overlays. The overhead for each partition is only one word, so the default value, or a larger number, is recommended.

If you expect to use the Type-Rite command "BK" on your system, a value of 100 should be entered.

Once the system being generated is in use, the appearance of a System Error Code 27 may indicate that this value was too small for the job mix at that moment. However, a code 27 may also indicate that a partition was available, but too small.

Question: MAX NUMBER OF JOBS?

Default: 32

Enter <RETURN> to accept the default value, or another decimal number -- between 8 and 100 -- -- and <RETURN> to override it.

This value sets the maximum number of jobs -- both foreground and background -- which will be permitted to run simultaneously. The overhead for each possible job is only one word, so the default value, or a larger number, is recommended.

Once the system being generated is in use, the appearance of a System Error Code 26 indicates that this value was too small for the job mix at that moment.

Question: FLOPPY DISKS?

Modules: $ZFPC.RB, $ZFPDMT.RB, $ZFPLP.RB, $ZUFPDI.RB, $ZUVDSK.RB

Defaults:

(a)	(b)
FP00	14
FP01	15

(a) Device name.

(b) Device address, in hex; the only valid entries are 14 for Drive 0 (on the left), and 15 for Drive 1.

Single and Double Density

It is legal, and highly advisable, to define each single-sided floppy drive under both this question and the next. The names in each pair -- FP00 and FD00 for the lefthand drive; FP01 and FD01 for the righthand drive -- share a common device address.

Once this is done, the device name specified within a given program will determine which density is set for a drive from OPEN to CLOSE.

In particular, the device name specified to the FORMAT utility implies the density of the diskette being initialized, and all subsequent access to that diskette (until it's reformatted) must use a device name which implies the same density.

Each diskette should be clearly labelled with its density as soon as you've formatted it. Note that only the "/I" option of the FORMAT utility can change that density.

You must always define single-density names, because AM Jacquard software is distributed only on single-density diskettes.

Question: FLOPPY DISKS: DOUBLE-DENSITY 1-SIDED?

Modules: $ZADPC.RB, $ZDPDMT.RB, $ZFDLP.RB, $ZUFDDI.RB, $ZUVDSK.RB

Defaults:

(a)	(b)
FD00	14
FD01	15

(a) Device name.

(b) Device address, in hex; the only valid entries are 14 for Drive 0 (on the left) and 15 for Drive 1.

Question: FLOPPY DISKS: DOUBLE-DENSITY 2-SIDED?

Modules: $ZADPC.RB, $ZFALP.RB, $ZDPDMT.RB, $ZUFADI.RB, $ZUVDSK.RB

Defaults:

(a)	(b)
FA00	14
FA01	15

(a) Device name.

(b) Device address, in hex; the only valid entries are 14 for Drive 0 (on the left) and 15 for Drive 1.

Question: PERTEC D3341, 100-TPI DISKS?

Modules: $ZADPC.RB, $ZDPDMT.RB, $ZDPLP.RB, $ZUDPDI.RB, $ZUVDSK.SB

Defaults:

(a)	(b)	(c)
DP00	18	0
DP01	18	1
DP02	19	0
DP03	19	1

(a) Device name.

(b) Device address, in hex; the only valid entries are --

18	Drive 0
19	Drive 1
1A	Drive 2
1B	Drive 3

(c) Platter number. The upper, or only, platter is 0. On a dual-platter drive, the lower platter is 1. Each platter is a separate System II logical device.

These are single-density drives -- 100 tracks per inch, 3 megabtyes per platter. The hardware must be set for 12 sectors per track.

Single and Double Density

A system can include both single-density drives (defined with the question above) and double-density drives (defined with any of the next three questions).

Cartridges can be formatted on either type of drive, if they have been certified for 200 tracks per inch.

Once a cartridge is formatted in a given density, it can't be accessed by a drive with a different density until it's been completely reformatted, a process which destroys all data.

Question: PERTEC D3441, 256-WORD SECTOR, 9744 USABLE SECTOR DISKS?

Modules: $ZADPC.RB, $ZDELP.RB, $ZDPDMT.RB, $ZUDEDI.RB, $ZUVDSK.RB

Defaults:

(a)	(b)	(c)
DE00	18	0
DE01	18	1
DE02	19	0
DE03	19	1

(a) Device name.

(b) Device address, in hex; the only valid entries are --

18	Drive 0
19	Drive 1
1A	Drive 2
1B	Drive 3

(c) Platter number. The upper, or only, platter is 0. On a dual-platter drive, the lower platter is 1. Each platter is a separate System II logical device.

