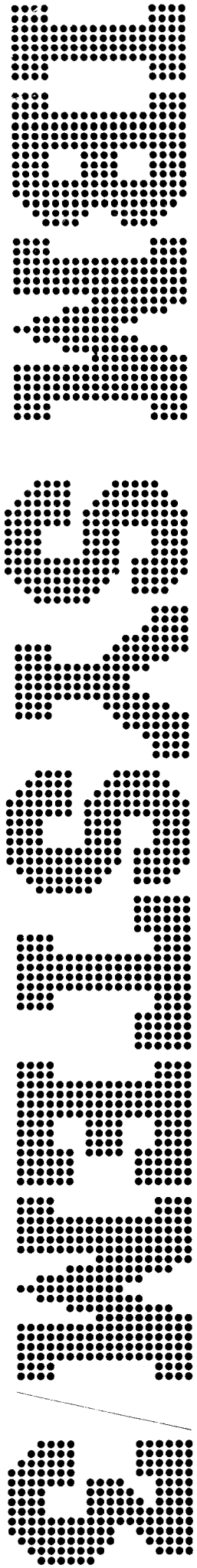


IBM System/3 Model 15 System Generation Reference Manual

Program Numbers:
5704-SC1
5704-SC2

GC21-7616-4
File No. S3-34

Fifth Edition (September 1978)

This is a major revision of, and obsoletes, GC21-7616-3 and technical newsletters GN21-5546 and GN21-5554. Chapter 2 has been completely revised and should be reviewed in its entirety. Other changes or additions to text and illustrations are indicated by a vertical line to the left of the change or additions.

This edition applies to the following IBM System/3 System Control Programming and to all subsequent versions and modifications until otherwise indicated in new editions or technical newsletters:

Version	Modification	Program Number	System/3 Model
6	00	5704-SC1	Model 15 A-B-C
3	00	5704-SC2	Model 15 D

Changes are periodically made to the information herein; before using this publication in connection with the operation of IBM systems, refer to the latest *IBM System/3 Bibliography*, GC20-8080, for the editions that are applicable and current.

Use this publication only for the purposes stated in the *Preface*.

Publications are not stocked at the address below. Requests for copies of IBM publications and for technical information about the system should be made to your IBM representative or to the branch office serving your locality.

This publication could contain technical inaccuracies or typographical errors. Address your comments about this publication to IBM Corporation, Publications, Department 245, Rochester, Minnesota 55901. IBM may use and distribute any of the information you supply in any way it believes appropriate without incurring any obligation whatever. You may, of course, continue to use the information you supply.

The purpose of this manual is to provide information to aid the system installation manager, IBM systems engineer, IBM customer engineer, and application programmers in performing a system generation on an IBM System/3 Model 15.

The information includes procedures to perform a system generation which builds a supervisor, creates data management support for a particular configuration, and generates the program products that have been ordered. During system generation, the source library, object library, and system history area are established. The characteristics of the level of spooling supported are also defined.

The main storage and disk storage requirements given in Appendix C and Appendix D are current as of the following releases:

5704-SC1	Release 6
5704-SC2	Release 3

Any significant changes in these estimates will be documented in a technical newsletter to this publication and/or included with the material sent with the program from the program library; minor changes will not necessarily be documented.

Prerequisite Knowledge

You should be familiar with the System/3 Model 15 operating procedures (see *IBM System/3 Model 15 Operator's Guide*, GC21-5075) and spooling concepts (see *IBM System/3 Model 15 Introduction*, GC21-5094).

Related Publications

The following publications are referred to by abbreviated titles in this manual:

Abbreviated Title	Full Title and Order Number
Operator's Guide	*IBM System/3 Model 15 Operator's Guide*, GC21-5075
SCP Reference	For 5704-SC1: *IBM System/3 Model 15 System Control Programming Reference Manual*, GC21-5077 For 5704-SC2: *IBM System/3 Model 15 System Control Programming Concepts and Reference Manual*, GC21-5162
System Messages	*IBM System/3 Model 15 System Messages*, GC21-5076
User's Guide to Spooling	*IBM System/3 Model 15 User's Guide to Spooling*, GC21-7632
Components Reference	*IBM System/3 Models 8, 10, 12, and 15 Components Reference Manual*, GA21-9236
CCP System Reference	*IBM System/3 Model 15 Communications Control Program System Reference Manual*, GC21-7620

Additional Model 15 publications are listed in the *IBM System/3 Bibliography*, GC20-8080.

Program Versions and Modifications

System/3 programs are supported through the distribution of sequentially numbered versions or modifications. A new version replaces an entire program; a modification generally replaces only the changed portions of a program. Each program has a version number and a modification level associated with it.

A group of programs made available at the same time is called a release. A release generally refers to the period of time for which it is supported and it may consist of programs with a different version and/or modification level identification. For example, release 9 of SCP and program products may include six programs designated version 09, modification 00, and one program designated version 07, modification 00.

The initial availability of a program is usually called version 01, modification 00. Each subsequent modification raises the modification level by one. Each new version raises the version number by one and resets the modification level to zero.

Versions and modifications are made available in one of two ways. Some are sent automatically by the program library to all users, and all others are sent when ordered by the user. In the latter case, ordering instructions are sent to users by the program library.

The version number and modification level of each program is indicated on the machine readable material and in the documentation sent with the program from the program library. In some cases, a version number or modification level may be skipped; the documentation from the program library notes any such action.

Sample Programs

The sample programs should be run after system generation is complete and after the generated system on F1 has been copied to a backup area or to a tailored system pack.

The successful execution of the sample programs indicates that your system has been generated properly.

Applicable sample programs may be found in the manuals listed as follows:

- *IBM System/3 RPG II Reference Manual,* SC21-7504.
- *IBM System/3 Subset American National Standard COBOL Reference Manual,* GC28-6452.
- *IBM System/3 FORTRAN IV Reference Manual,* SC28-6874.
- *IBM System/3 RPG II Auto Report Feature Reference Manual,* SC21-5057.
- *IBM System/3 Disk Sort Reference Manual,* SC21-7522.
- *IBM System/3 Basic Assembler Reference Manual,* SC21-7509.
- *IBM System/3 Sort/Collate and Card Utilities References Manual,* SC21-7529.

CHAPTER 1. INTRODUCTION 1-1
Spooling System Considerations 1-4
Communications Control Program (CCP) Considerations 1-6
Display Adapter Support Considerations 1-6
Customer Engineering Diagnostic Support Considerations 1-6
RPG II 3270 Display Control Feature Considerations . 1-6
3340 Cylinder 0 Considerations 1-6
Program Pack Protection Considerations (5704-SC2 Only) 1-7
Simulation Area Assignment Considerations (5704-SC2 Only) 1-7
File Share Area Considerations and Restrictions (5704-SC2 Only) 1-7
Generation Checklist (5704-SC1) 1-8
Generation Checklist (5704-SC2) 1-10

CHAPTER 2. SYSTEM GENERATION 2-1
How To Use this Chapter 2-1
Common System Generation Procedures 2-1
Pressing ENTER 2-1
Device Codes 2-1
IPL (Initial Program Load) 2-2
Changing the System Input Device 2-3
Preparing for System Generation (5704-SC1) 2-4
Backing Up Resident System from F1 to R1 . . . 2-4
System Control Program Generation (5704-SC1) . . . 2-6
Calling the System Generation Program 2-7
Canceling System Generation 2-7
System Generation Prompts 2-8
Building the Supervisor 2-21
Generating Macro Processor Support 2-21
Generating Customer Engineering Diagnostics Support . 2-21
Backing Up Distribution SCP Programs 2-22
Proceeding to the Next Generation 2-22
Preparing for Program Products Generation (5444) . . . 2-23
Backing Up F1 2-23
Generating Program Products 2-24
Completing System Generation and Installation Verification (5444) 2-25
Copying the Tailored System from F1 to R1 . . . 2-25
Building a Minimal Resident System on F1 2-25
Deleting Unneeded Programs and Procedures . . . 2-26
Restoring Active Data Files to F1 2-27
Building a Program Pack (5444) 2-28
Deleting All Libraries and Files from F1 2-28
Copying Programs from R1 to F1 2-29
Copying the Programs on F1 to the Program Pack . . 2-30
Preparing for System Generation (5704-SC2) 2-31
System Control Program Generation (5704-SC2) . . . 2-31
Calling the System Generation Program 2-32
Canceling System Generation 2-32
System Generation Prompts 2-33
Building the Supervisor 2-50
Generating Macro Processor Support 2-50
Generating Customer Engineering Diagnostics Support . 2-50
Generating PTF Program Support 2-51
Backing Up Distribution SCP Programs 2-51
Proceeding to the Next Generation 2-51
Preparing for Program Products Generation (3340) . . . 2-52
Backing Up F1 (D1A) or R1 (D1B) Simulation Areas 2-52
Copying the Tailored System to F1 (D1A) 2-53
Generating Program Products 2-53
Completing System Generation and Installation Verification (3340) 2-55
Copying Tailored System from F1 (D1A) to Backup Area 2-55
Building a Minimal Resident System on F1 (D1A) . . 2-56
Deleting Unneeded Programs and Procedures . . . 2-57
Restoring Active Data Files to F1 (D1A) 2-57
Building a Program Pack (3340) 2-58
Copying the Tailored System to R1 (D1B) 2-58
Deleting All Libraries and Files from F1 (D1A) . . . 2-58
Copying Programs from R1 (D1B) to F1 (D1A) . . . 2-59
Copying the Programs on F1 (D1A) to the Program Pack 2-60

APPENDIX A. IMAGE STATEMENT A-1
Description of the IMAGE Statement A-1
Changing the Chain Image at System Generation . . . A-2
Specifying Print Chain at System Generation . . . A-2

APPENDIX B. STORAGE ESTIMATES (5704-SC1) . . B-1
Main Storage Estimates B-1
Supervisor Size Estimates B-1
Data Management Estimates B-4
Device Independent Data Management B-12
Secondary (Disk) Storage Estimating (5444) B-14
Storage Requirements on the Distribution Disk Cartridge B-14
Secondary (Disk) Storage Estimating (3340) B-15
Storage Requirements on the Distribution Data Module B-15
Determining Library Requirements on Generated System Packs and Program Packs B-16
Determining Library Allocations B-25

APPENDIX C. STORAGE ESTIMATES (5704-SC2) . . C-1
Main Storage Estimates C-1
Supervisor Size Estimates C-1
Data Management Estimates C-5
Device Independent Data Management C-13
Determining Library Requirements on Generated System Packs and Program Packs C-15
Determining Library Allocations C-23

APPENDIX D. GENERATION PROMPT SUMMARY . . D-1

APPENDIX E. DISTRIBUTION TAPE REELS (DTRs) . E-1
Data Module Format E-1
Copying DTRs to a Data Module E-1
Adding Program Products to an Existing System . . E-2
OCL Considerations E-2

APPENDIX F. SYSTEM CONFIGURATIONS F-1

APPENDIX G. COPY STATEMENTS **G-1**
COPY Statements Required for Program Products . . . G-1
Basic Assembler G-1
Card Utilities G-1
CCP/Disk Sort G-1
COBOL Compiler G-1
Disk Sort G-1
FORTRAN Compiler G-2
RPG II Compiler/RPG II Telecommunications . . . G-3
RPG II Auto Report G-3
RPG II 3270 Display Control Feature (5704-SC1 Only) G-3
Tape Sort G-4
COPY Statements Required for System Control Programming Support G-4
$COPY/DUMP Support (Models 15A, 15B, and 15C) . G-4
$COPY/DUMP Support (Model 15D) G-6
Customer Engineering Diagnostic Support G-7
Macro Processor and I/O Macros Support G-7
MLMP (Multiline/Multipoint) Support G-9
PTF Support G-9

INDEX **X-1**

Chapter 1. Introduction

System/3 Model 15 requires that all of the system control programs (SCP) needed to perform your everyday jobs reside on disk. The programs are called a disk resident system. System generation is the process by which you create this disk resident system. References to distribution disk cartridges are only for systems using 5444/5445. References to distribution data modules are only for systems using 3340/3344.

System generation must be performed when:

- You first receive your system.
- You add new devices and/or new SCP support to your system.

Your installation has a distribution disk cartridge or a distribution data module that contains a system generation program, system control programs (SCP), and program products (PP). See Appendix B or C for a discussion of determining the amount of space required for the programs contained on the distribution disk cartridge or distribution data module. The requirements depend upon which program products you have in your installation.

The distribution disk cartridges or distribution data modules must be used every time you perform system generation. You should never destroy the contents of these disk cartridges or data modules until you have received new ones. Therefore, you should label these cartridges and modules and use them only for system generation and PTF (program temporary fix) applications. Follow the system generation procedures carefully so that you can remove the distribution disk cartridges or distribution data modules at the appropriate times and return them to a safe storage area.

System control programs are used to control Model 15 operation after system generation is completed. These programs are selected and placed on disk by the system generation program according to your system configuration. Program products are special programs you may use in the day-to-day operation of your system. You use the system generation program to include those program products you ordered in the resident system.

The printed output resulting from generation must be saved in case of required support by IBM customer engineering personnel. This paper is the only documentation of your unique system and the precise sequence of events during this particular SCP generation.

Program packs may be built anytime after completion of system generation. There are several reasons for building program packs. For example, you may prefer to have more file space on the system pack. A program pack contains one or more program products and, if you desire, a minimal system.

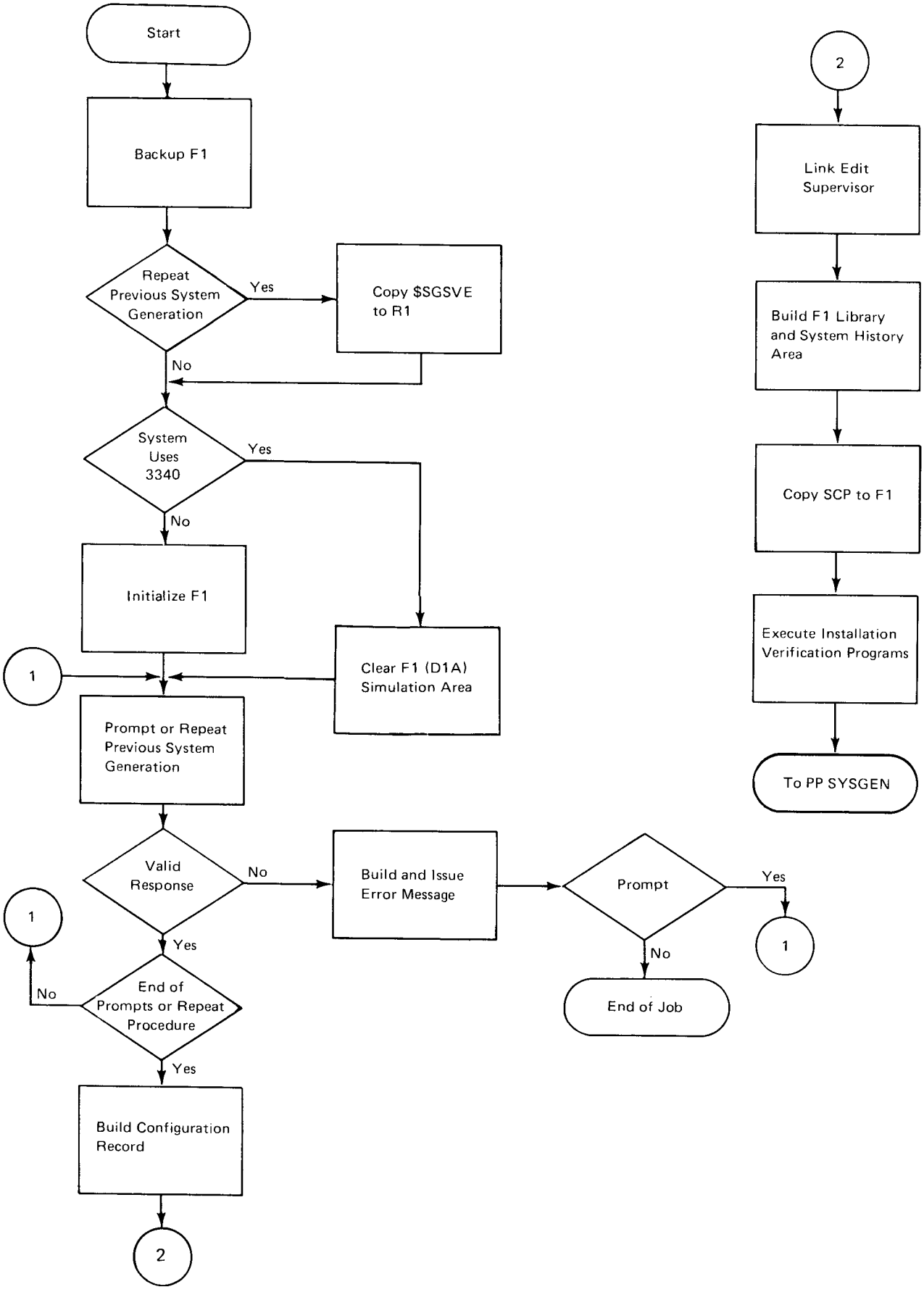
System generation is divided into the following functions:

1. Preparing for system generation
2. System control program (SCP) generation
3. Program product (PP) generation
4. Completing system generation
5. Building a program pack

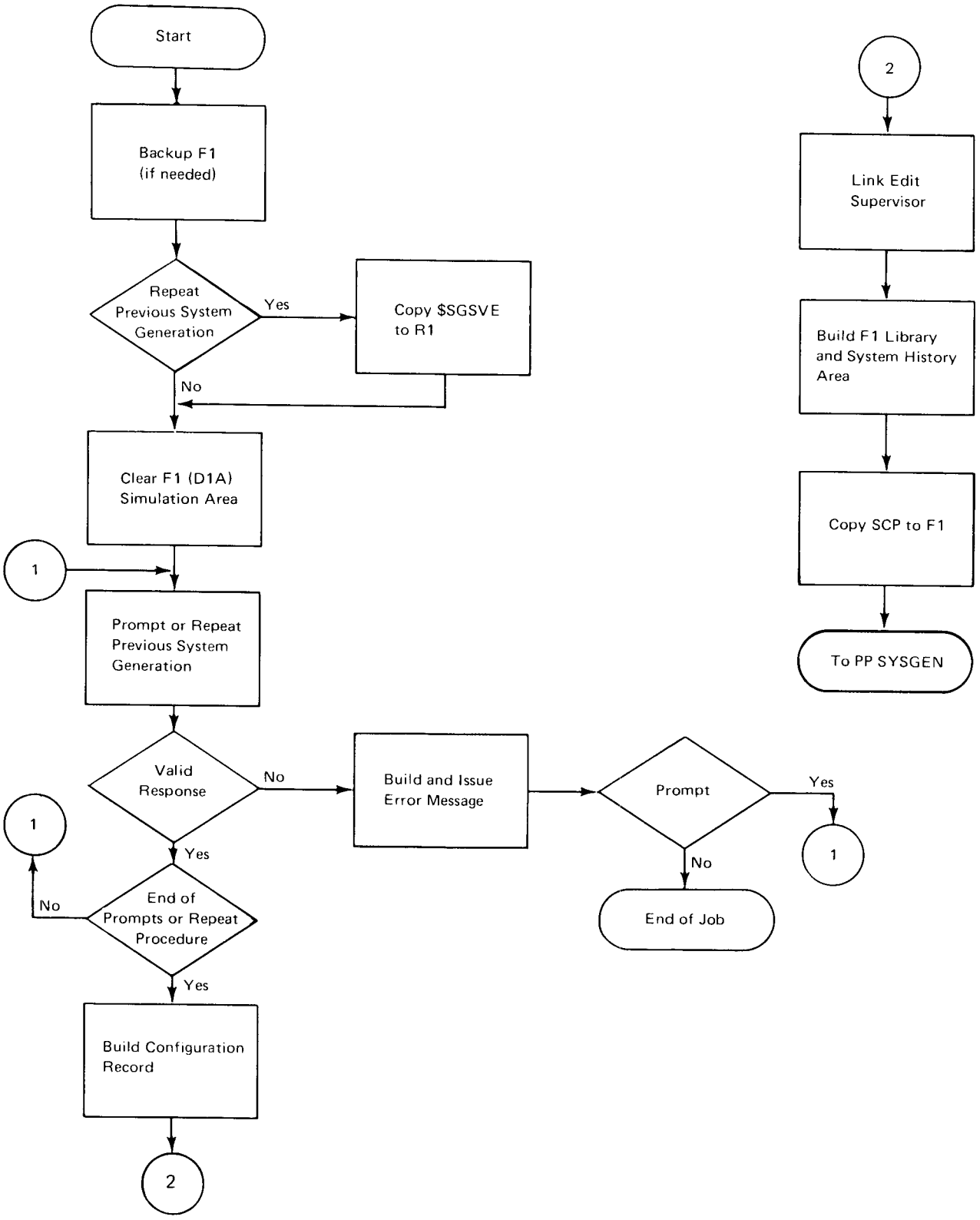
The charts on the following pages provide an overview of system generation (SCP). System generation begins with the option of making a backup copy of the current resident system; for systems using 5444, mount the distribution disk cartridge on R1 and initialize F1. For systems using 3340/3344, mount the distribution data module and initialize F1 (D1A) simulation area. After backing up the resident system, initiating SCP generation gives you two options: (1) a series of prompts for the system hardware and program options (required for a first time system generation); (2) a repeat of the options selected during the previous system generation.