These are D3441 or D3481 double-density drives -- 200 tracks per inch, 6 megabytes per platter. The hardware must be set for 12 sectors per track.

A "24-megabyte drive" really contains two dual-platter units which share the same device address; the removable cartridge is Unit 0, Platter 0.

Question: PERTEC D3441, 256-WORD SECTOR, 9144 USABLE SECTOR DISKS?

Modules: $ZADPC.RB, $ZDELP.RB, $ZDPDMT.RB, $ZUDDDI.RB, $ZUVDSK.RB

Defaults:

(a)	(b)	(c)
DD00	18	0
DD01	18	1
DD02	19	0
DD03	19	1

Except for the default names, all of the information given for the previous question applies here.

This device type represents an older version of the disk I/O software, in which 600 fewer sectors were available. New users typically do not define this type.

Cartridges formatted as DDnn can't be accessed by any other type of logical device. To convert a cartridge to the newer DEnn format, these steps must be followed:

1. Copy all current files somewhere else, one by one, using a DDnn-type source device specification. BLDCPY, BACKUP, COPY, HKOPY, or similar file-oriented utilities can be used; DSKOPY is not appropriate. Note that a loadable version of System II can't be transferred from its absolute disk position.

2. Use the FORMAT utility on the cartridge, specifying a DEnn-type device name. A complete reformatting, not FORMAT/C, is necessary.

3. Copy back the files, one by one, using a DEnn-type target device specification.

Question: PERTEC D3441, 200-TPI, 512-WORD SECTOR DISKS?

Modules: $ZADPC.RB, $ZDALP.RB, $ZDPDMT.RB, $ZUDADI.RB, $ZUVDSK.RB

Defaults:

(a)	(b)	(c)
DA00	18	0
DA01	18	1
DA02	19	0
DA03	19	1

(a) Device name.

(b) Device address, in hex; the only valid entries are --

18	Drive 0
19	Drive 1
1A	Drive 2
1B	Drive 3

(c) Platter number. The upper, or only, platter is 0. On a dual-platter drive, the lower platter is 1. Each platter is a separate System II logical device.

As in the previous two questions, these are D3441 or D3481 double-density drives -- 200 tracks per inch, 6 megabytes per platter, 12 sectors of 256 words per track. However, for this device type, all System II software will act as if a track contained 6 sectors of 512 words per track.

There is no significant difference in capacity between DEnn (or DDnn) and DAnn drives. The advantage of DAnn is that sequential I/O is faster, because half as many device operations are needed to transfer a given file. The main disadvantage is that the System Buffer Pool must be larger for efficient operation, because each SMT entry will require 512 words, rather than 256. Also, hash files with small records will involve more wasted disk space than in the other formats.

Again, a cartridge disk formatted with a DAnn-type name can't be accessed with any other type of logical device.

Note that DAnn access requires a maximum buffer size, set earlier, of 0200.

Question: PRIMARY DISK?

Default: FP00

The device name given here must have been defined earlier. It will become the primary disk at bootstrap time -- an assignment which may then be changed at any time with the CHPRI utility.

There is no connection whatever between this entry and the switch-selected device from which the system is actually bootstrapped. They may be the same; they may be two drives of the same type or of completely different types. The choice depends solely on the procedures intended for a system start-up. Note, however, that a System Initial Command File ($SYSICF) will be executed at bootstrap time only if it's on the device specified here.

Question: DEFAULT NOMINAL DISK?

Default: FP00

This question is included for compatibility with J100 System Generation procedures, and may be answered with just a <RETURN>. Field (b) in the next question overrides any answer given here.

Note that no answer for this question will ever appear on a SI5DEF listing.

Question: J500 TERMINAL?

Defaults:

(a)	(b)
CRT1	see below

(a) Device name.

(b) A disk device name, which must have been defined earlier. It will become the nominal disk at bootstrap time -- an assignment which may then be changed at any time with the CHNOM utility.

If this entry is omitted, then the answer to the previous question will determine the nominal disk at bootstrap time.

Question: CHAR OUTPUT DEVICES ... PRINTERS?

Driver: $CDODRV.SB

Defaults:

(a)	(b)	(c)	(d)	(-------e--------)
LPT1	0080	132	66	FF TS LC LU FB

(a) Device name.

(b) Words in I/O buffer, hex, ending in a zero, and no greater than the defined maximum buffer size. For a fast printer -- over 30 cps -- at least 0080 is recommended.

(d) Columns per line, decimal; maximum 255.

(e) Lines per page, decimal; maximum 255. The default value assumes 11-inch paper at 6 lines per inch.

(f) Options, from FF, FS, FB, TS, LC, LU, TM, and ES.

This question covers only line printers (Data Products, Centronics, Printronix), -- not character printers (Diablo, Qume, NEC), which go under the next two questions.

Any number of definitions, each with a different name, may be used for the same address, so that the device behaves according to the device name used by a given program. (In a running system, it's also possible for the ACUP utility to alter most definition fields for a device which is not open.)

Question: DIABLO/QUME PRINTERS?

Driver: $DPRDRV.SB

Defaults:

(a)	(b)	(c)	(d)	(e)	(f)	(------g---------)
DPR1	80	132	66	8	12	FF FS TS LC FB
DPL1	80	132	84	8	12	FF FS TS LC FB

(a) Device name.

(b) I/O buffer words, hex, ending in a zero, and no greater than the defined maximum buffer size.

(d) Columns per line, decimal; maximum 255.

(e) Lines per page, decimal; maximum 255. The default value for DPR1 assumes 11-inch paper at 6 lines per inch; DPL1 assumes 14-inch paper at 6 lpi.

(f) Vertical pitch, decimal; 1/48 inch units. With a pitch of 8, there are 6 lines per inch.

(g) Horizontal pitch, decimal; 1/120 inch units. Even number required for a Diablo HyType I. With a pitch of 12, there are 10 characters per inch.

(h) Options, from FF, FS, FB, TS, LU, LC, ES, TM, QM, and QT.

This question covers a character printer -- not a line printer -- on a parallel interface. The default definitions all assume a Diablo HyType. For Qume and NEC printers, see the next page. For the Diablo HyTerm, a serial interface printer with an optional keyboard, see the next question.

Other Printer Types

The following definitions, under the question just described, are recommended for some other types of character printers. These are not defaults; in each case, a complete line must be entered, with whatever changes are desired.

Qume, standard:

```
QPR1 0E 80 132 66 8 12 QM FF FS TS LC FB
```

Qume, with sheet feeder:

```
QPS1 0E 80 132 66 8 12 QM FF TS LC FB
```

Qume, WideTrack:

```
QPW1 0E 100 255 66 8 12 QM FF FS TS LC FB
```

The following printers will require not only the usual $DPRDRV.SB driver, but also Wheel Tables with names matching the devices -- $QTR1.WT, for example.

Standard Wheel Tables are supplied on diskette TBL1nn. See the System II Reference Manual for details on custom tables.

Qume, TwinTrack:

```
QTR1 0E 80 132 66 8 12 QM FF FS TS LC FB ES QT
```

NEC, proportional spacing thimble mounted:

```
NPP1 0E 80 132 66 8 12 FF FS TS LC FB
```

NEC, non-proportional spacing thimble mounted:

```
NPR1 0E 80 132 66 8 12 FF FS TS LC FB
```

Note that the last two definitions supply two different names for the same printer. This allows the activation of Wheel Tables which match the differing character sequences of PS and non-PS thimbles -- in this case, $NPP1.WT versus $NPR1.WT -- according to the device name specified in a Type-Rite menu, a PRINT utility command, a program OPEN statement, or a similar context.

Question: CHAR INPUT/OUTPUT DEVICES, ASYNCHRONOUS COM LINES?

Driver: $CDXDRV.SB

Defaults:

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(-----m-----)
ASY1	1E	80	80	66	0	12000	1200	0	8	0	1	TM
ASY2	1F	80	80	66	0	12000	1200	0	8	0	1	TM
ACY1	1E	80	80	24	0	12000	1200	0	8	0	1	EM LC TS IE
ACY2	1F	80	80	24	0	12000	1200	0	8	0	1	EM LC TS IE

(a) Device name. ASYn is set for a general-purpose asynch line; ACYn is set for a remote asynch CRT.

(b) Device address in hex, either 1E or 1F.

(c) I/O buffer words, hex, ending in a zero. Partition space (not buffer pool space) twice this size, plus 34, rounded up to a multiple of 16, is obtained by the driver.

(d) Columns per line, decimal; maximum 255.

(e) Lines per page, decimal; maximum 255. The default value for ASY1 assumes 11-inch paper at 6 lines per inch.