The SCP generation prompts are displayed on the IBM 3277 Display Station cathode-ray tube (CRT) in a sequential format. Prompts are displayed with all possible valid options. You respond using the operator console keyboard to select one option (or accept the default). In case of an error, the prompt is reissued after an error message has been displayed. If halts should occur during system generation, use the *System Messages* for recovery procedures.

After all the prompts have been displayed and responses made during the SCP generation, the system generation processor builds the configuration record and a procedure that allows the linkage editor to create the tailored system supervisor. Procedures to copy required SCP modules are also created. The linkage editor is then called to create the new supervisor, after which the required SCP is copied from the distribution disk cartridge to F1. After SCP generation is complete, program products may be generated.



SCP System Generation Overview (5704-SC1)



SCP System Generation Overview (5704-SC2)

Spooling System Considerations

During system generation, you can choose the level of spooling support to meet your requirements. The level of spooling support determines the amount of main storage required. The four levels of spooling support you can select during system generation are:

1. Print spooling
2. Print and punch spooling
3. Input and print spooling
4. Input, print, and punch spooling

In addition to choosing the level of spooling support desired, the following information must also be specified:

1. The 5445, 3340, or 3344 disk unit to be used for spooled records. Only one 5445, 3340, or 3344 disk unit can be specified. The unit can be changed temporarily at IPL (initial program load) using the START operator control command (refer to the *Operator's Guide*).

2. The amount of 5445, 3340, or 3344 disk space to be used for the spooled records. This disk space must be specified in numbers of cylinders, with the maximum being 199 for the 5445 disk unit, 166 for the 3340 disk unit, or 186 for the 3344 disk unit. The space is obtained on the specified 5445, 3340, or 3344 disk unit during IPL and reserved for use by spooling under a filename in the VTOC (volume table of contents) called $SPOOL. The amount of disk space can be temporarily changed during IPL using the START command (refer to the *Operator's Guide* or the *User's Guide to Spooling*).

3. The track group size. When formatting the disk space used by spooling, the disk space is segmented into equal-size groups of tracks. Each track group represents an extent obtained by spooling each time space is needed. The allowed track group sizes are 1, 2, 4, 5, and 10 tracks. The smaller sizes minimize unused areas within spooling disk space; the larger sizes improve performance, in jobs with large volumes of output, by minimizing the number of times spooling is required to obtain additional disk space.

4. The devices to be spooled. Depending on the level of spooling support chosen, one reader and one punch device can be specified. The 1403 printer is always supported whenever spooling is specified.

   Depending on the hardware configuration, one of the following read devices can be chosen during system generation as the spooled reader:

   MFCU1 (5424 MFCU primary hopper)
   MFCU2 (5424 MFCU secondary hopper)
   MFCM1 (2560 MFCM primary hopper)
   MFCM2 (2560 MFCM secondary hopper)
   1442 (card read punch)
   2501 (card reader)
   3741 (data station/programmable work station)

   Note: Any references in this manual to the 3741 or the directly attached 3741 pertain to all models of the 3741 (directly attached 3741 Data Station Models 1 and 2; also 3741 Programmable Work Station Models 3 and 4).

   Depending on the hardware configuration, one of the following card punch devices can be chosen during system generation as the spooled punch device:

   MFCU1
   MFCU2
   MFCM1
   MFCM2
   1442

5. Spooling can be specified for partition 1, partition 2, partition 3, partitions 1 and 2, partitions 1 and 3, partitions 2 and 3, or partitions 1, 2, and 3.

6. Autostart. This option relieves the operator of having to initially enter operator control commands to start the reader, printer, or punch at IPL when spooling is specified.

7. Autowrite. This option causes the specified writer(s), when they are started, to produce output whenever output is available on the queue(s). If output is not available on the queue, the writer waits for output without issuing a message or requiring operator interaction when output is available on the queue.

8. Time recording. This option causes a message to be written in the system history area every time the print or punch writer completes the output from a job step. The message will contain the date and time that the output was started, and the time that the output was completed.

9. Default card type and default forms type. These options allow the operator to enter a default card type or a default forms type that will be used for spool punched and printed output. Alternate card type or forms type may be supplied on the PUNCH or PRINTER OCL statements at execution time or by a CHANGE command after execution has been completed.

10. The second 1403 printer is supported only by spool; therefore, if you have two 1403 printers, spool support must be selected.

The following chart shows the combinations of devices that can be used with the different levels of spooling support.

		Level of Spooling Support																			
		Print	Print/Punch			Input/Print					Input/Print/Punch										
Printer	1403	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Punch Device	MFCU		X								X	X	X	X							
	MFCM			X											X	X	X				
	1442				X													X	X	X	X
Input Device	MFCU					X					X							X			
	MFCM						X								X						
	1442							X				X							X		
	2501								X				X			X				X	
	3741									X				X			X				X

Communications Control Program (CCP) Considerations

Generating CCP requires at least one of the following (BSCC and MLTA support are mutually exclusive):

- Multiline/multipoint support (MLMPS prompt) and binary synchronous communications adapter support (LINEB prompt)
- Binary synchronous communications controller support (LINEC prompt)
- Multiple line terminal adapter feature support (MLTAS prompt)

In addition, if the interval polling option is to be specified in the CCP generation (INTPOL-YES on the CCP $EBSC statement), then the *full* interval timer support (TIMER prompt) is required. For further information regarding the CCP generation, see the *CCP System Reference.*

Display Adapter Support Considerations

The display adapter is supported by microcode that is not distributed from the program library but is available from your customer engineer. The LINEB-- prompt contains the option for display adapter support during system generation.

The distribution data module contains a module called $@MCRI. $@MCRI is a dummy module that does not contain usable code but is used to reserve space in the object library for the required microcode.

Your customer engineer can copy the display adapter microcode to your data module either before or after system generation. When display adapter support is selected during system generation, $@MCRI is copied to the generated pack and renamed $$MCRI. The module $@MCRI or $$MCRI occupies 18 sectors in the object library.

If you attempt to use the display adapter without having the required microcode in $$MCRI, the system message IBY6BL is issued. This message indicates that an attempt was made to load a dummy display adapter module, or that an unsuccessful attempt was made to load the display adapter microcode. The CCP startup routine diagnoses the absence of valid display adapter microcode and issues the following error message:

```
SU459*ERROR*VALID DISPLAY
ADAPTER MICROCODE--$$MCRI,
NOT FOUND*
```

Customer Engineering Diagnostic Support Considerations

Customer engineering (CE) diagnostic support (for CE use only) is available to allow the user's production programs to run concurrently with the customer engineer's tests to diagnose device errors, to verify repairs, or to check certain devices periodically. With this support, the customer engineer can load the CE diagnostic routines without having to terminate all user programs. To delete unwanted diagnostic modules, use DELETE statements in the same format as the COPY statements in Appendix G.

RPG II 3270 Display Control Feature Considerations

Generating the RPG II 3270 display control feature requires multiline/multipoint support (MLMPS prompt) and binary synchronous communications adapter support (LINEB prompt).

3340 Cylinder 0 Considerations

SCP system generation builds new IPL records on cylinder 0 of drive 1 (D1). These IPL records from the drive with the newly generated SCP should be propagated to the other data modules you intend to use with this release. The SYSTEM-YES keyword of $SCOPY copies IPL records from cylinder 0 of the data module mounted on D1 to cylinder 0 of the data module indicated by the TO parameter of the COPYAREA control statement. The COPYIPL function of $SCOPY copies IPL records from the data module indicated by the FROM parameter to the data module indicated by the TO parameter of the COPYAREA control statement. The distribution data module or distribution tape will have the latest release level for the IPL records available at the time of the initial availability of a new SCP release. For a more complete description of the SYSTEM-YES keyword and the COPYIPL function of $SCOPY, see the appropriate *SCP Reference.*

Program Pack Protection Considerations (5704-SC2 Only)

When determining the level of support that should be selected for cataloging to an active program pack, either during system generation or when executing the configuration record program ($CNFIG), the procedures followed and the mode of operation are the major determining factors. For example, if you have control over the daily scheduling of jobs, knowing when a certain job will be run and the job(s) that will be running in the other partition(s), the option to catalog to all program packs may be the appropriate option to select. On the other hand if you are development oriented (with many different people having access to the system on a first-come, first-served basis), the option to catalog to no program packs may be appropriate.

The following three levels of support for cataloging to an active program pack are available:

- Disallow catalog to all active libraries. Any attempt to catalog an object library entry to an active program pack with this level of support results in an F/ message. (The overlay linkage editor will halt only if the program executing is a LOAD * or a temporary entry.)
- Allow catalog to active CCP libraries but not to other active libraries. This level of support does not allow cataloging to any active libraries except CCP libraries. If an attempt is made to catalog to a library that is not a CCP library, an F/ message will occur.
- Allow catalog to all active libraries. No message is issued when the program is attempting to catalog an object library entry to any program pack.

For further information concerning cataloging to an active library and the possible exposures it can have on a program executing in another partition, see *Cataloging to an Active Library* in the *SCP Reference*, GC21-5162.

Simulation Area Assignment Considerations (5704-SC2 Only)

Unit codes (F1, R1, F2, and R2) are assigned by partition to any of the supported simulation areas. Each unit code for a given partition must be assigned to a simulation area. Simulation area assignments are set in the configuration record during system generation and remain in effect until either another system generation is performed that has different simulation area assignments or until the configuration record program ($CNFIG) is used to change the simulation area assignments. An ASSIGN statement will temporarily reassign the simulation areas for the partition in which it is processed until another IPL is performed or another ASSIGN statement is processed.

Refer to the following chart for invalid simulation area assignments. For more information about the simulation areas, see the *SCP Reference*, GC21-5162.

5444 Unit Codes	Simulation areas that cannot be assigned the 5444 unit codes.
F1	D1B, D3B
R1	D1A, D3A
F2	D1A, D1B, D3A, D3B
R2	D1A, D1B, D3A, D3B

File Share Area Considerations and Restrictions (5704-SC2 Only)

File sharing is a standard function of SCP 5704-SC2. File sharing requires an area at the high end of main storage to contain a common area, short DTFs, and file share queues. The amount of main storage given to this file share area is specified during system generation; the minimum size is 2K bytes. This size may later be changed with the SET command in increments of 2K bytes. All partitions must be at end of job before this SET command is used.

The minimum 2K bytes area can accommodate approximately 24 entries; a 10K byte area can accommodate approximately 132 entries. One entry is required for each direct or sequential file; two entries are required for each indexed file.

The file share area should be kept as small as possible to eliminate unnecessary open search time. When opening a file, the entire share area must be searched to determine if a short DTF already exists for that file.

Generation Checklist (5704-SC1)

This is a checklist of the facts you must know before performing system generation; see Appendix B for information to aid you during preinstallation planning. If you plan to generate the communication control program (CCP), see the *CCP System Reference* for the CCP requirements and storage estimates.

_____ Number of tracks to reserve for the object library (120-380 tracks)

_____ Number of tracks to reserve for the object directory (1-9 tracks)

_____ Number of tracks to reserve for the source library (10-390 minus the value specified for the object library)

_____ Number of tracks to reserve for the system history area (392 minus the value specified for the object library and source library minus any number from 2 to 99)

_____ Main storage size of the processing unit

_____ Unit record restart support

_____ Date format (mmddyy or ddmmyy)

_____ Number of lines per page the 1403 Printer should default to (12-112 lines)

_____ Number of print positions the 3284 printer will have (120, 126, or 132)

_____ Number of lines per page the 3284 printer should default to (12-112 lines)

_____ System print device for partition 1

_____ System print device for partition 2

_____ System log device for partition 1

_____ System default log device for partition 2

_____ 3741 directly attached support

_____ Type of card devices attached to the system

_____ System input device for partition 1

_____ System input device for partition 2

_____ System punch device for partition 1

_____ System punch device for partition 2

_____ 3340 disk unit configuration

_____ 5444 disk unit configuration

_____ 5445 disk unit configuration

_____ 3410/3411 tape unit configuration

_____ 3410/3411 tape units that are dual density

_____ 3410/3411 tape units that are 7-track

_____ Interval timer is supported

_____ Number of BSCA lines and/or display adapter

_____ MLMP is supported

_____ MLTA is supported

_____ SIOC is supported (required for 1255, 3881, 1419, or RPQ)

_____ MRJE is supported

_____ I/O protection is supported (Assembler user)

_____ Rollout/rollin is supported[1]

[1] The same disk area is used by both rollout/rollin and checkpoint/restart; therefore, the same amount of disk space is required for either or both:
8 tracks for 48K system
11 tracks for 64K or greater system.

HOW TO USE THIS CHAPTER

The basic processes in system generation are:

- Generating the system control program (SCP)
- Generating the program products (PPs)
- Completing generation and installation verification
- Building a program pack

Because the procedures vary somewhat depending on whether you are generating SCP 5704-SC1 or 5704-SC2 and whether you are using the 5444 or 3340 disk drive, the processes are described in separate figures. Beginning with Figure 2-1, your progress is guided by YES/NO questions that refer you to other parts of that figure or to other figures within the chapter depending on your answer.

The normal sequence of procedures in the figures is from top-to-bottom of the first column, then top-to-bottom of the second column. An on-page connector, (1) , directs you to a place on that page that is out of the normal sequence. An off-page connector, D , directs you to another part of the figure on another page.

A ● symbol preceding a sentence indicates an action you must take; a ♦ symbol indicates a decision you must make.

COMMON SYSTEM GENERATION PROCEDURES

Some procedures in the system generation process occur so often that it is unnecessary to describe them in detail each time they take place. Therefore, they are described here; footnotes within the figures refer you back to this section if you need to review the procedure.

Pressing ENTER

If you are using the CRT/keyboard, you must press the ENTER key after each response you make to the system, whether that response is a one-character alphabetic option code, a numeric figure, an OCL or control statement, or the use of a PF key. You must press ENTER to send the response to the system.

Device Codes

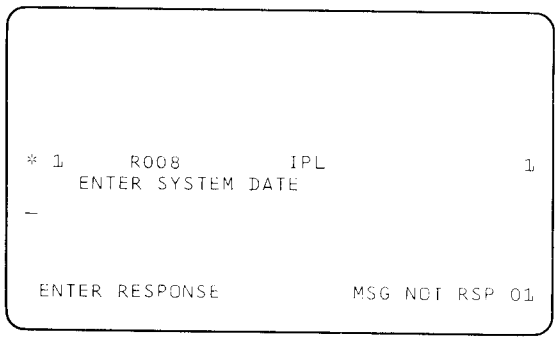
Several prompts within the generation process offer a choice of devices, whose names appear on the screen in abbreviated form. Following are the full descriptions of device codes that may appear:

Device Code	Meaning
CONSOLE	3277 Display Station (CRT/keyboard)
MFCM	2560 Multi-Function Card Machine
MFCM1	2560 primary hopper
MFCM2	2560 secondary hopper
MFCU	5424 Multi-Function Card Unit
MFCU1	5424 primary hopper
MFCU2	5424 secondary hopper
RPQ	For example: 1017 Paper Tape Reader and 1018 Paper Tape Punch
1255	1255 Magnetic Character Reader
1403	1403 Printer
1419	1419 Magnetic Character Reader
1442	1442 Card Read Punch
2501	2501 Card Reader
3277	3277 Display Station (CRT/keyboard)
3284	3284 Printer
3741	Directly attached 3741 Data Station/Programmable Work Station
3881	3881 Optical Mark Reader

IPL (Initial Program Load)

Throughout the generation procedure, you will be directed to press the PROGRAM LOAD key, which begins the initial program load (IPL) process. Following is a description of IPL and the responses you are required to make:

During IPL, the system prompts you to key in the date:



- Key in the date: mmddyy or ddmmyy [and press ENTER].

When EJ is displayed on the CRT, IPL is complete.

- If you have a system that supports spooling, you should cancel spooling at this time by using the CANCEL command.[1]

  - Press PF10.

  - Key in

    CN SP
    or
    CANCEL SPOOL

    [and press ENTER]

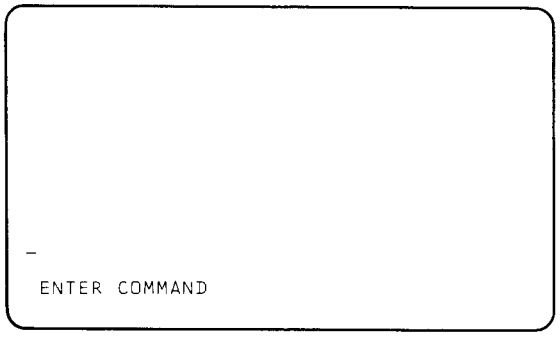
[1] Refer to the *Operator's Guide* or the *User's Guide to Spooling.*

Changing the System Input Device

Once you have specified a system input device for partition 1 in response to the SYIN1 prompt (Figure 2-1 or 2-5), the system expects that your responses and input will be entered through that device. If you wish to use a different device for input to a procedure (for example, entering OCL statements), you can temporarily change the designated system input device.

- Press PF10.

The system prompts:



- Key in

  READER P1,device
  or
  RDR P1,device

  where device is one of the following:[1]

MFCU1	1442
MFCU2	2501
MFCM1	CONSOLE
MFCM2	3741

  [and press ENTER]

[1] See *Device Codes* earlier in this chapter for an explanation of these names.

♦ Does your system use Program Number 5704-SC2?

No — Yes

Yes: Proceed to Figure 2-5, *System Control Program Generation (5704-SC2)*

PREPARING FOR SYSTEM GENERATION (5704-SC1)

- Turn system power on.
- Load forms in printer.

♦ Do you have a 3340 Direct Access Storage Facility?

No — Yes: C (Part 3)

♦ Is this the first-time system generation?

No — Yes: C (Part 3)

Backing Up Resident System from F1 to R1

- Mount a scratch disk cartridge (one that has not been used or that can be reused) on R1.
- Ready the disk drive.
- Set the program load selector at FIXED DISK.
- Press PROGRAM LOAD to begin the IPL process.[1]

♦ Are you using the 3277 Display Station (CRT/keyboard) as the system input device?

Yes:
- Press PF12 and ENTER.

A (Part 2)

No: (Card reader is to be used as the system input device.)

B (Part 2)

[1] See *Common System Generation Procedures* earlier in this chapter.

Figure 2-1 (Part 1 of 19). System Control Program Generation (5704-SC1)

♦ Is the scratch disk cartridge on R1 initialized?

No — Yes (1)

Initializing Scratch Disk Cartridge from CRT/Keyboard

- Enter the following OCL and control statements:[1]

```
// LOAD $INIT,F1
// RUN
// UIN TYPE-CLEAR,UNIT-R1
// VOL PACK-name[,ID-characters]
// END
```

When ENTER READER DATA P1 is displayed on the CRT, the scratch disk on R1 is initialized.

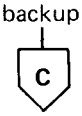
(1)

Copying the Resident System from F1 to R1

- Enter the following OCL and control statements:[1]

```
// LOAD $COPY,F1
// RUN
// COPYPACK FROM-F1,TO-R1
// END
```

When ENTER READER DATA P1 is displayed on the CRT, the resident system on F1 is copied to R1. Remove this backup cartridge and save it.



(Part 3)

♦ Is the scratch disk cartridge on R1 initialized?

No — Yes (2)

Initializing Scratch Disk Cartridge from Card Reader

- Prepare the following OCL and control statements:[1]

```
// LOAD $INIT,F1
// RUN
// UIN TYPE-CLEAR,UNIT-R1
// VOL PACK-name[,ID-characters]
// END
/&
```

- Place the statements in the card reader.
- Press reader START.
- Press PF12 and ENTER.

(2)

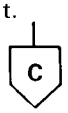
Copying the Resident System from F1 to R1

- Prepare the following OCL and control statements:[1]

```
// HALT
// LOAD $COPY,F1
// RUN
// COPYPACK FROM-F1,TO-R1
// END
/&
```

- Place the statements in the card reader.
- Press reader START.
- Press PF12 and ENTER.

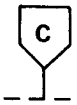
When EJ is displayed on the CRT, the resident system on F1 is copied to R1. Remove this backup cartridge and save it.



(Part 3)

[1] Refer to *SCP Reference*.

Figure 2-1 (Part 2 of 19). System Control Program Generation (5704-SC1)



SYSTEM CONTROL PROGRAM GENERATION (5704-SC1)

- If your system uses 5444, mount the distribution disk cartridge on R1 and ready the disk drive.
- If your system uses 3340, mount the distribution data module on D1 and ready the disk drive. If you received SCP, program products, or CCP on distribution tape reels (DTRs), go to Appendix E.
- Ready the printer.
- Set the program load selector to REMOVABLE DISK.
- Press PROGRAM LOAD to begin the IPL process.[1]
- ♦ Do you intend to repeat just the options selected during the previous system generation?

  Yes — No → D (Part 4)

- ♦ Is $SGSVE on F1? ($SGSVE was placed in the source library on F1 during the previous system generation.)

  Yes — No → 1

- Press PF12 and ENTER.
- To copy $SGSVE from F1 to R1, enter the following OCL statements:[2]

```
// CALL $SGSVE,R1
// RUN
```

D (Part 4)

- ♦ Is $SGSVE available from the previous system generation?

  Yes: Copy the $SGSVE source module from the previous system generation to R1.

  No: You *must* select the CRT prompt option later in this generation.

D (Part 4)

[1] See *Common System Generation Procedures* earlier in this chapter.
[2] Refer to *SCP Reference.*

Figure 2-1 (Part 3 of 19). System Control Program Generation (5704-SC1)

D

- Press PF12 and ENTER.

♦ Is the standard 48-character LC printer chain being used?

Yes — No

If a different printer chain is used, you must enter an IMAGE statement.[1]

- Key in the following OCL statements,[2] pressing ENTER after each statement:

```
// CALL $SGINT,R1
// RUN
```

When ENTER READER DATA P1 is displayed on the CRT, F1 is initialized.

Calling the System Generation Program

- Key in the following OCL statements,[2] pressing ENTER after each statement:

```
// CALL $SGEN,R1
// RUN
```

$SGEN calls a system generation program that prompts for system configuration statements and processes the responses.

Canceling System Generation

An option to terminate system generation at any time is available. If you enter a question mark (?) in the first position of a response, the system generation program displays a prompt to cancel the system generation:

```
CANCEL SYSGEN REPLY YES OR NO - NO



ENTER DATA P1                MSG NOT RSP 00
```

If you respond with YES, the system generation terminates, and all work done up to that point is lost.

If you respond with NO, the system generation returns to the interrupted prompt.

E (Part 5)

[1] See Appendix A for instructions on using an IMAGE statement.
[2] Refer to *SCP Reference.*

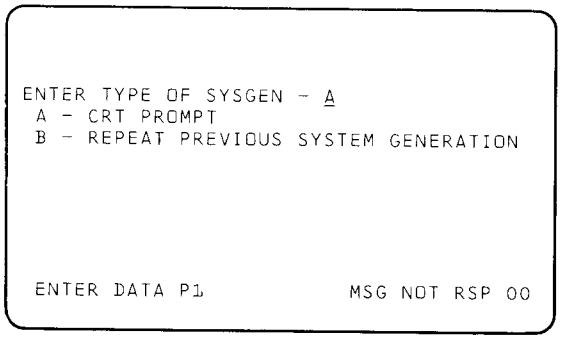
Figure 2-1 (Part 4 of 19). System Control Program Generation (5704-SC1)

E

System Generation Prompts

The first prompt displayed asks what method of system generation to use:

- *Prompt* option, which displays prompts for each option available in system generation
- *Repeat* option, which repeats just the options selected during the previous system generation.



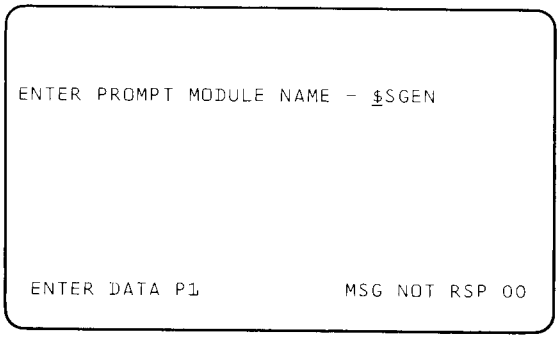
- Select an option and press ENTER.

Prompt option

Repeat option

1

If you chose the *prompt* option, a prompt is issued for the name of the module that will be used to control the remaining prompts. For SCP system generation, the name must be $SGEN, which is the default value.

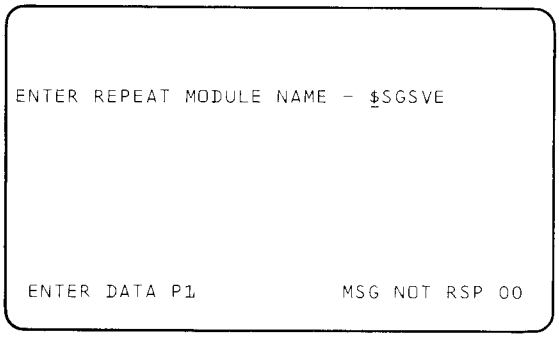


- Press ENTER to select the default value.

F (Part 6)

1

If you chose the *repeat* option, a prompt is issued for the name of the source module that contains the previous system generation responses. For SCP system generation, the name must be $SGSVE, which is the default value.



- Press ENTER to select the default value.

The information contained in this module is now used to generate the system without further operator action.

R (Part 18)

Figure 2-1 (Part 5 of 19). System Control Program Generation (5704-SC1)

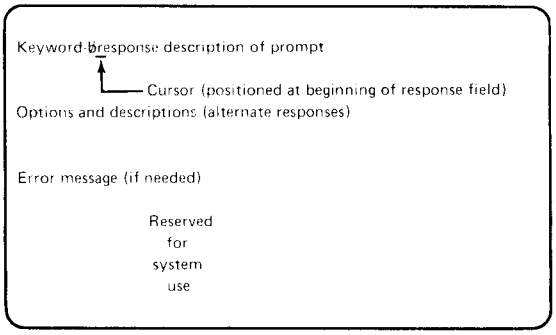
F

A series of prompts now appears on the CRT. Each prompt has:

- A default value
- An explanation of the prompt
- Alternate responses

After selecting the response desired, press ENTER to display the next prompt. If you key in no response prior to pressing ENTER, the default value of the prompt is used.

The prompts are displayed in the following format:



Error Messages

If you make an error that can be corrected with a different response, the prompt is redisplayed with an error message on line 7 that explains the error so that you can correct the response and retry. Following are the common messages and their meanings:

Message	Meaning
INVALID RESPONSE	You entered a character(s) other than the options specified in the display.
{DEVICE / DRIVE / FUNCTION} SELECTED IS NOT SUPPORTED	You did not specify support in a previous prompt for the device/drive/function selected at this time.
RESPONSE IS LESS THAN MINIMUM	You entered a value lower than the range specified in the display.
RESPONSE IS GREATER THAN MAXIMUM	You entered a value higher than the range specified in the display.
RESPONSE IS NON-NUMERIC	You entered an alphabetic or special character where only a numeric character is allowed.

If you make an uncorrectable error, the system issues a halt[1] and the system generation is terminated.

G (Part 7)

[1] Refer to *System Messages.*

Figure 2-1 (Part 6 of 19). System Control Program Generation (5704-SC1)

G

Prompts for Library and Storage Sizes

The size of the supervisor[1] generated for your system depends on the system generation responses.

```
OLIBR- 170 <-ENTER O-LIBRARY SIZE
 ANY NUMBER FROM 120 TO 380 TRACKS
 IS VALID
```

This prompt defines the object library size, which must be large enough to contain the SCP and any program products you will generate.[1]

Respond with a three-digit number (library size in tracks) within the range specified.

```
DIRSZ- 3 <-ENTER DIRECTORY SIZE
 ANY NUMBER FROM 1 TO 9 TRACKS
 IS VALID
```

This prompt defines the object library directory size, which must be large enough to accommodate the SCP and any program products you will generate.[1]

Respond with a one-digit number (directory size in tracks) within the range specified.

```
SLIBR- 020 <-ENTER S-LIBRARY SIZE
 ANY NUMBER FROM 010 TO (390-OLIBR)
 TRACKS IS VALID
```

This prompt defines the source library size, which must be large enough to contain the SCP and any program products you will generate.[1]

Respond with a three-digit number (library size in tracks) within the range specified. The combined source and object library sizes cannot total more than 390 tracks.

```
HSTRY- 02 <-ENTER SYSTEM HISTORY AREA
 SIZE. ANY NUMBER FROM 02 TO 99 LESS
 THAN 392-(OLIBR+SLIBR) TRACKS IS VALID
```

This prompt defines the system history area (SHA) size.[1]

Respond with a two-digit number (SHA size in tracks) within the range specified. The combined size of object library, source library, and SHA cannot total more than 392 tracks.

```
STORE- A  <-SELECT MAIN STORAGE SIZE
 A-48K       F-192K
 B-64K       G-224K
 C-96K       H-256K
 D-128K
 E-160K
```

This prompt defines the processing unit (CPU) main storage size.

H (Part 8)

[1] See Appendix B.

Figure 2-1 (Part 7 of 19). System Control Program Generation (5704-SC1)

H

Prompts for Restart Option and Date Format

```
READY- A <-SELECT UNIT RECORD RESTART
 A-NO
 B-YES
```

This prompt defines unit record restart support. If you select this option, it will not be necessary to respond to certain error messages (for example, forms alignment or error recovery procedures that have a 1-option response) that are associated with unit record devices.[1]

```
DATEF- A <-SELECT DATE FORMAT
 A-MMDDYY
 B-DDMMYY
```

This prompt defines the date format.

Prompts for Printer and Log Device Support

```
LINEP- 066 <-ENTER LINES PER PAGE FOR
 1403 PRINTER.  ANY NUMBER FROM 012 TO
 112 LINES IS VALID
```

This prompt defines the default number of lines per page for a 1403 printer.

Respond with a three-digit number within the range specified.

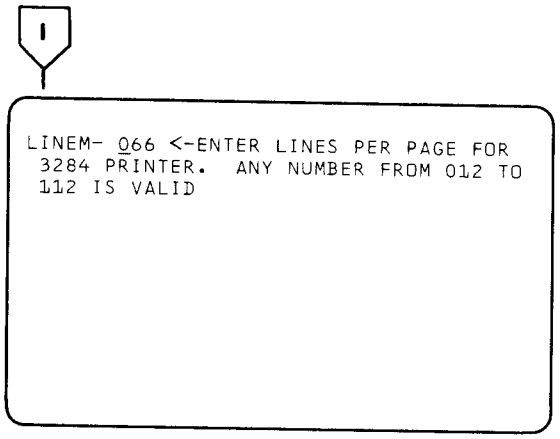
```
MATRX- A <-SELECT 3284 PRINTER SUPPORT
 A-NONE
 B-120 POSITION
 C-126 POSITION
 D-132 POSITION
```

This prompt defines the support for the 3284 matrix printer.

I (Part 9)

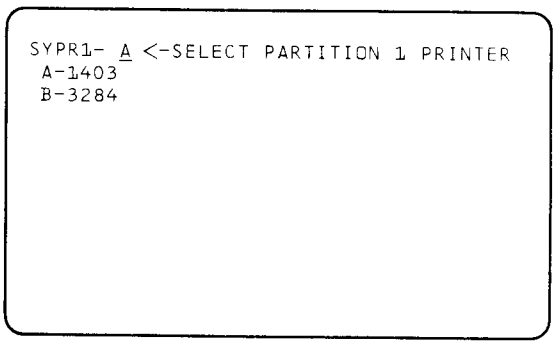
[1] Unit record devices include 5424 MFCU, 2560 MFCM, 1442 Card Read Punch, 2501 Card Reader, 1403 Printer, 3741 Data Station.

Figure 2-1 (Part 8 of 19). System Control Program Generation (5704-SC1)

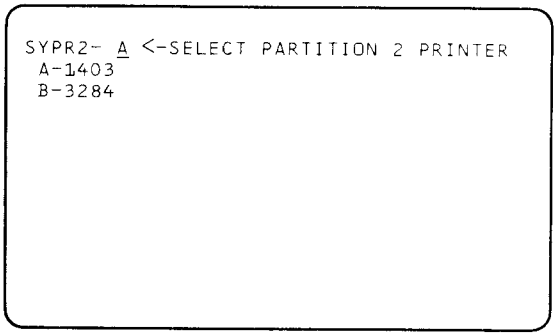


This prompt defines the number of lines per page for a 3284 printer.

Respond with a three-digit number within the range specified.



This prompt defines the system print device[1] used by IBM-supplied programs in partition 1.



This prompt defines the system print device[1] used by IBM-supplied programs in partition 2 (can be the same device as specified for partition 1).

(Part 10)

[1] See *Common System Generation Procedures* earlier in this chapter.

Figure 2-1 (Part 9 of 19). System Control Program Generation (5704-SC1)

J

```
P1LOG- A <-SELECT P1 DEFAULT LOG DEVICE
 A-3277
 B-1403,EJECT
 C-1403,NOEJECT
 D-3284,EJECT
 E-3284,NOEJECT
```

This prompt defines the default log device[1] for partition 1.

```
P2LOG- A <-SELECT P2 DEFAULT LOG DEVICE
 A-3277
 B-1403,EJECT
 C-1403,NOEJECT
 D-3284,EJECT
 E-3284,NOEJECT
```

This prompt defines the default log device[1] for partition 2.

```
DSK41- A  <-SELECT 3741 I/O SUPPORT
 A-NO
 B-YES
```

This prompt defines the I/O support for the directly attached 3741.

```
CARDD- A <-SELECT CARD I/O DEVICES(S)
 A-MFCU          F-1442,2501
 B-MFCM          G-MFCU,1442
 C-1442          H-MFCU,2501,1442
 D-MFCU,2501     J-2501
 E-MFCM,2501     K-NONE
```

This prompt defines the card device(s) supported.[1]

K (Part 11)

[1] See *Common System Generation Procedures* earlier in this chapter.

Figure 2-1 (Part 10 of 19). System Control Program Generation (5704-SC1)

K

```
SYIN1- A <-SELECT PARTITION 1 READER
 A-MFCU1      F-2501
 B-MFCU2      G-CONSOLE
 C-MFCM1      H-3741
 D-MFCM2
 E-1442
```

This prompt defines the system input device[1] (used to enter OCL, control, and data statements for IBM-supplied programs) for partition 1.

```
SYIN2- G <-SELECT PARTITION 2 READER
 A-MFCU1      F-2501
 B-MFCU2      G-CONSOLE
 C-MFCM1      H-3741
 D-MFCM2
 E-1442
```

This prompt defines the system input device[1] for partition 2 (can be the same device as specified for partition 1).

```
SYPC1- A <-SELECT PARTITION 1 PUNCH
 A-MFCU1      F-3741
 B-MFCU2      G-NONE
 C-MFCM1
 D-MFCM2
 E-1442
```

This prompt defines the punch device[1] used by IBM-supplied programs in partition 1.

```
SYPC2- A <-SELECT PARTITION 2 PUNCH
 A-MFCU1      F-3741
 B-MFCU2      G-NONE
 C-MFCM1
 D-MFCM2
 E-1442
```

This prompt defines the punch device[1] used by IBM-supplied programs in partition 2.

L (Part 12)

[1] See *Common System Generation Procedures* earlier in this chapter.