(f) Read time-out, decimal, 1/10 second units; maximum, 32767. If zero is specified, an infinite time-out is used.

(g) Write time-out, decimal, 1/10 second units; maximum, 32767. If zero is specified, an infinite time-out is used.

(h) Baud rate, decimal: 50, 75, 110, 134 (meaning 134.5), 150, 300, 600, 1200, 1800, 2000, 2400, 3600, 4800, 7200, 9600, or 19200.

(i)

Entry:	XMIT clock:	RCV clock:
0	internal	internal
1	internal	external
2	external	internal
3	external	external

Internal clocking is normally used. External clocking may be required for non-standard rates, or for different rates when transmitting and receiving.

(j) Number of bits per character, not including parity or stop bits -- 5, 6, 7, or 8.

(k)

Entry:	Parity generation and checking:
0	None
1	Odd
2	Even

(l) Stop bit length:

1	1 stop bit, normal for baud rates of 300 and above.
2	1.5 stop bits.
3	2 stop bits, normal for baud rate of 100.

(m) Options, from FB, FF, FS, EM, ES, IE, LC, LU, TM TS, DH, DC, and XO.

Any number of definitions, each with a different name, may be used for the same address, so that the device behaves according to the device name used by a given program. The default lines for ASY1 and ACY1 are examples. (In a running system, it's also possible for the ACUP utility to alter most definition fields for a device which is not open.)

Recommended Diablo HyTerm definition:

```
ASH1 1E 100 132 66 0 12000 LC FB TS FF FS DH
```

For keyboard support, field (f) should specify a large or infinite read time-out as it does here; options IE and EM should be added; the hardware must be set for even parity and 7 bits.

Question: GENERAL SYNCHRONOUS COMMUNICATION LINES?

Driver: $SIL5DR.SB

Default:

(a)	(b)	(c)	(d)
COM1	1E	2400	3

(a) Device name.

(b) Device address in hex, either 1E or 1F.

(c) Baud rate, decimal: 50, 75, 110, 134 (meaning 134.5), 150, 300, 600, 1200, 1800, 2000, 2400, 3600, 4800, 7200, 9600.

(d)

Entry:	XMIT clock:	RCV clock:
0	internal	internal
1	internal	external
2	external	internal
3	external	external

Question: BSC COM LINES (POINT-TO-POINT, EBCDIC CONTROL CHARS)?

Driver: $BPE5DR.SB

Defaults:

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
BPE1	1E	2	512	-1	25	2400	3	PP
BPE2	1E	2	512	-1	25	2400	3	

(a) Device name.

(b) Device address in hex, either 1E or 1F.

(c) Device type:

0	AM Jacquard BSC
1	IBM 2780
2	IBM 3780
3	IBM 3275

(d) Block size, characters, decimal.

(e) Poll/select retry limit, decimal. -1 for unlimited.

(f) Line error retry limit, decimal. -1 for unlimited.

(g) Baud rate, decimal : 50, 75, 110, 134 (meaning 134.5), 150, 300, 600, 1200, 1800, 2000, 2400, 3600, 4800, 7200, or 9600.

(h) Entry:

	XMIT clock:	RCV clock:
0	internal	internal
1	internal	external
2	external	internal
3	external	external

(i) Options, from DC, DE, MM, NT, PP, SS, and TT.

Details on System Generation requirements for BSC devices appear in publication V1-066, Binary Synchronous Communications.

Question: BSC COM LINES (POINT-TO-POINT, ASCII CONTROL CHARS)?

Driver: $BPA5DR.SB

Defaults:

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
BPA1	1E	2	512	-1	25	2400	3	PP
BPA2	1E	2	512	-1	25	2400	3	

For definition fields, see the previous question.

Question: BSC COM LINES (MULTIPOINT, EBCDIC CONTROL CHARS)?

Driver: $BME5DR.SB

Defaults:

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
BME1	1E	3	256	-1	25	2400	3	0	0	
BME2	1E	3	256	-1	25	2400	3	0	0	

(a) Device name.

(b) Device address in hex, 1E or 1F.

(c) Device type:

0	AM Jacquard BSC
3	IBM 3271

(d) Block size, characters, decimal.

(e) Poll/select retry limit, decimal. -1 for unlimited.

(f) Line error retry limit, decimal. -1 for unlimited.

(g) Baud rate, decimal : 50, 75, 110, 134 (meaning 134.5), 150, 300, 600, 1200, 1800, 2000, 2400, 3600, 4800, 7200, or 9600.