Figure 2-1 (Part 11 of 19). System Control Program Generation (5704-SC1)

Prompts for Disk Device Support

```
DSK33- A  <-SELECT 3340 CONFIGURATION
 A-NONE
 B-D1,D2
 C-D1,D2,D3
 D-D1,D2,D3,D4
```

This prompt defines the 3340 disk configuration (simulation areas R1, F1, R2, and F2, as well as main data areas, are supported).

```
DSK44- A <-SELECT 5444 CONFIGURATION
 A-R1,F1
 B-R1,F1,R2
 C-R1,F1,R2,F2
```

This prompt defines the 5444 disk configuration (not applicable for simulation areas on the 3340).

```
DSK45- A <-SELECT 5445 CONFIGURATION
 A-NONE
 B-D1
 C-D1,D2
 D-D1,D2,D3
 E-D1,D2,D3,D4
```

This prompt defines the 5445 disk configuration (not applicable for main data areas on the 3340).

Prompts for Tape Device Support

```
TAPES- A <-SELECT TAPE CONFIGURATION
 A-NONE
 B-T1
 C-T1,T2
 D-T1,T2,T3
 E-T1,T2,T3,T4
```

This prompt defines the 3410/3411 tape configuration.

```
DUALD- A <-IDENTIFY DUAL DENSITY DRIVES
 A-NO   F-T1,T2  L-T3,T4     R-T1,T2,T3,
 B-T1   G-T1,T3  M-T1,T2,T3     T4
 C-T2   H-T1,T4  N-T1,T2,T4
 D-T3   J-T2,T3  P-T1,T3,T4
 E-T4   K-T2,T4  Q-T2,T3,T4
```

This prompt (issued only if tape units are supported) defines the dual-density 3410/3411 tape units.

```
TRK7D- A <-IDENTIFY 7-TRACK DRIVES
 A-NO   F-T1,T2  L-T3,T4     R-T1,T2,T3
 B-T1   G-T1,T3  M-T1,T2,T3     T4
 C-T2   H-T1,T4  N-T1,T2,T4
 D-T3   J-T2,T3  P-T1,T3,T4
 E-T4   K-T2,T4  Q-T2,T3,T4
```

This prompt (issued only if tape units are supported but dual density is not supported) defines the 7-track 3410 tape units.

(Part 13)

Figure 2-1 (Part 12 of 19). System Control Program Generation (5704-SC1)

M

Prompt for Timer Support

The interval timer provides time-of-day services for time-stamping reports and messages and for timing intervals in the CCP multipoint polling applications.

```
TIMER- A <-SELECT TIMER SUPPORT
 A-NONE
 B-TIME OF DAY ONLY
 C-FULL TIMER SUPPORT
```

This prompt defines the interval timer support.

Prompts for Communications Support

```
LINEB- A <-SELECT NUMBER OF BSCA LINES
 A-NONE
 B-LINE 1
 C-LINE 1 AND LINE 2
 D-LINE 1 AND DISPLAY ADAPTER
 E-DISPLAY ADAPTER
```

This prompt defines the number of BSCA lines to be supported. LINE1 and LCA (local communications adapter) are the same for this prompt. LINE2 and DISPLAY ADAPTER are mutually exclusive.

```
MLMPS- A <-SELECT MLMP SUPPORT
 A-NO
 B-YES
```

This prompt defines the multiline/multipoint suppor

```
MLTAS- A <-SELECT MLTA SUPPORT
 A-NO
 B-YES
```

This prompt defines the multiple line terminal adapter feature support.[1]

```
SIOCS- A <-SELECT SIOC SUPPORT
 FOR 3881 OR 1255 OR 1419 OR RPQ
 A-NO              D-1419
 B-3881, 1255      E-RPQ
 C-3881
```

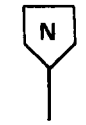
This prompt defines the serial I/O channel support.[2]

N (Part 14)

[1] Program Number 5799-WFK

[2] See *Common System Generation Procedures* earlier in this chapter.

Figure 2-1 (Part 13 of 19). System Control Program Generation (5704-SC1)




```
MRJES- A <-SELECT MRJE SUPPORT
 A-NO
 B-YES
```

This prompt defines MULTI-LEAVING remote job entry support.

Prompts for Additional SCP Support

I/O protection support may be desirable during development of user-written assembler programs. Except for SIOC, BSCA, MLMP, and unit record punch operations, I/O protection support ensures that an I/O buffer is within the user partition before allowing an I/O operation to proceed. This support increases the execution time of all I/O operations.

```
IOPRT- A <-SELECT I/O PROTECTION
 A-NO
 B-YES
```

This prompt defines the I/O protection support.

```
INQRY- A <-SELECT ROLLOUT/ROLLIN
 A-NO
 B-YES
```

This prompt defines the rollout/rollin support.

Possible error message: INSUFFICIENT DISK SPACE FOR ROLLOUT[1]

```
CKPRS- A <-SELECT CHECKPOINT/RESTART
 A-NO
 B-YES
```

This prompt defines the checkpoint/restart support.

Possible error message: INSUFFICIENT DISK SPACE FOR CHECKPOINT[1]

(Part 15)

[1] The same disk area is used by both rollout/rollin and checkpoint/restart; therefore, the same amount of disk space is required for either or both:
8 tracks for 48K system
11 tracks for 64K or greater system

Figure 2-1 (Part 14 of 19). System Control Program Generation (5704-SC1)

O

Memory-resident overlays is an optional SCP technique that is designed to allow the user to increase the performance of programs that use overlays.[1]

```
MEMRO- A <-SELECT MEMORY
 RESIDENT OVERLAYS
 A-NO
 B-YES
```

This prompt defines memory-resident overlay support.

```
CCPUT- 00 <-ENTER NUMBER OF CCP USER
 TASKS. ANY NUMBER FROM 00 TO 15 IS
 VALID
```

This prompt defines the amount of supervisor space to reserve for use by CCP (communications control program).

Respond with a two-digit number (number of CCP user tasks) within the range specified.

Possible error message: MLMP OR MLTA IS REQUIRED FOR CCP (if you have not previously specified multiline/multipoint (MLMPS-B) or multiple line terminal adapter (MLTAS-B) support).

Prompts for Spooling Support

Considerations for generating a spooling system are described in Chapter 1. If spooling is selected but there is not enough main storage to support spooling, the generated system is unusable.[2]

```
PARTN- A <-SELECT SPOOLED PARTITION(S)
 A-NONE
 B-PARTITION 1
 C-PARTITION 2
 D-PARTITION 1 AND PARTITION 2
```

This prompt indicates if spooling is supported and defines spooled partitions.

Possible error message: 5445 OR 3340 REQUIRED FOR SPOOL (if you have not previously specified 5445 (DSK45 prompt) or 3340 (DSK33 prompt) support).

The following prompts associated with spooling are bypassed if spooling is not supported: SPRDR, SPPCH, DEFCN, DEFFN, AUTST, AUTWT, SPDSK, SPCYL, SPEXT, SSPTR.

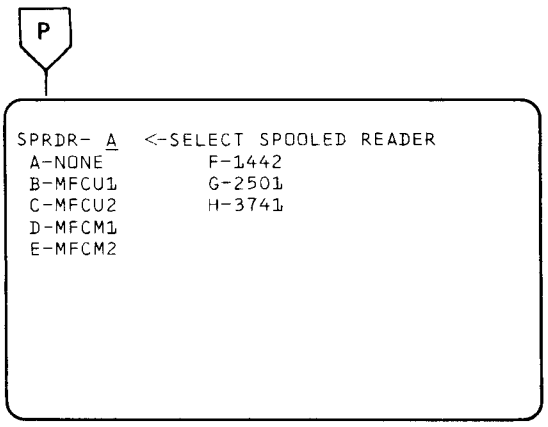
♦ Did you select spooling support?

Yes — P (Part 16)

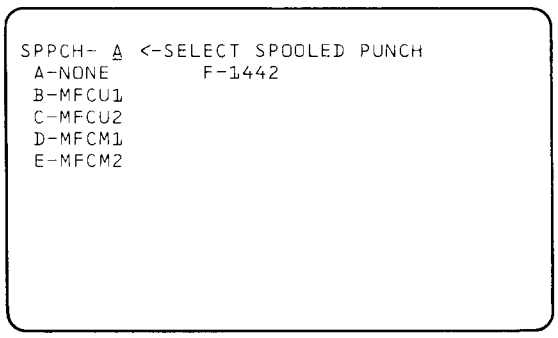
No — R (Part 18)

[1] Refer to the *IBM System/3 Overlay Linkage Editor Reference*, GC21-7561.
[2] See Appendix B.

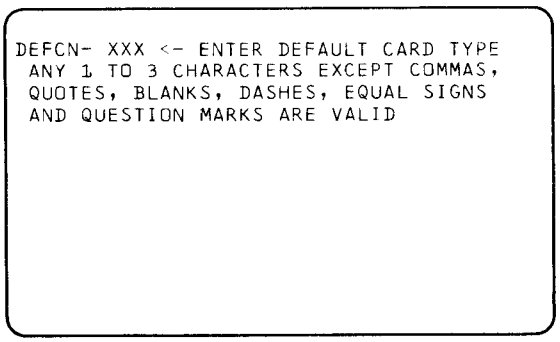
Figure 2-1 (Part 15 of 19). System Control Program Generation (5704-SC1)



This prompt defines the input device[1] that reads the records associated with the spooling job stream.

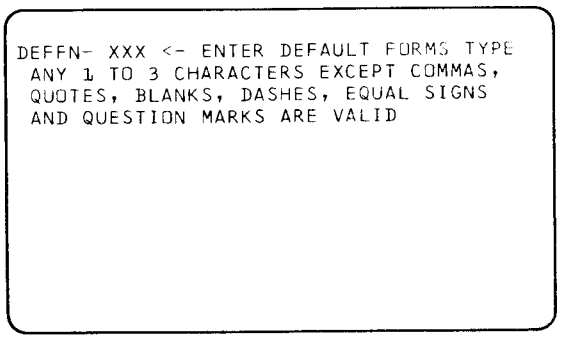


This prompt defines the output device[1] that punches the cards associated with the spooling job stream.



This prompt defines the default card type that the operator loads into the punch device for punched output of the next job. (The card type can be changed for a specific job by the CARDNO parameter of the PUNCH statement[2,3] or by the CHANGE command[3,4].)

Respond with 1 to 3 characters within the restrictions specified.



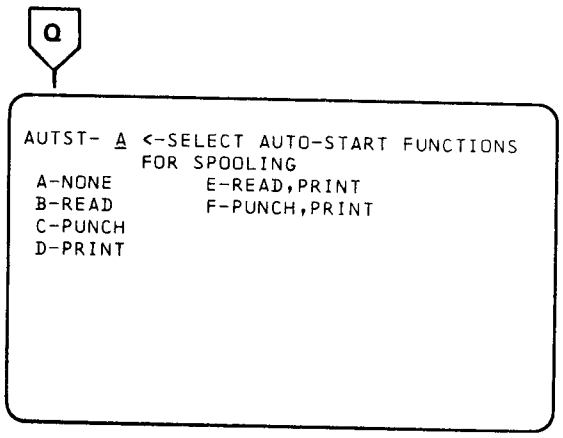
This prompt defines the default forms type that the operator mounts on the printer for printed output of the next job. (The forms type can be changed for a specific job by the FORMSNO parameter of the PRINTER statement[2,3] or by the CHANGE command[3,4].)

Respond with 1 to 3 characters within the restrictions specified.

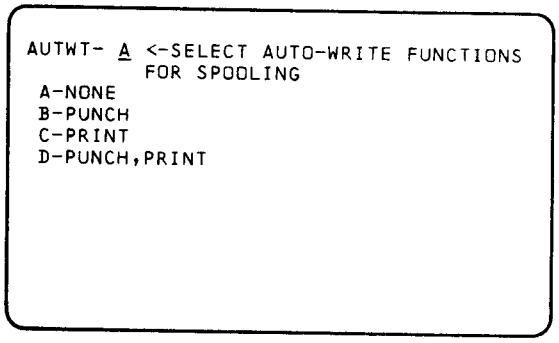
(Part 17)

[1] See *Common System Generation Procedures* earlier in this chapter.
[2] Refer to *SCP Reference.*
[3] Refer to *User's Guide to Spooling.*
[4] Refer to *Operator's Guide.*

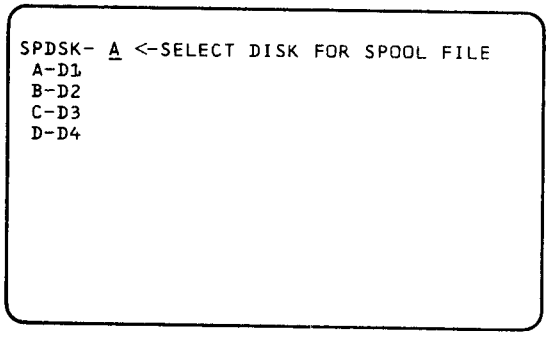
Figure 2-1 (Part 16 of 19). System Control Program Generation (5704-SC1)



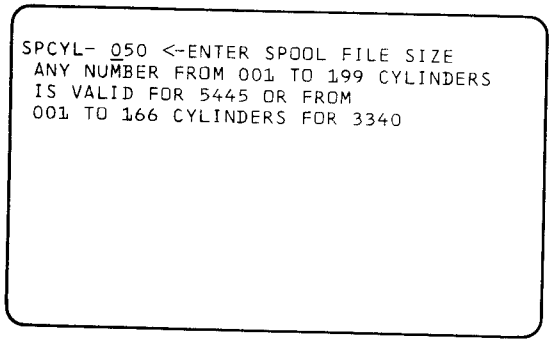
This prompt defines which spooling function(s) are to start automatically.



This prompt defines which spooling output function(s) are to write automatically.

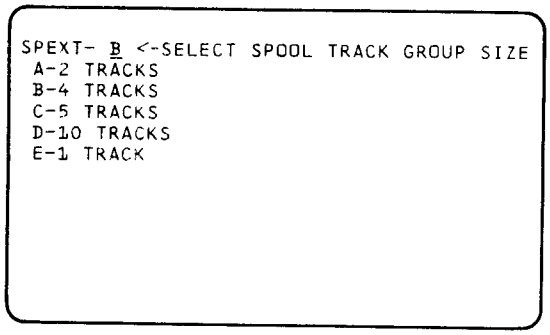


This prompt defines which 5445/3340 drive is to be used for the spooling file.

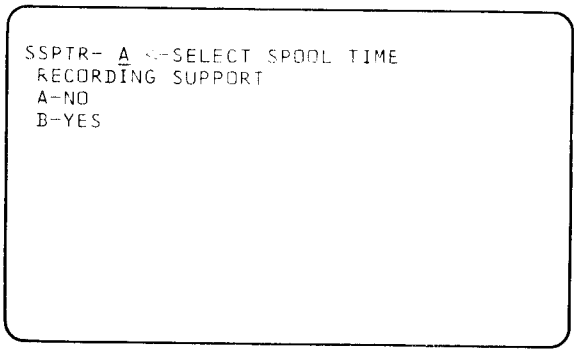


This prompt defines the total number of cylinders for the spooling file.

Respond with a three-digit number within the range specified.



This prompt defines the spooling track group size.



This prompt defines the spool time-recording support.

R (Part 18)

Figure 2-1 (Part 17 of 19). System Control Program Generation (5704-SC1)

R

At this point, the CRT goes blank for some time while the system processes the information that you specified.

Building the Supervisor

After all prompts have been responded to and processed, $SGEN builds the new supervisor.[1]

A prompt is then issued for partition 1 and partition 2 sizes.[2]

```
MAIN STORAGE nnn K SUPERVISOR mmm K[3]
AVAILABLE STORAGE FOR P1 & P2 ppp K
P1 SIZE XXX K 8 TO ppp IN 2 K
              INCREMENTS IS VALID
P2 SIZE XXX K 0 OR 8 TO ppp-P1 IN 2K
              INCREMENTS IS VALID
```

- Enter the P1 and P2 sizes over the XXX and press ENTER.

When ENTER READER DATA P1 is displayed on the CRT, the required SCP support is copied.

Generating Macro Processor Support

Macro processor support required for CCP generation is already included with that program.

♦ Do you wish to generate macro processor support in the system control program?

Yes — No → 1

- Enter the following OCL statements:[4]

```
// CALL $SGMAC,R1
// RUN
```

When ENTER READER DATA P1 is displayed on the CRT, processing is complete.

1

Generating Customer Engineering Diagnostics Support

♦ Do you wish to include the customer engineering diagnostics support in the SCP (Model 15B or 15C only)?

Yes — No → S (Part 19)

- Enter the following OCL statements:[4]

```
// CALL $SGCED,R1
// RUN
```

When ENTER READER DATA P1 is displayed on the CRT, processing is complete.

S (Part 19)

[1] If your generated supervisor is larger than 48K, the overlay linkage editor issues warning message 'P27, which indicates that the program will not fit into the specified storage size. Use the 0 option to continue.

[2] See Appendix B.

[3] Sizes in K bytes (K = 1024):
nnn = main storage size
mmm = supervisor size
ppp = difference between main storage and supervisor sizes

[4] Refer to *SCP Reference.*

Figure 2-1 (Part 18 of 19). System Control Program Generation (5704-SC1)

S

Backing Up Distribution SCP Programs

♦ Do you have a 3340 system?

Yes

All 3340 data modules must be in System/3 format before being used by programs processed under disk system management. At this time, the Disk Initialization Program is available on your generated system to perform this function using $INIT. The R1 simulation area will be used for *Program Products Generation* and for *Completing System Generation and Installation Verification.*

No → 1

A 6FDA message will result if you attempt to clear or copy to a simulation area, named PID001, that previously contained distribution programs from the program library. To clear this area, you must include an AREA-PID001 parameter on the CLEAR statement, as well as a CLRNAME parameter with a name *other than* PID001.

- Enter the following OCL and control statements:[1]

```
// LOAD $SCOPY,R1
// RUN
// CLEAR FROM-unit,PACK-name,CLRNAME-name,
   TYPE-FORCE[,AREA-name][2]
// COPYAREA FROM-D1B,TO-unit,PACK-name,
   AREA-name[,SYSTEM-YES]
// END
```

When ENTER READER DATA P1 is displayed on the CRT, processing is complete.

1

Proceeding to the Next Generation

♦ Are you generating program products?

Yes

- Proceed to Figure 2-2 if you are using 5444 or to Figure 2-6 if you are using 3340.

No

- Proceed to Figure 2-3 if you are using 5444 or to Figure 2-7 if you are using 3340.

[1] See *SCP Reference.*
[2] AREA-name is required only if the backup area previously contained a simulated distribution pack.

Figure 2-1 (Part 19 of 19). System Control Program Generation (5704-SC1)

PREPARING FOR PROGRAM PRODUCTS GENERATION (5444)

♦ Did an IBM customer engineer just complete system verification?

No — Yes → (A) (Part 2)

♦ Was SCP generation just completed?

No — Yes → (A) (Part 2)

♦ Is there a need to retain the information currently on F1?