(h) Entry:

	XMIT clock:	RCV clock:
0	internal	internal
1	internal	external
2	external	internal
3	external	external

(i) Station CU, decimal, 0 to 31.

(j) Station DN, decimal, 0 to 31, or 127 for general poll.

(k) Options, from DE, MC, MM, NT, SS, and TT.

Details on System Generation requirements for BSC devices appear in publication V1-066, Binary Synchronous Communications.

Question: BSC COM LINES (MULTIPOINT, ASCII CONTROL CHARS)?

Driver: $BMA5DR.SB

Defaults:

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
BMA1	1E	3	256	-1	25	2400	3	0	0	
BMA2	1E	3	256	-1	25	2400	3	0	0	

For definition fields, see the previous question.

Question: UNIVAC REMOTE JOB ENTRY LINES?

Driver: $UJE5DR.SB

Default:

(a)	(b)	(c)	(d)
UJE1	1E	2400	3

(a) Device name.

(b) Device address in hex, 1E or 1F.

(c) Baud rate, decimal: 50, 75, 110, 134 (meaning 134.5), 150, 300, 600, 1200, 1800, 2000, 2400, 3600, 4800, 7200, or 9600.

(d)

Entry:	XMIT clock:	RCV clock:
0	internal	internal
1	internal	external
2	external	internal
3	external	external

For details, see publication V1-052, Univac RJE.

Final Question: AUTO-DIALER?

Driver: $DILDRV.SB

Default:

(a)
DIL1

(a) Device name.

DEVICE OPTIONS

The two-character codes for J500 device options will be described in functional groups:

BSC Options
Printer Families
Input/Output Options
Output Options
Input Options

Some devices have valid options from several of these groups.

BSC Options

Only a summary of BSC options will be given here; details appear in publication V1-066, Binary Synchronous Communications.

DE	Display errors
MC	Control station
MM	Multithread mode
NT	No translation file
PP	Primary station
SS	Seven SYN
TT	Transmit transparent

Printer Families

These codes are required to identify certain printers:

DH	Diablo HyTerm. The printer must be set up for full-duplex operation, 7-bit characters, and even parity.
QM	Qume printer, any model.
QT	Qume TwinTrack; QM code also required.

Input/Output Options

DC Disconnect when closed. Normally, a communications connection is broken only by specific program request. This option automatically disconnects a device when it is closed by program or system action.

ES Extended character set. Normally, a device driver zeroes the high-order bit of each input character, and converts any output character greater than X'7F into a space (X'20). The ES option prevents this. However, the characters X'00 through X'0F, except X'09 and X'0C, are converted to X'0D unless the TM option is also present.

LC Line Feed control. During output, an ASCII code LF is appended to each CR; for some printers and terminals, this is required to move up the paper. During input, the codes NUL, LF, and DEL are dropped if they occur between lines; they are not dropped if they are embedded within lines.

LU Lowercase to uppercase. Characters in the range X'61 through X'7A are converted into X'41 through X'5A -- that is, ASCII lowercase letters are shifted up.

TM Transparent mode. Allows all 8-bit patterns to be sent or received, without processing by the driver. This option is assumed if a Code Translation Table -- a ".CT" file -- is active, as described in the System II Reference Manual.

TS Tab simulation. Each X'09 (ASCII Horizontal Tab) is converted into enough spaces to reach the next standard tab stop. If the start of a line is called Column 1, then the tab stops are at 9, 17, etc.

XO Teletype X-ON, X-OFF convention is recognized. For details, refer to the System II Reference Manual chapter on communications.

Output Options

FB Form Feed at bottom. When the line count becomes 6 less than the currently defined page size, X'0C (ASCII Form Feed) is generated. Type-Rite ignores this option.

FF Form Feed on close. Whenever the device is closed, X'0C (ASCII Form Feed) is generated.

FS Form Feed simulation. Each X'0C generated by a program (or by the presence of other options) is converted into enough line feeds to complete the currently defined page size. If the last output line before any X'0C has no terminator, then X'0D (ASCII Carriage Return) is inserted first. This option is intended for a printer which would not recognize X'0C as a form feed request.

Input Options

EM Echo mode. As characters are received from a full-duplex terminal, they are sent back -- subject to other options.

IE Input editing. The ASCII code BEL is sent to the device in these situations:

The input buffer has overflowed; a character has been lost, and further editing of the line is not possible.