Yes — No → (A) (Part 2)

Backing Up F1

- Mount an initialized scratch disk cartridge on R1.
- Ready the disk drive.
- Set the program load selector at FIXED DISK.
- Press PROGRAM LOAD to begin the IPL process.[1]
- ♦ If you wish to change the system input device designation for partition 1, you should do so now.[1]
- Press PF12 and ENTER.
- Enter the following OCL and control statements:[2]

```
// HALT
// LOAD $COPY,F1
// RUN
// COPYPACK FROM-F1,TO-R1
// END
/&
```

When EJ is displayed on the CRT, your system on F1 is copied to your backup disk cartridge on R1.

[1] See *Common System Generation Procedures* earlier in this chapter.
[2] Refer to *SCP Reference.*
[3] nnnnnn is the name you have assigned to the disk pack on F1.

Figure 2-2 (Part 1 of 2). Program Products Generation (5444)

Deleting All Libraries and Files from F1

- Remove the backup disk cartridge from R1.
- Mount your tailored disk cartridge on R1.
- Ready the disk drive.
- Set the program load selector at REMOVABLE DISK.
- Press PROGRAM LOAD to begin the IPL process.[1]
- ♦ If you wish to change the system input device designation for partition 1, you should do so now.
- Press PF12 and ENTER.
- Enter the following OCL and control statements:[2]

```
// LOAD $MAINT,R1
// RUN
// ALLOCATE TO-F1,SOURCE-0,OBJECT-0
// END

// LOAD $DELET,R1
// RUN
// REMOVE UNIT-F1,LABEL-VTOC,PACK-nnnnnn[3]
// END
/&
```

When EJ is displayed on the CRT, all files and libraries are deleted from F1.

Copying Tailored System from R1 to F1

- Press PF12 and ENTER.
- Enter the following OCL and control statements:[2]

```
// LOAD $COPY,R1
// RUN
// COPYPACK FROM-R1,TO-F1
// END
/&
```

When EJ is displayed on the CRT, the system has been copied from R1 to F1.

(A) (Part 2)

A

GENERATING PROGRAM PRODUCTS

- Mount on R1 the distribution disk cartridge that contains the program products you wish to generate.
- Ready the disk drive.
- Set the program load selector at FIXED DISK.
- Press PROGRAM LOAD to begin the IPL process.[1]
- ♦ If you wish to change the system input device designation for partition 1, you should do so now.[1]
- Press PF12 and ENTER.
- Enter the OCL statements needed for each program product you wish to copy:

// CALL $SGRPG,R1 // RUN	RPG II Compiler
// CALL $SGBSC,R1 // RUN	RPG II BSCA Telecommunications
// CALL $SGDCF,R1 // RUN	RPG II 3270 Display Control Feature[2]
// CALL $SGAU,R1 // RUN	RPG II Auto Report
// CALL $SGSRT,R1 // RUN	Disk Sort
// CALL $SGATH,R1 // RUN	CCP/Disk Sort
// CALL $SGTST,R1 // RUN	Tape Sort
// CALL $SGCOB,R1 // RUN	Subset ANS COBOL Compiler
// CALL $SGUTL,R1 // RUN	Card Utilities
// CALL $SGASM,R1 // RUN	Basic Assembler
// CALL $SGFTN,R1 // RUN	FORTRAN IV Compiler[3]

- Repeat the *Generating Program Products* steps for each disk cartridge that contains program products you wish to copy.
- Proceed to Figure 2-3, *Completing System Generation and Installation Verification.*

---

[1] See *Common System Generation Procedures* earlier in this chapter.
[2] When this feature is copied, the system issues LM60SY messages; respond with a 0-option to continue.
[3] For FORTRAN multivolume tape support after SCP generation, use $MAINT to delete $$BTAM and rename $$BTMM to $$BTAM. $$BTAM and $$BTMM are functionally identical except that $$BTMM contains multivolume tape support. If multivolume tape support is not required, $$BTMM may be deleted from the R-library.

Figure 2-2 (Part 2 of 2). Program Products Generation (5444)

COMPLETING SYSTEM GENERATION AND INSTALLATION VERIFICATION (5444)

Although you now have a usable tailored system on F1, the system generation process is not complete until the tailored system on F1 has been copied to R1 to create a removable system pack. The tailored system on F1 contains the following:

Minimum system control program
System service programs
Data management routines
Other SCP features, program products, and program product features that you have ordered

Copying the Tailored System from F1 to R1

- Mount a scratch disk cartridge on R1.
- Ready the disk drive.
- Set the program load selector at FIXED DISK.
- Press PROGRAM LOAD to begin the IPL process.[1]
- ♦ If you wish to change the system input device designation for partition 1, you should do so now.[1]
- Press PF12 and ENTER.
- Enter the following OCL statements:

```
// CALL $SGINR,F1      To initialize R1
// RUN

// CALL $SGCPY,F1      To copy the tailored
// RUN                  system to R1
```

When EJ is displayed on the CRT, you have identical tailored systems on R1 and F1, both containing all the programs generated.

- Identify the cartridge on R1 as your tailored system disk cartridge (the disk name is SYSTEM).
- You should test the generated program products by running their respective sample programs.[2]

System generation is complete; you can leave the entire tailored system on F1 or you can build a minimal resident system on F1 instead. A minimal resident system consists of:

- Only those system control programs needed to perform IPL and to process OCL statements
- System service programs you want
- Program products you want

♦ Do you wish to build a minimal resident system on F1?

Yes — No → B (Part 2)

Building a Minimal Resident System on F1

- Determine the number of tracks required[3] for the source and object libraries and directories for the programs you wish to copy.[4]
- Mount the tailored system disk cartridge on R1.
- Ready the disk drive.
- Set the program load selector at REMOVABLE DISK.
- Press PROGRAM LOAD to begin the IPL process.[1]
- ♦ If you wish to change the system input device designation for partition 1, you should do so now.[1]

A (Part 2)

[1] See *Common System Generation Procedures* earlier in this chapter.
[2] See *Preface*.
[3] See Appendix B.
[4] If the copy/dump program is to be copied, its entire R-library must be copied to the minimal system.

Figure 2-3 (Part 1 of 3). Completing System Generation and Installation Verification (5444)

- Press PF12 and ENTER.

- Enter the following OCL and control statements:

```
// HALT
// LOAD $MAINT,R1
// RUN
// ALLOCATE TO-F1,OBJECT-0,SOURCE-0
// ALLOCATE TO-F1,OBJECT-nnn,SOURCE-nnn,
   SYSTEM-YES,DIRSIZE-n,HISTORY-nnn
// COPY FROM-R1,TO-F1,LIBRARY-O,
   NAME-SYSTEM
   .
   . [1]
   .
// END
```

When EJ is displayed on the CRT, you have a minimal resident system on F1.

Deleting Unneeded Programs and Procedures

At the end of system generation, your tailored system (on R1 or F1) contains some system generation procedures not needed in your day-to-day operation; it may also contain other programs and procedures you do not need. You can make this space available for other uses by deleting these unneeded procedures.

♦ Do you wish to delete procedures from your tailored system disk cartridge?[2]

Yes

No → 

(Part 3)

- Press PF12 and ENTER.

- Enter the following OCL and control statements:[3]

```
// HALT
// LOAD $MAINT,unit
// RUN
// DELETE FROM-unit,RETAIN-P,LIBRARY-P,
   NAME-$SG.ALL
   .
   . [4]
   .
// END
/&
```

When EJ is displayed on the CRT, the unneeded programs are deleted from your tailored system.

(Part 3)

[1] Enter COPY statements here for the programs and routines to be included in your minimal system. See Figures B-11 and B-12 in Appendix B for the LIBRARY and NAME parameters and library space requirements for each program.

[2] **CAUTION:** You must not attempt to remove these procedures from the *distribution* disk cartridge.

[3] Refer to *SCP Reference*.

[4] Enter DELETE statements here for any other programs and routines to be deleted from your tailored system. See Figures B-11 and B-12 in Appendix B for the LIBRARY and NAME parameters for each program (as well as the library space for each that will now be available).

Figure 2-3 (Part 2 of 3). Completing System Generation and Installation Verification (5444)

Restoring Active Data Files to F1

To ensure that you do not inadvertently destroy active data files, you should copy them to F1 from the backup disk cartridge that contains your *previous release* resident system.

♦ Do you have any active data files to be copied to F1?

Yes

- Use $COPY to restore the active data files.[1]
- Proceed to Figure 2-4, *Building a Program Pack.*

No

Proceed to Figure 2-4, *Building a Program Pack.*

[1] Refer to *SCP Reference.*

Figure 2-3 (Part 3 of 3). Completing System Generation and Installation Verification (5444)

BUILDING A PROGRAM PACK (5444)

If you want to have more file space on the system pack, you can separate your program products on different packs. These program packs may be built any time after system generation.

- Ensure that you have a backup copy of the system on F1.
- Determine the number of tracks required for the source and object libraries.[1] (If you expect to add any programs to these libraries later, leave space now.)
- ◆ Are all the programs required for the program pack on F1?

No → (1)

Yes → (B) (Part 3)

(1)

Deleting All Libraries and Files from F1

- Mount the tailored system disk cartridge on R1.
- Ready the disk drive.
- Set the program load selector at REMOVABLE DISK.
- Press PROGRAM LOAD to begin the IPL process.[2]
- ◆ If you wish to change the system input device designation for partition 1, you should do so now.[2]
- Press PF12 and ENTER.
- Enter the following OCL and control statements.[3]

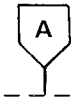
```
// LOAD $MAINT,R1
// RUN
// ALLOCATE TO-F1,SOURCE-0,OBJECT-0
// END
// HALT
// LOAD $DELET,R1
// RUN
// REMOVE UNIT-F1,LABEL-VTOC,PACK-nnnnnn[4]
// END
/&
```

When EJ is displayed on the CRT, all files and libraries on F1 are deleted. You can now copy R1 to F1.

(A) (Part 2)

[1] See Appendix B.
[2] See *Common System Generation Procedures* earlier in this chapter.
[3] Refer to *SCP Reference.*
[4] nnnnnn is the name you have assigned to the disk pack on F1.

Figure 2-4 (Part 1 of 3). Building a Program Pack (5444)



Copying Programs from R1 to F1

- Press PF12 and ENTER.
- Enter the following OCL and control statements[1] to copy system service programs:

```
// HALT
// LOAD $MAINT,R1
// RUN
// ALLOCATE TO-F1,SOURCE-nnn,OBJECT-nnn,
   SYSTEM-YES
// COPY FROM-R1,TO-F1,LIBRARY-O,
   NAME-SYSTEM
// COPY FROM-R1,TO-F1,LIBRARY-O,
   RETAIN-R,NAME-$MA.ALL (library maintenance)
// COPY FROM-R1,TO-F1,LIBRARY-O,
   RETAIN-R,NAME-$CO.ALL (copy/dump)
// COPY FROM-R1,TO-F1,LIBRARY-O,
   RETAIN-R,NAME-$DE.ALL (file delete)
// COPY FROM-R1,TO-F1,LIBRARY-O,
   RETAIN-R,NAME-$IN.ALL (disk initialization)
// COPY FROM-R1,TO-F1,LIBRARY-R,
   RETAIN-R,NAME-$$.ALL (data management and
                         subroutines)
.
. [2]
.
// END
/&
```

When EJ is displayed on the CRT, the copy operation is complete.

♦ Are the program products you wish to copy on the pack that is currently mounted on R1?

No → 1

Yes → 2

- Remove the tailored system disk cartridge from R1.
- Mount the pack containing the program products on R1.
- Ready the disk drive.
- Set the program load selector at FIXED DISK.
- Press PROGRAM LOAD to begin the IPL process.[3]

♦ If you wish to change the system input device designation for partition 1, you should do so now.[4]

- Press PF12 and ENTER.

- Enter the following OCL and control statements:[1]

```
// HALT
// LOAD $MAINT,F1
// RUN
.
. [4]
.
// END
/&
```

When EJ is displayed on the CRT, the copy operation is complete.

♦ Are there program products on another pack to be copied to F1?

No → You are now ready to copy the programs to the program pack. → B

Yes → 1

[1] Refer to *SCP Reference.*

[2] If there are additional system service programs on R1 that you want to copy to your program pack, include COPY statements for them here. See Appendix B.

[3] See *Common System Generation Procedures* earlier in this chapter.

[4] Enter a COPY statement here for each program product that you want to copy; see Appendix G.

Figure 2-4 (Part 2 of 3). Building a Program Pack (5444)

B

Copying the Programs on F1 to the Program Pack

- Mount an initialized scratch disk cartridge on R1.
- Ready the disk drive.
- Set the program load selector at FIXED DISK.
- Press PROGRAM LOAD to begin the IPL process.[1]
- ♦ If you wish to change the system input device designation for partition 1, you should do so now.[1]
- Press PF12 and ENTER.
- ♦ Do you wish to copy all of F1 to R1?

Yes — No → 1

- Enter the following OCL and control statements:[2]

```
// LOAD $MAINT,F1
// RUN
// ALLOCATE TO-R1,SOURCE-nnn,OBJECT-nnn,
   SYSTEM-YES,DIRSIZE-n,HISTORY-nnn[3]
// COPY FROM-F1,TO-R1,RETAIN-R,
   LIBRARY-ALL,NAME-ALL
// END
/&
```

When EJ is displayed on the CRT, you have completed building your program pack.

1

- ♦ Do you wish to copy the system plus selected programs from F1?

Yes — No → 2

- Enter the following OCL and control statements:[1]

```
// LOAD $MAINT,F1
// RUN
// ALLOCATE TO-R1,SOURCE-nnn,
   OBJECT-nnn,SYSTEM-YES,DIRSIZE-n,
   HISTORY-nnn[3]
// COPY FROM-F1,TO-R1,LIBRARY-O,
   NAME-SYSTEM
   .
   .[4]
   .
// END
/&
```

When EJ is displayed on the CRT, you have completed building a program pack.

2

- To copy only selected programs, enter the following OCL and control statements:[2]

```
// LOAD $MAINT,F1
// RUN
// ALLOCATE TO-R1,SOURCE-nnn,OBJECT-nnn,
   DIRSIZE-n[3]
   .
   .[4]
   .
// END
/&
```

When EJ is displayed on the CRT, you have completed building a program pack.

---

[1] See *Common System Generation Procedures* earlier in this chapter.
[2] Refer to *SCP Reference*.
[3] The number of tracks that you have determined are required for your source and object libraries replace the *nnn* in the ALLOCATE statement.
[4] Enter a COPY statement here for each program product that you want to copy; see Appendix G.

Figure 2-4 (Part 3 of 3). Building a Program Pack (5444)

PREPARING FOR SYSTEM GENERATION (5704-SC2)

- Turn system power on.
- Load forms in printer.

SYSTEM CONTROL PROGRAM GENERATION (5704-SC2)

- Mount the distribution data module on D1 and ready the disk drive. If you received SCP, program products, or CCP on distribution tape reels (DTRs), go to Appendix E.
- Ensure that the distribution SCP programs are in the D1B simulation area of D1.
- Ready the printer.
- Set the program load selector to DISK 1 R1.
- Press PROGRAM LOAD to begin the IPL process.[1]

♦ Do you intend to repeat just the options selected during the previous system generation?

Yes — No → (A) (Part 2)

♦ Is $SGSVE on F1? ($SGSVE was placed in the source library on F1 during the previous system generation.)

Yes — No → (1)

- Press PF12 and ENTER.
- To copy $SGSVE from F1 to R1, enter the following OCL statements:[2]

```
// CALL $SGSVE,R1
// RUN
```

(A) (Part 2)

(1)

♦ Is $SGSVE available from the previous system generation?

Yes: Copy the $SGSVE source module from the previous system generation to R1.

No: You *must* select the CRT prompt option later in this generation.

(A) (Part 2)

[1] See *Common System Generation Procedures* earlier in this chapter.
[2] Refer to *SCP Reference.*

Figure 2-5 (Part 1 of 21). System Control Program Generation (5704-SC2)

A

- Press PF12 and ENTER.

♦ Is the standard 48-character LC printer chain being used?

Yes — No

If a different printer chain is used, you must enter an IMAGE statement.[1,2]

- Enter the following OCL statements:[3]

```
// CALL $SGINT,R1
// RUN
```

When ENTER READER DATA P1 is displayed on the CRT, F1 is initialized.

Calling the System Generation Program

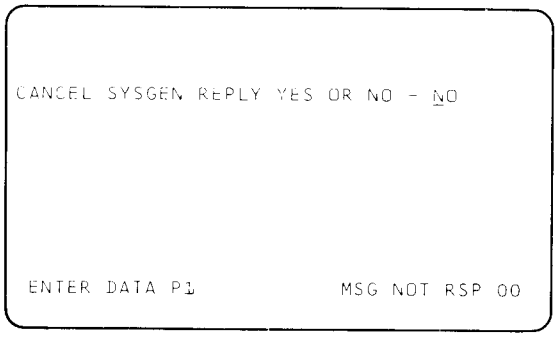
- Key in the following OCL statements:

```
// CALL $SGEN,R1
// RUN
```

$SGEN calls a system generation program that prompts for system configuration statements and processes the responses.

Canceling System Generation

An option to terminate system generation at any time is available. If you enter a question mark (?) in the first position of a response, the system generation program displays a prompt to cancel the system generation:



If you respond with YES, the system generation terminates, and all work done up to that point is lost.

If you respond with NO, the system generation returns to the interrupted prompt.

B (Part 3)

[1] See Appendix A for instructions on using an IMAGE statement.
[2] For the second 1403 printer, the only image that can be used is an IMAGE statement entered here or the default image supplied by the supervisor.
[3] Refer to *SCP Reference*.

Figure 2-5 (Part 2 of 21). System Control Program Generation (5704-SC2)

B

System Generation Prompts

The first prompt displayed asks what method of system generation to use:

- *Prompt* option, which displays prompts for each option available in system generation.
- *Repeat* option, which repeats just the options selected during the previous system generation.

```
ENTER TYPE OF SYSGEN - A
 A - CRT PROMPT
 B - REPEAT PREVIOUS SYSTEM GENERATION


 ENTER DATA P1              MSG NOT RSP 00
```

- Select an option and press ENTER.

Prompt option

Repeat option

1

If you chose the *prompt* option, a prompt is issued for the name of the module that will be used to control the remaining prompts. For SCP system generation, the name must be $SGEN, which is the default value.

```
ENTER PROMPT MODULE NAME - $SGEN


 ENTER DATA P1              MSG NOT RSP 00
```

- Press ENTER to select the default value.

C (Part 4)

1

If you chose the *repeat* option, a prompt is issued for the name of the source module that contains the previous system generation responses. For SCP system generation, the name must be $SGSVE, which is the default value.

```
ENTER REPEAT MODULE NAME - $SGSVE


 ENTER DATA P1              MSG NOT RSP 00
```

- Press ENTER to select the default value.

The information contained in this module is now used to generate the system without further operator action.