An input character has caused a hardware-detected parity error, framing error, or overrun. The character itself is then ignored.

The IE option also causes special processing for certain input characters, identified below in in ASCII and Teletype nomenclature.

HT (Control-I)	Echoes HT. See the TS option, above, for the possible driver-level effect.
BS (Control-H)	Deletes the previous character from the input buffer. If the EM option is present, echoes BS, or BEL in Column 1.
BEL (Control-G)	Deletes the previous character from the input buffer. If the EM option is present, echoes X'23 (normally "#"), or BEL in Column 1.
CAN (Control-X)	Deletes the current line from the input buffer. If the EM option is present, echoes CR and LF.
EOT (Control-D)	Causes an end-of-file condition when the next input is requested.
ESC (Control-[)	Equivalent to <CANCEL> on a Videocomputer keyboard.

ERROR PROCESSING

The following messages may appear after an unacceptable answer. If possible, a caret will point at the first bad field. During an Interactive Sysgen, a corrected line may then be entered.

Messages are listed here in alphabetical order.

BUFFER SIZE > MAX ALLOWED

The specified buffer size is greater than the system's maximum buffer size, which was set in the third question.

EXCESS ARGUMENT

There are too many fields in this line.

ILLEGAL DEVICE CHARACTERISTIC

The indicated option is not acceptable for this type of device.

ILLEGAL INPUT FIELD

This field must be -- as documented -- either a valid device name (one to four letters and numerals, starting with a letter), or a hex number (digits "0" to "9" and "A" to "F" only), or a decimal whole number.

INCOMPLETE INPUT LINE

Field missing.

NO DEFAULT VALUES EXIST FOR THIS DEVICE

A definition for this name requires a full set of fields.

NO SUCH DISK HAS BEEN DEFINED

This field must name a disk which has already been defined.

NOT A MULTIPLE OF HEX 10

This field must end with a zero.

NOT A POWER OF 2 FROM HEX 100 TO HEX 400

This field must be 0100, 0200, or 0400.

THIS DEVICE ALREADY DEFINED

This name can't be used twice.

UNACCEPTABLE VALUE

This field does not agree with the documented requirements.

VALUE OUT OF RANGE

This value is either too large or too small.

WORK SPACE EXHAUSTED

More memory is needed to build the System Table. A command field of "P=0300" should be sufficient if the default was not.

Chapter 3: RLDR

The next step in System Generation is the creation, using RLDR, of a System Binary File. This file is constructed from a large number of files on the current nominal disk, including a System Table File (which must be named SYSTBL.RB). The result contains more than 50,000 characters, and may be stored on any disk with enough free space.

RLDR is not a relocating loader, as its name would imply, but a file-to-file link editor -- that is, it reads a set of disk files containing binary modules, and writes one new file in which all references between those modules have been resolved. A full description of RLDR appears in the System II Utilities Manual. Here, we will describe only the specialized use of RLDR as a part of the System Generation process.

The relevant command format is:

```
$RLDR/A P=8000 B=disk:sysbin SYSLFn/I
```

The "/A" switch generates an absolute program, and is required in this context. The "P=" field allocates 8000 words of RLDR workspace in memory; this should be sufficient for processing any System Table File.

The "B=" field specifies the disk and the name of RLDR's output -- in this case, the System Binary File which will eventually become your new version of System II. For our recommended Sysgen procedures, the field would always be --

```
B=Fx01:SYSBIN
```

The "SYSLFn/I" field means "File SYSLFn, on the current nominal disk, is an indirect file, containing the names of all the modules to be processed." One of these names is always --

```
SYSTBL.RB
```

-- which explains why a System Table File with exactly that name, on the current nominal disk, must be available at this time.

The "n" in "SYSLFn" is a letter or number which represents the desired overlay configuration of System II. For this release, "n" must be chosen from the following set:

```
1 2 3 4 5 6 A B C
```

WHICH CONFIGURATION?

Your choice of overlay configuration depends on many factors, including these:

Size of installed memory

Sizes of programs to be executed concurrently

Languages in which programs were written

Need to remove or reassign the primary disk

Response time requirements for system functions

Consultation with your AM Jacquard representative is advised.

Overlay diagrams appear in publication V1-073, the Software Guide. For your convenience, we chart here the subset of System II functions which can be made resident ("R"), kept in overlays on the current primary disk ("O"), or totally excluded from your system ("-").