T (Part 20)

Figure 2-5 (Part 3 of 21). System Control Program Generation (5704-SC2)

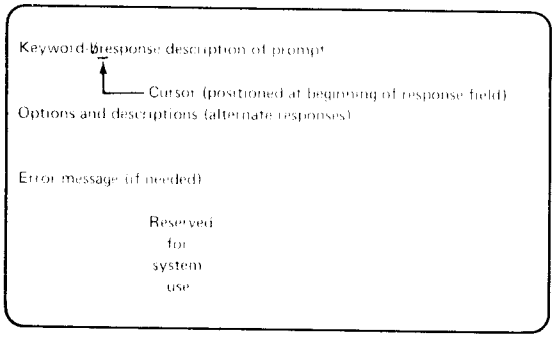
C

A series of prompts now appears on the CRT. Each prompt has

- A default value
- An explanation of the prompt
- Alternate responses

After selecting the response desired, press ENTER to display the next prompt. If you key in no response prior to pressing ENTER, the default value of the prompt is used.

The prompts are displayed in the following format:



Error Messages

If you make an error that can be corrected with a different response, the prompt is redisplayed with an error message on line 7 that explains the error so that you can correct the response and retry.

Following are the common messages and their meanings:

Message	Meaning
INVALID RESPONSE	You entered a character(s) other than the options specified in the display.
{ DEVICE / DRIVE / FUNCTION } SELECTED IS NOT SUPPORTED	You did not specify support in a previous prompt for the device/drive/function selected at this time.
RESPONSE IS LESS THAN MINIMUM	You entered a value lower than the range specified in the display.
RESPONSE IS GREATER THAN MAXIMUM	You entered a value higher than the range specified in the display.
RESPONSE IS NON-NUMERIC	You entered an alphabetic or special character where only a numeric character is allowed.

If you make an uncorrectable error, the system issues a halt[1] and the system generation is terminated.

D (Part 5)

[1] Refer to *System Messages*.

Figure 2-5 (Part 4 of 21). System Control Program Generation (5704-SC2)

D

Prompts for Library and Storage Sizes

The size of the supervisor[1] generated for your system depends on the system generation responses.

```
OLIBR- 170 <-ENTER O-LIBRARY SIZE
 ANY NUMBER FROM 120 TO 366 TRACKS
 IS VALID
```

This prompt defines the object library size, which must be large enough to contain the SCP and any program products you will generate.[1]

Respond with a three-digit number (library size in tracks) within the range specified.

```
DIRSZ- 3 <-ENTER DIRECTORY SIZE
 ANY NUMBER FROM 1 TO 9 TRACKS
 IS VALID
```

This prompt defines the object library directory size, which must be large enough to accommodate the SCP and any program products you will generate.[1]

Respond with a one-digit number (directory size in tracks) within the range specified.

```
SLIBR- 020 <-ENTER S-LIBRARY SIZE
 ANY NUMBER FROM 010 TO (376-OLIBR)
 TRACKS IS VALID
```

This prompt defines the source library size, which must be large enough to contain the SCP and any program products you will generate.[1]

Respond with a three-digit number (library size in tracks) within the range specified. The combined source and object library sizes cannot total more than 376 tracks.

```
HSTRY- 02 <-ENTER SYSTEM HISTORY AREA
 SIZE. ANY NUMBER FROM 02 TO 9? LESS
 THAN 378-(OLIBR+SLIBR) TRACKS IS VALID
```

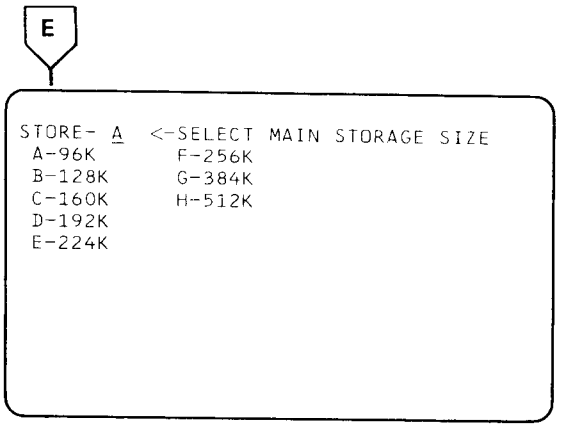
This prompt defines the system history area (SHA) size.[1]

Respond with a two-digit number (SHA size in tracks) within the range specified. The combined size of object library, source library, and SHA cannot total more than 378 tracks.

E (Part 6)

[1] See Appendix C.

Figure 2-5 (Part 5 of 21). System Control Program Generation (5704-SC2)



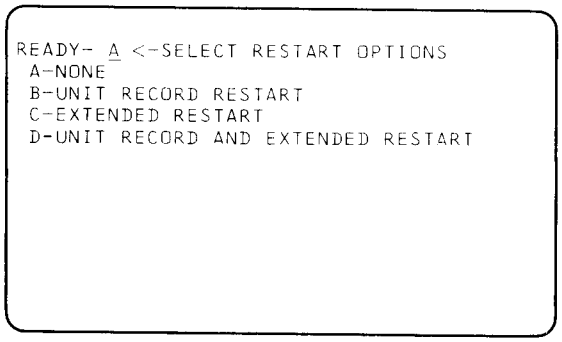
This prompt defines the processing unit (CPU) main storage size.

Prompts for Restart Option, Program Pack Protection, and Date Format

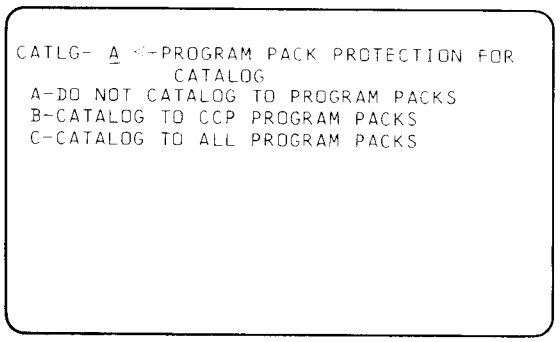
---

With unit record restart, it is not necessary to respond to certain error messages[1] that are associated with unit record devices.[2]

With extended restart, it is not necessary to respond with a 1-option to certain disk contention[3] and spool[4] messages.



This prompt defines unit record and extended restart support.[5]



This prompt defines the program pack protection for cataloging an entry into the object library on an active program pack.[6]

(Part 7)

---

[1] For example: forms alignment or error recovery procedures having a 1-option response.
[2] Unit record devices include 5424 MFCU, 2560 MFCM, 1442 Card Read Punch, 2501 Card Reader, 1403 Printer, 3741 Data Station.
[3] For example: F/ or WA messages.
[4] For example: RDRQ IS EMPTY/HELD or NO INPUT JOB AVAILABLE.
[5] Refer to *SCP Reference.*
[6] See *Program Pack Protection Considerations* in Chapter 1.

Figure 2-5 (Part 6 of 21). System Control Program Generation (5704-SC2)

F

```
DATEF- A <-SELECT DATE FORMAT
 A-MMDDYY
 B-DDMMYY
```

This prompt defines the date format.

Prompts for Printer and Log Device Support

```
PRNTR- A <-SELECT 1403 PRINTER SUPPORT
 A-ONE 1403 PRINTER
 B-TWO 1403 PRINTERS
```

This prompt defines the number of 1403 printers supported. The second 1403 printer can only be used with spooling.

```
LINEP- 066 <-ENTER LINES PER PAGE FOR
 1403 PRINTER.  ANY NUMBER FROM 012 TO
 112 LINES IS VALID
```

This prompt defines the default number of lines per page for a 1403 printer.

Respond with a three-digit number within the range specified.

G (Part 8)

Figure 2-5 (Part 7 of 21). System Control Program Generation (5704-SC2)

G

```
MATRX- A <-SELECT 3284 PRINTER SUPPORT
 A NONE
 B-120 POSITION
 C-126 POSITION
 D-132 POSITION
```

This prompt defines the support for the 3284 matrix printer.

Respond with a three-digit number within the range specified.

The following prompts are bypassed if the 3284 matrix printer is not supported: LINEM, SYPR1, SYPR2, SYPR3.

♦ Did you select 3284 matrix printer support?

Yes

No

H (Part 9)

```
LINEM- 066 <-ENTER LINES PER PAGE FOR
 3284 PRINTER.  ANY NUMBER FROM 012 TO
 112 IS VALID
```

This prompt defines the number of lines per page for a 3284 printer.

Respond with a three-digit number within the range specified.

```
SYPR1  A <-SELECT PARTITION 1 PRINTER
 A 1403
 B-3284
```

This prompt defines the system print device[1] used by IBM-supplied programs in partition 1.

```
SYPR2  A <-SELECT PARTITION 2 PRINTER
 A 1403
 B-3284
```

This prompt defines the system print device[1] used by IBM-supplied programs in partition 2 (can be the same device as specified for partition 1 or 3).

```
SYPR3- A <-SELECT PARTITION 3 PRINTER
 A-1403
 B-3284
```

This prompt defines the system print device[1] used by IBM-supplied programs in partition 3 (can be the same device as specified for partition 1 or 2).

H (Part 9)

[1] See *Common System Generation Procedures* earlier in this chapter.

Figure 2-5 (Part 8 of 21). System Control Program Generation (5704-SC2)

H

```
P1LOG- A <-SELECT P1 LOG DEVICE
 A-3277
 B-1403,EJECT
 C-1403,NOEJECT
 D-3284,EJECT
 E-3284,NOEJECT
```

This prompt defines the default log device[1] for partition 1.

```
P2LOG- A <-SELECT P2 LOG DEVICE
 A-3277
 B-1403,EJECT
 C-1403,NOEJECT
 D-3284,EJECT
 E-3284,NOEJECT
```

This prompt defines the default log device[1] for partition 2.

```
P3LOG- A <-SELECT P3 LOG DEVICE
 A-3277
 B-1403,EJECT
 C-1403,NOEJECT
 D-3284,EJECT
 E-3284,NOEJECT
```

This prompt defines the default log device[1] for partition 3.

```
DSK41- A  <-SELECT 3741 I/O SUPPORT
 A-NO
 B-YES
```

This prompt defines the I/O support for the directly attached 3741.

```
CARDD- A <-SELECT CARD I/O DEVICES(S)
 A-MFCU          F-1442,2501
 B-MFCM          G-MFCU,1442
 C-1442          H-MFCU,2501,1442
 D-MFCU,2501     J-2501
 E-MFCM,2501     K-NONE
```

This prompt defines the card device(s)[1] supported.

J (Part 10)

[1] See *Common System Generation Procedures* earlier in this chapter.

Figure 2-5 (Part 9 of 21). System Control Program Generation (5704-SC2)


```
SYIN1- A <-SELECT PARTITION 1 READER
 A-MFCU1      F-2501
 B-MFCU2      G-CONSOLE
 C-MFCM1      H-3741
 D-MFCM2
 E-1442
```

This prompt defines the system input device[1] (used to enter OCL, control, and data statements for IBM-supplied programs) for partition 1.

```
SYIN2- G <-SELECT PARTITION 2 READER
 A-MFCU1      F-2501
 B-MFCU2      G-CONSOLE
 C-MFCM1      H-3741
 D-MFCM2
 E-1442
```

This prompt defines the system input device[1] for partition 2 (can be the same device as specified for partition 1 or 3).

```
SYIN3- G <-SELECT PARTITION 3 READER
 A-MFCU1      F-2501
 B-MFCU2      G-CONSOLE
 C-MFCM1      H-3741
 D-MFCM2
 E-1442
```

This prompt defines the system input device[1] for partition 3 (can be the same device as specified for partition 1 or 2).

```
SYPC1- A <-SELECT PARTITION 1 PUNCH
 A-MFCU1      F-3741
 B-MFCU2      G-NONE
 C-MFCM1
 D-MFCM2
 E-1442
```

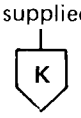
This prompt defines the punch device[1] used by IBM-supplied programs in partition 1.

```
SYPC2- A <-SELECT PARTITION 2 PUNCH
 A-MFCU1      F-3741
 B-MFCU2      G-NONE
 C-MFCM1
 D-MFCM2
 E-1442
```

This prompt defines the punch device[1] used by IBM-supplied programs in partition 2.

```
SYPC3- A <-SELECT PARTITION 3 PUNCH
 A-MFCU1      F-3741
 B-MFCU2      G-NONE
 C-MFCM1
 D-MFCM2
 E-1442
```

This prompt defines the punch device[1] used by IBM-supplied programs in partition 3.



(Part 11)

[1] See *Common System Generation Procedures* earlier in this chapter.

Figure 2-5 (Part 10 of 21). System Control Program Generation (5704-SC2)

K

Prompts for Disk Device Support

```
D3340- A <-SELECT 3340 CONFIGURATION
 A-D1,D2
 B-D1,D2,D3
 C-D1,D2,D3,D4.
```

This prompt defines the 3340 disk configuration (simulation areas R1, F1, R2, and F2 as well as main data areas are supported). If you respond with a B or C option, the next prompt (D3344) will not appear.

```
D3344- A <-SELECT 3344 CONFIGURATION
 A-NO
 B-D3,D4
```

This prompt defines the 3344 disk configuration.

L (Part 12)

[1] See *Simulation Area Assignment Considerations* in Chapter 1.

Figure 2-5 (Part 11 of 21). System Control Program Generation (5704-SC2)


```
ASNP1- ABEF <-ASSIGN F1,R1,F2,R2
 FOR PARTITION 1 SIMULATION AREAS
 A-D1A E-D2A J-D3A N-D3E S-D4A W-D4E
 B-D1B F-D2B K-D3B P-D3F T-D4B X-D4F
 C-D1C G-D2C L-D3C Q-D3G U-D4C Y-D4G
 D-D1D H-D2D M-D3D R-D3H V-D4D Z-D4H
```

This prompt defines the unit code assignments for the partition 1 simulation areas.[1] (Note that the letters I and O are not used for options.)

Possible error messages:

INVALID xx SIMULATION AREA RESPONSE
DRIVE SELECTED IS NOT SUPPORTED
DUPLICATE AREAS WITHIN A PARTITION
INVALID RESPONSE (if all four unit codes are not assigned)

```
ASNP2- ABEF <-ASSIGN F1,R1,F2,R2
 FOR PARTITION 2 SIMULATION AREAS
 A-D1A E-D2A J-D3A N-D3E S-D4A W-D4E
 B-D1B F-D2B K-D3B P-D3F T-D4B X-D4F
 C-D1C G-D2C L-D3C Q-D3G U-D4C Y-D4G
 D-D1D H-D2D M-D3D R-D3H V-D4D Z-D4H
```

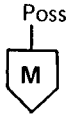
This prompt defines the unit code assignments for the partition 2 simulation areas.[1] (Note that the letters I and O are not used for options.)

Possible error messages are the same as for ASNP1.

```
ASNP3- ABEF <-ASSIGN F1,R1,F2,R2
 FOR PARTITION 3 SIMULATION AREAS
 A-D1A E-D2A J-D3A N-D3E S-D4A W-D4E
 B-D1B F-D2B K-D3B P-D3F T-D4B X-D4F
 C-D1C G-D2C L-D3C Q-D3G U-D4C Y-D4G
 D-D1D H-D2D M-D3D R-D3H V-D4D Z-D4H
```

This prompt defines the unit code assignments for the partition 3 simulation areas.[1] (Note that the letters I and O are not used for options.)

Possible error messages are the same as for ASNP1.



(Part 13)

[1]See *Simulation Area Assignment Considerations* in Chapter 1.

Figure 2-5 (Part 12 of 21). System Control Program Generation (5704-SC2)

M

Prompts for Tape Device Support

```
TAPES- A <-SELECT TAPE CONFIGURATION
 A-NONE
 B-T1
 C-T1,T2
 D-T1,T2,T3
 E-T1,T2,T3,T4
```

This prompt defines the 3410/3411 tape configuration.

```
DUALD- A <-IDENTIFY DUAL DENSITY DRIVES
 A-NO  F-T1,T2  L-T3,T4     R-T1,T2,T3,
 B-T1  G-T1,T3  M-T1,T2,T3     T4
 C-T2  H-T1,T4  N-T1,T2,T4
 D-T3  J-T2,T3  P-T1,T3,T4
 E-T4  K-T2,T4  Q-T2,T3,T4
```

This prompt (issued only if tape units are supported) defines the dual-density 3410/3411 tape units. (Note that the letters I and O are not used for options.)

```
TRK7D- A <-IDENTIFY 7-TRACK DRIVES
 A-NO  F-T1,T2  L-T3,T4     R-T1,T2,T3
 B-T1  G-T1,T3  M-T1,T2,T3     T4
 C-T2  H-T1,T4  N-T1,T2,T4
 D-T3  J-T2,T3  P-T1,T3,T4
 E-T4  K-T2,T4  Q-T2,T3,T4
```

This prompt (issued only if tape units are supported but dual density is not supported) defines the 7-track tape units. (Note that the letters I and O are not used for options.)

Prompt for Timer Support

The interval timer provides time-of-day services for time-stamping reports and messages and for timing intervals in the CCP multipoint polling applications.

```
TIMER- A <-SELECT TIMER SUPPORT
 A-NONE
 B-TIME OF DAY ONLY
 C-FULL TIMER SUPPORT
```

This prompt defines the interval timer support.

Prompts for Communications Support

The following table shows different combinations of communications support when generating SCP 5704-SC2. Applicability of the next four prompts can be determined from the table below:

Support: Prompt:	BSCA (LINEB)	MLMP (MLMPS)	BSCC (LINEC)	MLTA (MLTAS)
1.	X	X		
2.	X	X	X	
3.	X	X		X
4.			X	
5.				X
6.	X			
7.	X		X	
8.	X			X

For CCP, any one of the first five combinations can be selected. Note that MLMP is not required if only BSCC is generated and that MLTA is mutually exclusive with BSCC.

N (Part 14)

Figure 2-5 (Part 13 of 21). System Control Program Generation (5704-SC2)

N

```
LINEB- A <-SELECT BSCA SUPPORT
 A-NONE
 B-LINE 1
 C-LINE 1 AND LINE 2
 D-LINE 1 AND DISPLAY ADAPTER
 E-DISPLAY ADAPTER
```

This prompt defines the number of BSCA lines to be supported. LINE1 and LCA (local communications adapter) are the same for this prompt. LINE2 and DISPLAY ADAPTER are mutually exclusive.

```
MLMPS- A <-SELECT MLMP SUPPORT
 A-NO
 B-YES
```

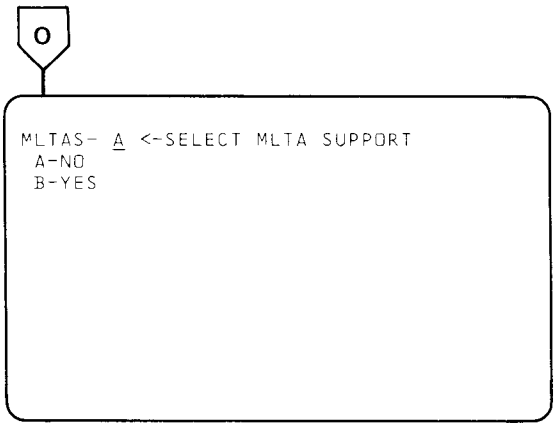
This prompt defines the multiline/multipoint support.

```
LINEC- A <-SELECT BSCC SUPPORT
 A-NONE
 B-LINE 3
 C-LINE 3 AND LINE 4
```

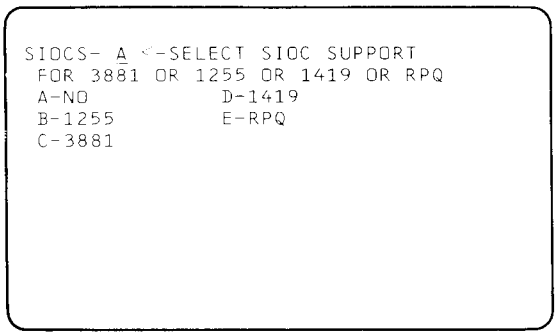
This prompt defines BSCC (binary synchronous communications controller) support. BSCC and MLTA are mutually exclusive.

O (Part 15)

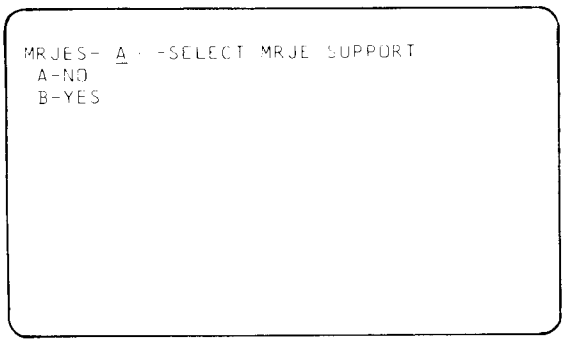
Figure 2-5 (Part 14 of 21). System Control Program Generation (5704-SC2)



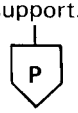
This prompt, which appears only if BSCC support was not selected, defines the multiple line terminal adapter feature support.[1]



This prompt defines the serial I/O channel support.[2]



This prompt defines MULTI-LEAVING remote job entry support.



(Part 16)

[1] Program Number 5799-WFK.
[2] See *Common System Generation Procedures* earlier in this chapter.

Figure 2-5 (Part 15 of 21). System Control Program Generation (5704-SC2)

P

Prompts for Additional SCP Support

I/O protection support may be desirable during development of user-written assembler programs. Except for SIOC, BSCA, MLMP, and unit record punch operations, I/O protection support ensures that an I/O buffer is within the user partition before allowing an I/O operation to proceed. This support increases the execution time of all I/O operations.

```
IOPRT- A <-SELECT I/O PROTECTION
 A-NO
 B-YES
```

This prompt defines the I/O protection support.

```
CKPRS- A <-SELECT CHECKPOINT/RESTART
 A-NO
 B-YES
```

This prompt defines the checkpoint/restart support. (Disk space requirement is 15 tracks.)

Possible error message: INSUFFICIENT DISK SPACE FOR CHECKPOINT

Memory-resident overlays is an optional SCP technique that is designed to allow the user to increase the performance of programs that use overlays.[1]

```
MEMRO- A <-SELECT MEMORY
 RESIDENT OVERLAYS
 A-NO
 B-YES
```

This prompt defines memory-resident overlay support.

```
CCPUT- 00 <-ENTER NUMBER OF CCP USER
 TASKS. ANY NUMBER FROM 00 TO 15 IS
 VALID
```

This prompt defines the amount of supervisor space to reserve for use by CCP (communications control program).

Respond with a two-digit number (number of CCP user tasks) within the range specified.

Possible error message: MLMP OR MLTA IS REQUIRED FOR CCP (if you have not previously specified multiline/multipoint (MLMPS-B) or multiple line terminal adapter (MLTAS-B) support)

Q (Part 17)

[1] Refer to *IBM System/3 Overlay Linkage Editor Reference*, GC21-7561.

Figure 2-5 (Part 16 of 21). System Control Program Generation (5704-SC2)

Q

```
QCOPY- QCOPY -:RENAME $QCOPY FOR CCP
 USE.  NAME CAN BE 1-6 CHARACTERS.
```

This prompt allows CCP users to rename $QCOPY to a name acceptable to CCP. (If you responded with a 00 to the CCPUT prompt, this prompt will not appear.)

Respond with a one-to-six character name, of which
- The first character must be alphabetic (A-Z) or one of the characters @ or #.
- The remaining characters can be any combination of alphabetic, numeric, or the special characters @, #, or $.

Prompts for Spooling Support

Considerations for generating a spooling system are described in Chapter 1. If spooling is selected but there is not enough main storage to support spooling, the generated system is unusable.[1]

```
PARTN  A  -SELECT SPOOLED PARTITION(S)
 A NONE              E-PARTITION 1,3
 B-PARTITION 1       G-PARTITION 2,3
 C PARTITION 2       H-PARTITION 1,2,3
 D PARTITION 1,2
 E-PARTITION 3
```

This prompt indicates if spooling is supported and defines spooled partitions.

The following prompts associated with spooling are bypassed if spooling is not supported: SPRDR, SPPCH, DEFCN, DEFFN, AUTST, AUTWT, SPDSK, SPCYL, SPEXT, SSPTR.

♦ Did you select spooling support?

Yes → R (Part 18)

No → T (Part 20)

[1] See Appendix C.

Figure 2-5 (Part 17 of 21). System Control Program Generation (5704-SC2)

R

```
SPRDR- A  <-SELECT SPOOLED READER
 A-NONE          F-1442
 B-MFCU1         G-2501
 C-MFCU2         H-3741
 D-MFCM1
 E-MFCM2
```

This prompt defines the input device[1] that reads the records associated with the spooling job stream.

```
SPPCH- A <-SELECT SPOOLED PUNCH
 A-NONE          F-1442
 B-MFCU1
 C-MFCU2
 D-MFCM1
 E-MFCM2
```

This prompt defines the output device[1] that punches the cards associated with the spooling job stream.

```
DEFCN- XXX <- ENTER CARD TYPE
 ANY 1 TO 3 CHARACTERS EXCEPT COMMAS,
 QUOTES, BLANKS, DASHES, EQUAL SIGNS
 AND QUESTION MARKS ARE VALID
```

This prompt defines the default card type that the operator loads into the punch device for punched output of the next job. (The card type can be changed for a specific job by the CARDNO parameter of the PUNCH statement[2,3] or by the CHANGE command[3,4].)

Respond with one to three characters within the restrictions specified.

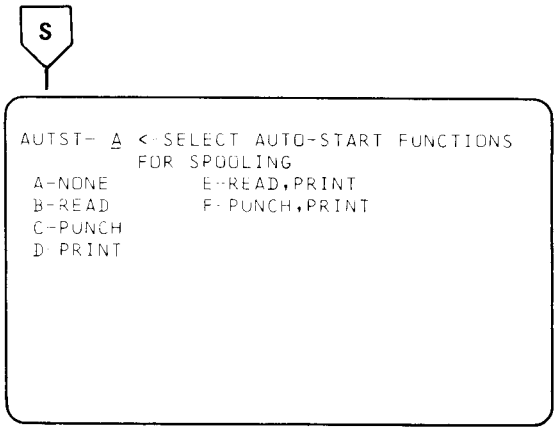
```
DEFFN- XXX <- ENTER FORMS TYPE
 ANY 1 TO 3 CHARACTERS EXCEPT COMMAS,
 QUOTES, BLANKS, DASHES, EQUAL SIGNS
 AND QUESTION MARKS ARE VALID
```

This prompt defines the default forms type that the operator mounts on the printer for printed output of the next job. (The forms type can be changed for a specific job by the FORMSNO parameter of the PRINTER statement[2,3] or by the CHANGE command[3,4].)

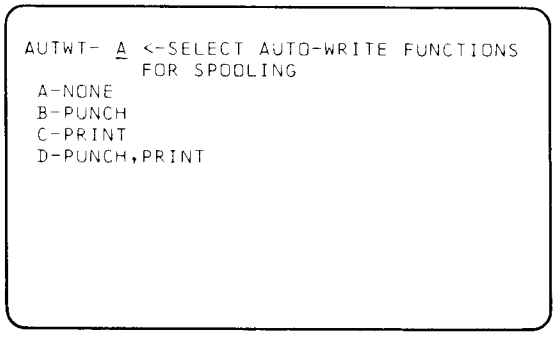
S (Part 19)

[1] See *Common System Generation Procedures* earlier in this chapter.
[2] Refer to *SCP Reference.*
[3] Refer to *User's Guide to Spooling.*
[4] Refer to *Operator's Guide.*

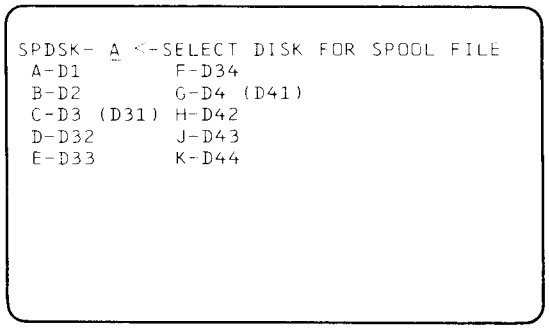
Figure 2-5 (Part 18 of 21). System Control Program Generation (5704-SC2)



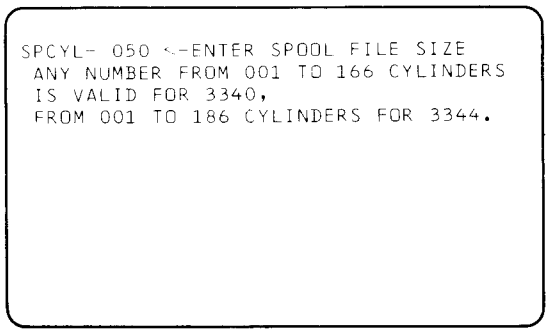
This prompt defines which spooling function(s) are to start automatically.



This prompt defines which spooling output function(s) are to write automatically.

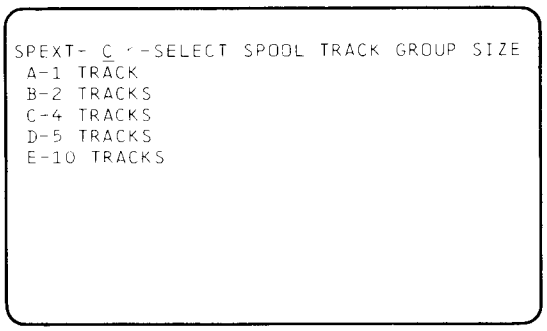


This prompt defines which 3340/3344 drive is to be used for the spooling file.

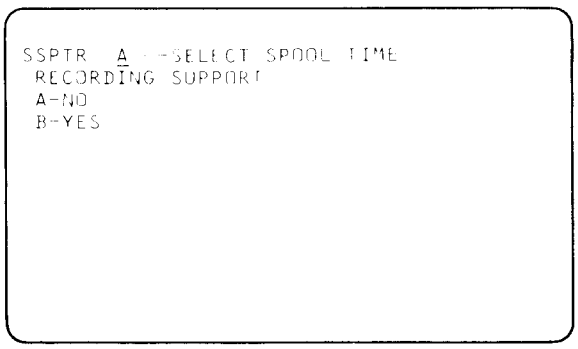


This prompt defines the total number of cylinders for the spooling file.

Respond with a three-digit number within the range specified.



This prompt defines the spooling track group size.



This prompt defines the spool time-recording support.

(Part 20)

Figure 2-5 (Part 19 of 21). System Control Program Generation (5704-SC2)

T

At this point, the CRT goes blank for some time while the system processes the information that you specified.

Building the Supervisor

After all prompts have been responded to and processed, $SGEN builds the new supervisor.

A prompt is then issued for the sizes of partition 1, partition 2, partition 3, and the file share area.[1]

```
MAIN STORAGE nnn K SUPERVISOR mmm K[2]
AVAILABLE STORAGE FOR P1+P2+P3+FS = ppp K
P1 SIZE XXX K 8 TO ppp, 2K INCREMENTS
P2 SIZE XXX K 0 OR 8 TO ppp-P1
P3 SIZE XXX K 0 OR 8 TO ppp-P1-P2
FS SIZE XXX K 2 TO      ppp-P1-P2-P3
```

- Enter the sizes over the XXX and press ENTER.

When ENTER READER DATA P1 is displayed on the CRT, the required SCP support is copied.

Generating Macro Processor Support

Macro processor support required for CCP generation is already included with that program.

♦ Do you wish to generate macro processor support in the system control program?

Yes — No (1)

- Enter the following OCL statements:[3]

```
// CALL $SGMA2,R1
// RUN
```

When ENTER READER DATA P1 is displayed on the CRT, processing is complete.

(1)

Generating Customer Engineering Diagnostics Support

♦ Do you wish to include the customer engineering diagnostics support in the SCP?

Yes — No (U) (Part 21)

- Enter the following OCL statements:[3]

```
// CALL $SGCE2,R1
// RUN
```

When ENTER READER DATA P1 is displayed on the CRT, processing is complete.

U (Part 21)

[1] See Appendix C.
[2] Sizes in K bytes (K = 1024):
nnn = main storage size
mmm = supervisor size
ppp = difference between main storage and supervisor sizes
[3] Refer to *SCP Reference*.

Figure 2-5 (Part 20 of 21). System Control Program Generation (5704-SC2)

U

Generating PTF Program Support

♦ Do you wish to generate the PTF program support in the SCP?

Yes

- Enter the following OCL statements:[1]

```
// CALL $SGPTF,R1
// RUN
```

When ENTER READER DATA P1 is displayed on the CRT, the processing is complete.

No → 1

1

Backing Up Distribution SCP Programs

All 3340 data modules must be in System/3 format before being used by programs processed under disk system management. At this time, the Disk Initialization Program is available on your generated system to perform this function using $INIT. The R1 simulation area will be used for Program Product Generation (PP) and for Completing System Generation and Installation Verification.

A 6FDA message will result if you attempt to clear or copy to a simulation area, named PID001, that previously contained distribution programs from the program library. To clear this area, you must include an AREA-PID001 parameter on the CLEAR statement, as well as a CLRNAME parameter with a name *other than* PID001.

- Enter the following OCL and control statements:[1]

```
// LOAD $SCOPY,R1
// RUN
// CLEAR FROM-unit,PACK-name,CLRNAME-name,
   TYPE-FORCE[,AREA-name][2]
// COPYAREA FROM-D1B,TO-unit,PACK-name,
   AREA-name[,SYSTEM-YES]
// END
```

When ENTER READER DATA P1 is displayed on the CRT, the processing is complete.

Proceeding to the Next Generation

♦ Are you generating program products?

Yes

- Proceed to Figure 2-6.

No

- Proceed to Figure 2-7.

[1] Refer to *SCP Reference.*

[2] AREA-name is required only if the backup area previously contained a simulated distribution pack.

Figure 2-5 (Part 21 of 21). System Control Program Generation (5704-SC2)

PREPARING FOR PROGRAM PRODUCTS GENERATION (3340)

♦ Did an IBM customer engineer just complete system verification?

No — Yes → B (Part 2)

♦ Was SCP generation just completed?

No — Yes → B (Part 2)

♦ Is there a need to retain the information currently on F1 (D1A) or R1 (D1B)?

Yes — No → B (Part 2)

Backing Up F1 (D1A) or R1 (D1B) Simulation Areas

- Ready the disk drive.
- Set the program load selector at DISK 1 F1.
- Press PROGRAM LOAD to begin the IPL process.[1]

With 5704-SC2, R1 must be assigned to D1B for the following procedures.

♦ Was R1 assigned to D1B during system generation?

Yes — No → Enter the following OCL statement:[2]

```
// ASSIGN R1-D1B
```

♦ If you wish to change the system input device designation for partition 1, you should do so now.[1]

- Press PF12 and ENTER.

♦ Do you wish to back up F1 (D1A)?

Yes — No → 1

- Enter the following OCL and control statements:[2]

```
// HALT
// LOAD $SCOPY,F1
// RUN
// CLEAR FROM-unit,PACK-name[,AREA-name]
   [,CLRNAME-name] [,TYPE-FORCE]
// COPYAREA FROM-D1A,TO-unit,PACK-name,
   AREA-name[,TONAME-name] [,SYSTEM-YES][3]
// END
/&
```

When EJ is displayed on the CRT, F1 (D1A) is backed up.

1

♦ Do you wish to back up R1 (D1B)?

Yes — No → A (Part 2)

- To back up R1 (D1B), enter the following OCL and control statements:[2]

```
// HALT
// LOAD $SCOPY,F1
// RUN
// CLEAR FROM-unit,PACK-name[,AREA-name]
   [,CLRNAME-name] [,TYPE-FORCE]
// COPYAREA FROM-D1B,TO-unit,PACK-name,
   AREA-name[,TONAME-name] [,SYSTEM-YES][3]
// END
```

When EJ is displayed on the CRT, R1 (D1B) is backed up.

A (Part 2)

---

[1] See *Common System Generation Procedures* earlier in this chapter.
[2] Refer to *SCP Reference.*
[3] See *3340 Cylinder 0 Considerations* in Chapter 1.

Figure 2-6 (Part 1 of 3). Program Products Generation (3340)

A

Copying the Tailored System to F1 (D1A)

- Enter the following OCL and control statements[1] to first copy your tailored system to R1:

```
// LOAD $SCOPY,F1
// RUN
// CLEAR FROM-D1B,PACK-name[,AREA-name]
   [,CLRNAME-name] [,TYPE-FORCE]
// COPYAREA FROM-unit,TO-D1B,PACK-name,
   AREA-name,[,SYSTEM-YES][3]
// END
```

When EJ is displayed on the CRT, the tailored system is copied to R1.

- Set the program load selector at DISK 1 R1.
- Press PROGRAM LOAD to begin the IPL process.[2]
- ♦ If you wish to change the system input device designation for partition 1, you should do so now.[2]
- Press PF12 and ENTER.
- Enter the following OCL and control statements:[1]

```
// HALT
// LOAD $SCOPY,R1
// RUN
// CLEAR FROM-D1A,PACK-name[,AREA-name]
   [,CLRNAME-name] [,TYPE-FORCE]
// COPYAREA FROM-D1B,TO-D1A,PACK-name,
   AREA-name[,TONAME-F1F1F1] [,SYSTEM-YES][3]
// END
```

When EJ is displayed on the CRT, the tailored system is copied from R1 to F1.

[1] Refer to *SCP Reference.*
[2] See *Common System Generation Procedures* earlier in this chapter.
[3] See *3340 Cylinder 0 Considerations* in Chapter 1.

Figure 2-6 (Part 2 of 3). Program Products Generation (3340)

B

GENERATING PROGRAM PRODUCTS

- Verify that the distribution data module is mounted on D1 and that D1 contains the program products you wish to generate.
- Ready the disk drive.
- Set the program load selector at DISK 1 F1.
- Press PROGRAM LOAD to begin the IPL process.[2]

With 5704-SC2, R1 must be assigned to D1B for the following procedures.