	----- Configuration -----								
	1	2	3	4	5	6	A	B	C
Non-I/O file processing, such as open/close, delete, rename, change attributes	R	R	O	O	O	R	R	R	R
Job and partition control; system commands and errors; disk space analysis	R	O	O	O	O	R	R	O	O
Hash file processing; required by all Data-Rite programs, and by others which access hash files	R	O	O	O	O	-	R	O	O
Decimal arithmetic; required by programs which were written in BASIC or Data-Rite	R	R	R	R	O	-	R	R	R
String processing, GOSUB/RETURN; required by programs which were written in BASIC	R	R	R	O	O	-	-	-	-

Note that programs written in BASIC, including the BLDCPY utility, EXCRT and other device exercisers, and AM Jacquard business application packages, can't run under a Configuration A system (such as the one on the Sysgen diskette itself), nor under 6, B, or C.

Chapter 4: UNSTAL, MKABS, and INSTAL

In this Sysgen step, a System Binary File is processed into a loadable system on a disk. In our recommended procedure, this disk is called "pbb" -- the "primary being built."

For a better understanding of this step, some facts about how System II gets into memory will be helpful.

When it's activated at hardware level, a microcode program in the Videocomputer accesses a disk indicated by CPU switches. The program on Sector 0 of the disk -- written there during FORMAT processing -- is loaded into memory at X'0001 and executed. That program, in turn, reads the same disk's Overlay Directory Sector -- a sector reserved for just this purpose by FORMAT. The Overlay Directory supplies the disk address of System II's own code, which is loaded into memory at X'0100 and executed.

These steps -- a hardware feature executes a microcode program, which executes a larger disk program, which executes an entire operating system -- suggest the proverbial phrase, "pulling yourself up by your own bootstraps." This explains why system loading is often called "bootstrapping" or even "booting."

DELETING AN OLD SYSTEM

If there's already a loadable version of System II on the disk you have in mind, it must now be deleted with a special program:

```
$UNSTAL disk:sysname
```

Here, "sysname" represents the file name, ignoring the extension, used for your old system. For all systems supplied by AM Jacquard, and for our recommended Sysgen procedure, this will always be --

```
SYS
```

The program name "UNSTAL" is meant to imply the opposite of "install" -- that is, all of System II is deleted from the disk; then the Overlay Directory itself is cleared. On a floppy disk, this takes about one minute.

If a System Error Code 34 appears, then the specified old system was not found. Either you gave the wrong name, or there was no system to delete.

Now a command in this format is entered:

```
$MKABS in:sysbin pbb:sysname
```

Here, "in" is the disk containing the System Binary File, and pbb" represents the new primary being built. The "in" and "pbb" disks need not be the same drive, nor the same type; quite often, they will be a floppy and a cartridge.

In the first command field, "sysbin" represents the name of your RLDR output. For our recommended procedure, the first field would thus be --

```
Fx01:SYSBIN
```

In the second field, "sysname" represents your choice of a name for the new system. This name would appear only in UNSTAL and MKABS commands. We recommend --

```
pbb:SYS
```

MKABS takes a few minutes to convert the System Binary File into a set of memory-image files. There will be one file for the main part of System II, with a name in this form --

```
pbb:sysname.00
```

-- and others, with extensions numbered from 02 upwards, for any overlays.

Some of these files contain absolute sector pointers, so they can't be copied into any other disk locations. To get a system onto another disk, either DSKOPY or MKABS must be used.

If the message "UNRECOGNIZED DISK TYPE" appears, then your "pbb" specification is unacceptable. Any other MKABS error message probably means that your input is not, in fact, a System Binary File. Check the command line and try again.

The usual System Error Codes may also appear, of course. One common problem is that the "pbb" disk has never been properly formatted; another is that you should have run UNSTAL first.

INSTALLING SYSTEM II

At this point, you have a disk with a memory-image version of System II on it.

However, it's not yet possible to load that system from the disk you've been building. The Overlay Directory sector must be set up with a command in this format:

```
$INSTAL pbb:sysname
```

Here, "pbb:sysname" is the output of a previous MKABS step. For our recommended procedure, the command would thus be --

```
$INSTAL pbb:SYS
```

If the message "PROGRAM DIRECTORY TOO LONG" appears, your "sysname" is somehow unacceptable. Perhaps you've given the name of your RLDR output -- which we've been calling "sysbin" -- rather than your MKABS output.

Chapter 5: COPYING SOFTWARE

You should now bootstrap System II from your new primary disk.

This disk won't be ready for practical use until it contains a set of the latest AM Jacquard utilities and device drivers.

We'll use "pbb" in command formats to represent the "primary being built" -- at this point, typically FP00, FD00, DE00, or DA00.

GENERAL FILES, PART 1

Put the first General Files diskette into FP01. It's labelled GEN181, as opposed to GEN281. Enter --

```
FP01:STAD
```

Set the current date and time, so that catalog updates and listings will be correct.

Make sure that the disk you're building is, in fact, the current primary by entering --

```
FP01:CHPRI pbb
```

Make GEN181 the nominal disk by entering --

```
FP01:CHNOM FP01
```

Now any file on GEN181 can be copied. We'll assume that you may have old versions of these files on your primary, so that a set of three keyboard commands would be needed for each one:

```
CHATR to clear the old file's probable PF attribute
DELETE to eliminate the old file
COPY the new file from nominal disk to primary disk
```

But we've provided a much simpler way -- a command file. Just enter --

```
FP01:EXEC FP01:GEN181.X1
```

A series of CHATR, DELETE, and COPY commands will start rolling up the screen. Ignore an Error Code 34 message from CHATR or DELETE; it merely indicates that your primary didn't have an old version of the specified file. For other errors, check the Utilities Manual and the Error Messages Manual. After you've cleared up the problem, it may be necessary to enter the EXEC command again, or to give you own specific commands.

When the execution of command file GEN181.X1 is complete, and the cursor appears, your primary will contain all of the software on diskette GEN181.

Now remove diskette GEN181 from FP01; put in GEN281. Enter --

```
$SPRCAT/S pbb
```

Note the space still available on the primary being built. If "pbb" is a single-density floppy disk, there won't be enough room for all the software on GEN281; you'll have to make choices among the command files described below, or enter your own CHATR/DELETE/COPY sequences. For other types of disks, all of GEN281's software should fit.

Later, you can eliminate any superfluous file from your primary by entering --

```
$CHATR $name
$DELETE $name
```

To run each command file, enter these two commands --

```
$EXEC FP01:GEN281.Xn
$SPRCAT/S pbb
```

-- in which "n" matches one of the descriptions below.

GEN281.X1

Files which can be used only on a J100:

```
BOOT
CDLDRV.SB
MUXDRV.SB
SIIDEF
SILDRV.SB
```

GEN281.X2

Files which can be used only on a J500:

```
CHRGEN
CHRGEN.SB
DIAL
DILDRV.SB
FLOPIZ
SI5DEF
SI5DRV.SB
```

GEN281.X3

Files for J100 Magnetic tape support:

```
FDR
MT9DRV.SB
MTUTIL
TDSPLY
```

GEN282.X4

Files which can be used only with versions of System II which allow BASIC programming -- Configurations 1 through 5:

```
BASM
BLDCPY
DOCCRT
SRTLIB.SB
```

GEN281.X5

Files which typically are used only for writing and testing assembly language programs:

```
ALTER
ASM
DEBUGX.SB
RLDR
RTDUMP
```

TABLES DISKETTE

The diskette labelled TBLlnn contains various Wheel Tables, Keyboard Mapping Tables, J500 CRT fonts, and similar files.

If you have a NEC printer, a Qume TwinTrack, a non-English keyboard, or other special features in your system, refer to the System II Reference Manual, the Utilities Manual, the Type-Rite Installation Manual, and other appropriate documents for details, or consult your AM Jacquard representative.

In general, setting up a new release of System II should include the copying of relevant TBLlnn files to your new primary disk.

OTHER SOFTWARE

The above step concludes the installation of a new release of System II and its associated files. Other software diskettes, such as those for BASIC and File Security, may be handled according to the procedures in the corresponding manuals, or by following these steps:

1. Put the diskette in FP01, and enter --

```
$CHNOM FP01
$SPRCAT/U
```

3. Write down the names of the files you require on your primary. For each one, enter --

```
$CHATR $name
$DELETE $name
$COPY name $name
```

4. At any time, enter --

```
$SPRCAT/S pbb
```

-- to see how much free space you still have on your primary.

5. To obtain a list of all the files on any disk, enter --

```
$SPRCAT/U disk
```

If you have installed support for your printer, and if your current nominal disk drive contains a usable medium, then a sorted list of file names, sizes, attributes, and dates may be obtained with --

```
$SPRCAT/D disk L=printer
```

For details, see the Utilities Manual under SPRCAT.

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