- ♦ Was R1 assigned to D1B during system generation?

Yes

No

Enter the following OCL statement:[1]

```
// ASSIGN R1-D1B
```

- ♦ If you wish to change the system input device designation for partition 1, you should do so now.[2]
- ♦ Are the program products you wish to generate on R1 (D1B)?

No

Yes

C (Part 3)

- Enter the following OCL and control statements:[1]

```
// LOAD $SCOPY,F1
// RUN
// CLEAR FROM-D1B,PACK-name[,AREA-name]
   [,CLRNAME-name] [,TYPE-FORCE]
// COPYAREA FROM-unit,TO-D1B,PACK-name,
   AREA-name[,TONAME-name] [,SYSTEM-YES][3]
// END
```

When EJ is displayed on the CRT, the required program product simulation area is copied to R1 (D1B).

C (Part 3)

C

♦ Are you using SCP 5704-SC1?

Yes — No → 1

- Press PF12 and ENTER.

- Enter the OCL statements needed for each program product you wish to copy:

// CALL $SGRPG,R1 // RUN	RPG II Compiler
// CALL $SGBSC,R1 // RUN	RPG II BSCA Telecommunications
// CALL $SGDCF,R1 // RUN	RPG II 3270 Display Control Feature[1]
// CALL $SGAU,R1 // RUN	RPG II Auto Report
// CALL $SGSRT,R1 // RUN	Disk Sort
// CALL $SGATH,R1 // RUN	CCP/Disk Sort
// CALL $SGTST,R1 // RUN	Tape Sort
// CALL $SGCOB,R1 // RUN	Subset ANS COBOL Compiler
// CALL $SGUTL,R1 // RUN	Card Utilities
// CALL $SGASM,R1 // RUN	Basic Assembler
// CALL $SGFTN,R1 // RUN	FORTRAN IV Compiler[2]

D

1

♦ Do you wish to copy some or all program products to R2?

YES — NO → E (Part 4)

♦ Do you wish to change the simulation area assigned R2 during system generation?

NO — YES

Enter the following OCL statement:[2]

// ASSIGN R2-simulation area code

- Press PF12 and ENTER

- Enter the following OCL and control statements:[2]

```
// LOAD $SCOPY,F1
// RUN
// CLEAR from simulation area code,PACK-name,
   CLRNAME-pack,TYPE-FORCE
// END
```

When EJ is displayed on the CRT, R2 is cleared.

- Press PF12 and ENTER.

- Enter the following OCL and control statements:[2] [4]

```
// LOAD $MAINT,F1
// RUN
// ALLOCATE TO-R2,OBJECT-nnn,SOURCE-nnn,
   DIRSIZE-n
// END
```

When EJ is displayed on the CRT, you will have libraries allocated on R2.

E

[1] When this feature is copied, the system issues LM60SY messages; respond with a 0-option to continue.
[2] Refer to *System Control Program Reference Manual* GC21-5077-4.
[3] For FORTRAN multivolume tape support after SCP generation, use $MAINT to delete $$BTAM and rename $$BTMM to $$BTAM. $$BTAM and $$BTMM are functionally identical except that $$BTMM contains multivolume tape support. If multivolume tape support is not required, $$BTMM may be deleted from the R-library.
[4] See Figure C-14 in Appendix C for library space requirements for each program.

Figure 2-6 (Part 3 of 3). Program Products Generation (3340)

E

- Press PF12 and ENTER.
- With 5704-SC2, enter the OCL statements needed for each program product you wish to copy:

Copies from R1 to F1	Copies from R1 to R2	
// CALL $SGRG2, R1 // RUN	// CALL $SG4RG, R1 // RUN	RPG II Compiler
// CALL $SGBS2, R1 // RUN	// CALL $SG4BS, R1 // RUN	RPG II BSCA Telecommunications
// CALL $SGAU2, R1 // RUN	// CALL $SG4AU, R1 // RUN	RPG II Auto Report
// CALL $SGSR2, R1 // RUN	// CALL $SG4SR, R1 // RUN	Disk Sort
// CALL $SGTS2, R1 // RUN	// CALL $SG4TS, R1 // RUN	Tape Sort
// CALL $SGCB2, R1 // RUN	// CALL $SG4CB, R1 // RUN	Subset ANS COBOL Compiler
// Call $SGUT3, R1 // RUN	// CALL $SG4UT, R1 // RUN	Card Utilities
// CALL $SGAS2, R1 // RUN	// CALL SGAS, R1 // RUN	Basic Assembler
// CALL $SGFT2, R1 // RUN	// CALL $SG4FT, R1 // RUN	FORTRAN IV Compiler[1]
// CALL $SGDST, R1 // RUN	// CALL $SG4DS, R1 // RUN	CCP/Disk Sort

[1] For FORTRAN multivolume tape support after SCP generation, use $MAINT to delete $$BTAM and rename $$BTMM to $$BTAM. $$BTAM and $$BTMM are functionally identical except that $$BTMM contains multivolume tape support. If multivolume tape support is not required, $$BTMM may be deleted from the R-library.

- Repeat the *Generating Program Products* steps for each simulation area that contains program products you wish to copy.
- Proceed to Figure 2-7, *Completing System Generation and Installation Verification.*

This page is intentionally left blank.

COMPLETING SYSTEM GENERATION AND INSTALLATION VERIFICATION (3340)

Although you now have a usable tailored system on F1 (D1A), the system generation process is not complete until the tailored system has been copied to a backup area (area A or B on a drive other than D1 is recommended). The tailored system contains the following:

Minimum system control program
System service programs
Data management routines
Other SCP features, program products, and program product features that you have ordered

Copying Tailored System from F1 (D1A) to Backup Area

- Ready the disk drive.
- Set the program load selector at DISK 1 F1.
- Press PROGRAM LOAD to begin the IPL process.[1]

With 5704-SC2, R1 must be assigned to D1B for the following procedures.

♦ Was R1 assigned to D1B during system generation?

Yes — No

Enter the following OCL statement:[2]

```
// ASSIGN R1-D1B
```

♦ If you wish to change the system input device designation for partition 1, you should do so now.[1]

- Press PF12 and ENTER.
- Enter the following OCL and control statements:[2]

```
// HALT
// LOAD $SCOPY,F1
// RUN
// CLEAR FROM-unit,PACK-name[,AREA-name]
   [,CLRNAME-SYSTEM] [TYPE-FORCE]
// COPYAREA FROM-D1A,TO-unit,PACK-name,
   AREA-name[,TONAME-SYSTEM] [SYSTEM-YES][3]
// END
```

When EJ is displayed on the CRT, you have identical tailored systems on F1 (D1A) and in a backup area, both containing all the programs generated.

- You should test the generated program products by running their respective sample programs.[4]

System generation is complete; you can leave the entire tailored system on F1 (D1A) or you can build a minimal resident system on F1 (D1A) instead. A minimal resident system consists of:

- Only those system control programs needed to perform IPL and to process OCL statements
- System service programs you want
- Program products you want

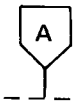
♦ Do you wish to build a minimal resident system on F1?

Yes — A (Part 2)

No — B (Part 3)

[1] See *Common System Generation Procedures* earlier in this chapter.
[2] See *SCP Reference.*
[3] See *3340 Cylinder 0 Considerations* in Chapter 1.
[4] See *Preface.*

Figure 2-7 (Part 1 of 3). Completing System Generation and Installation Verification (3340)



Building a Minimal Resident System on F1 (D1A)

- Determine the number of tracks required[1] for the source and object libraries and directories for the programs you wish to copy.[2]

♦ If necessary, you can copy the tailored system area to R1 (D1B) by entering the following OCL and control statements:[3]

```
// LOAD $SCOPY,F1
// RUN
// CLEAR FROM-D1B,PACK-name[,AREA-name]
   [,CLRNAME-name] [TYPE-FORCE]
// COPYAREA FROM-unit,TO-D1B,PACK-name,
   AREA-name[,TONAME-name] [SYSTEM-YES][4]
// END
```

- Set the program load selector at DISK 1 R1.
- Press PROGRAM LOAD to begin the IPL process.[5]

♦ If you wish to change the system input device designation for partition 1, you should do so now.[5]

- Press PF12 and ENTER.
- Enter the following OCL and control statements:[3]

```
// HALT
// LOAD $SCOPY,R1
// RUN
// CLEAR FROM-D1A,PACK-name,
   CLRNAME-F1F1F1,TYPE-FORCE
// END
```

When EJ is displayed on the CRT, F1 (D1A) is cleared.

- Press PF12 and ENTER.
- Enter the following OCL and control statements:[3]

```
// LOAD $MAINT,R1
// RUN
// ALLOCATE TO-F1,OBJECT-nnn,SOURCE-nnn,
   SYSTEM-YES,DIRSIZE-n,HISTORY-nnn[6]
// COPY FROM-R1,TO-F1,LIBRARY-O,
   NAME-SYSTEM
.
.[7]
.
// END
```

When EJ is displayed on the CRT, you have a minimal resident system on F1.

---

[1] See Appendix C.
[2] If the copy/dump program is to be copied, its entire R-library must be copied to the minimal system.
[3] Refer to *SCP Reference.*
[4] See *3340 Cylinder 0 Considerations* in Chapter 1.
[5] See *Common System Generation Procedures* earlier in this chapter.
[6] The number of tracks that you have determined are required for your source and object libraries replace the *nnn* in the ALLOCATE statement.
[7] Enter the COPY statements for the programs and routines to be included in your minimal system. See Figures B-11 and B-12 in Appendix B and C-13 in Appendix C for the LIBRARY and NAME parameters and library space requirements for each program.

Figure 2-7 (Part 2 of 3). Completing System Generation and Installation Verification (3340)

B

Deleting Unneeded Programs and Procedures

At the end of system generation, your tailored system contains some system generation procedures not needed in your day-to-day operation; it may also contain other programs and procedures you do not need. You can make this space available for other uses by deleting these unneeded procedures.

♦ Do you wish to delete procedures from your tailored system?

Yes

- Press PF12 and ENTER.
- Enter the following OCL and control statements:[1]

```
// HALT
// LOAD $MAINT,unit
// RUN
// DELETE FROM-unit,RETAIN-P,LIBRARY-S,
   NAME-$SG.ALL
   .
   .[2]
   .
// END
/&
```

When EJ is displayed on the CRT, the unneeded programs are deleted from your tailored system.

No → 1

1

Restoring Active Data Files to F1 (D1A)

To ensure that you do not inadvertently destroy active data files, you should copy them to F1 from the backup disk cartridge that contains your *previous release* resident system.

♦ Do you have any active data files to be copied to F1?

Yes

- Use $COPY to restore the active data files.[1]
- Proceed to Figure 2-8, *Building a Program Pack.*

No

- Proceed to Figure 2-8, *Building a Program Pack.*

[1] Refer to *SCP Reference.*

[2] Enter DELETE statements here for any other programs and routines to be deleted from your tailored system. See Figures B-11 and B-12 in Appendix B (for 5704-SC1) or Figure C-13 in Appendix C (for 5704-SC2) for the LIBRARY and NAME parameters and library space for each program.

Figure 2-7 (Part 3 of 3). Completing System Generation and Installation Verification (3340)

BUILDING A PROGRAM PACK (3340)

If you want to have more file space on the system pack, you can separate your program products onto different packs. These program packs may be built any time after system generation.

- Ensure that you have a backup copy of the system on F1 (D1A).
- Determine the number of tracks required for the source and object libraries.[1] (If you expect to add any programs to these libraries later, leave space now.)
- ♦ Are all the programs required for the program pack on F1 (D1A)?

No

Yes

D (Part 3)

Copying the Tailored System to R1 (D1B)

- Ready the disk drive.
- Set the program load selector at DISK 1 F1.
- Press PROGRAM LOAD to begin the IPL process.[2]

With 5704-SC2, R1 must be assigned to D1B for the following procedures.

- ♦ Was R1 assigned to D1B during system generation?

Yes

No

Enter the following OCL statement:[3]

```
// ASSIGN R1-D1B
```

- ♦ If you wish to change the system input device designation for partition 1, you should do so now.[2]
- Press PF12 and ENTER.
- Enter the following OCL and control statements[3] to first copy your tailored system to R1 (D1B):

```
// LOAD $SCOPY,F1
// RUN
// CLEAR FROM-D1B,PACK-name[,AREA-name]
   [,CLRNAME-name] [,TYPE-FORCE]
// COPYAREA FROM-unit,TO-D1B,PACK-name,
   AREA-name,[,SYSTEM-YES][4]
// END
```

When EJ is displayed on the CRT, the tailored system is copied to R1 (D1B).

Deleting All Libraries and Files from F1 (D1A)

- Set the program load selector at DISK 1 R1.
- Press PROGRAM LOAD to begin the IPL process.[2]
- ♦ If you wish to change the system input device designation for partition 1, you should do so now.[2]
- Press PF12 and ENTER.
- Enter the following OCL and control statements:[3]

```
// HALT
// LOAD $SCOPY,R1
// RUN
// CLEAR FROM-D1A,PACK-name,
   CLRNAME-F1F1F1,TYPE-FORCE
// END
```

When EJ is displayed on the CRT, F1 (D1A) is cleared of all libraries and files.

A (Part 2)

[1] See Appendix B or Appendix C.
[2] See *Common System Generation Procedures* earlier in this chapter.
[3] Refer to *SCP Reference.*
[4] See *3340 Cylinder 0 Considerations* in Chapter 1.

Figure 2-8 (Part 1 of 4). Building a Program Pack (3340)

A

Copying Programs from R1 (D1B) to F1 (D1A)

- Press PF12 and ENTER.
- Enter the following OCL and control statements[1] to copy system service programs:

```
// HALT
// LOAD $MAINT,R1
// RUN
// ALLOCATE TO-F1,SOURCE-nnn,OBJECT-nnn,
   SYSTEM-YES
// COPY FROM-R1,TO-F1,LIBRARY-O,
   NAME-SYSTEM
// COPY FROM-R1,TO-F1,LIBRARY-O,
   RETAIN-R,NAME-$MA.ALL  (library maintenance)
// COPY FROM-R1,TO-F1,LIBRARY-O,
   RETAIN-R,NAME-$CO.ALL  (copy/dump)
// COPY FROM-R1,TO-F1,LIBRARY-R,
   RETAIN-R,NAME-$CO.ALL  (copy/dump)
// COPY FROM-R1,TO-F1,LIBRARY-O,
   RETAIN-R,NAME-$DE.ALL  (file delete)
// COPY FROM-R1,TO-F1,LIBRARY-O,
   RETAIN-R,NAME-$IN.ALL  (disk initialization)
// COPY FROM-R1,TO-F1,LIBRARY-O,RETAIN-R,
   NAME-$SCALL (simulation area program)
// COPY FROM-R1,TO-F1,LIBRARY-R,RETAIN-R,
   NAME-$$.ALL
   .
   . [2]
   .
// END
/&
```

When EJ is displayed on the CRT, the copy operation is complete.

- Do you wish to copy program products in addition to those you just copied from R1 (D1B)?

  Yes — Set the program load selector at DISK 1 F1.

  No — D (Part 3)

- Press PROGRAM LOAD to begin the IPL process.[3]

With 5704-SC2, R1 must be assigned to D1B for the following procedures.

- Was R1 assigned to D1B during system generation?

  Yes

  No — Enter the following OCL statement:[1]

  ```
  // ASSIGN R1-D1B
  ```

- If you wish to change the system input device designation for partition 1, you should do so now.[3]
- Are the program products you wish to copy on R1 (D1B)?

  No — B (Part 3)

  Yes — C (Part 3)

[1] Refer to *SCP Reference.*

[2] If there are additional system service programs on R1 that you want to copy to your program pack, include COPY statements for them here. See Appendix B or Appendix C.

[3] See *Common System Generation Procedures* earlier in this chapter.

Figure 2-8 (Part 2 of 4). Building a Program Pack (3340)

B 1

- Enter the following OCL and control statements:[1]

```
// HALT
// LOAD $SCOPY,F1
// RUN
// CLEAR FROM-D1B,PACK-name[,AREA-name]
   [,CLRNAME-name] [,TYPE-FORCE]
// COPYAREA FROM-unit,TO-D1B,PACK-name,
   AREA-name,[,SYSTEM-YES] [2]
// END
```

When EJ is displayed on the CRT, the program product area is copied to R1 (D1B).

C

- Press PF12 and ENTER.

- Enter the following OCL and control statements:[2]

```
// HALT
// LOAD $MAINT,F1
// RUN
.
. [3]
.
// END
/&
```

When EJ is displayed on the CRT, the program products are copied to F1.

- ♦ Are there program products on another area to be copied to F1?

No: You are now ready to copy the programs to the program pack.

Yes: 1

D

Copying the Programs on F1 (D1A) to the Program Pack

- Set the program load selector at DISK 1 F1.

- Press PROGRAM LOAD to begin the IPL process.[4]

With 5704-SC2, R1 must be assigned to D1B for the following procedures.

- ♦ Was R1 assigned to D1B during system generation?

Yes:

No: Enter the following OCL statement:[1]

```
// ASSIGN R1-D1B
```

- If you wish to change the system input device designation for partition 1, you should do so now.[4]

- Press PF12 and ENTER.

- Enter the following OCL and control statements:[1]

```
// HALT
// LOAD $SCOPY,F1
// RUN
// CLEAR FROM-D1B,PACK-name[,AREA-name]
   [,CLRNAME-name] [,TYPE-FORCE]
// END
```

When EJ is displayed on the CRT, R1 (D1B) is cleared.

- ♦ Do you wish to copy all of F1 to R1?

Yes: E (Part 4)

No: F (Part 4)

---

[1] Refer to *SCP Reference.*
[2] See *3340 Cylinder 0 Considerations* in Chapter 1.
[3] Enter a COPY statement here for each program product that you want to copy. See Appendix G.
[4] See *Common System Generation Procedures* earlier in this chapter.

Figure 2-8 (Part 3 of 4). Building a Program Pack (3340)

E

- Enter the following OCL and control statements:[1]

```
// LOAD $MAINT,F1
// RUN
// ALLOCATE TO-R1,SOURCE-nnn,OBJECT-nnn,
   SYSTEM-YES,DIRSIZE-n,HISTORY-nnn[3]
// COPY FROM-F1,TO-R1,RETAIN-R,
   LIBRARY-ALL,NAME-ALL
// END
/&
```

When EJ is displayed on the CRT, you have completed building your program pack.

F

- ♦ Do you wish to copy the system plus selected programs from F1?

Yes

- Enter the following OCL and control statements:[1]

```
// LOAD $MAINT,F1
// RUN
// ALLOCATE TO-R1,SOURCE-nnn,OBJECT-nnn,
   SYSTEM-YES,DIRSIZE-n,HISTORY-nnn
// COPY FROM-F1,TO-R1,LIBRARY-O,
   NAME-SYSTEM
   .
   . [2]
   .
// END
/&
```

When EJ is displayed on the CRT, you have completed building a program pack.

No → 1

- To copy only selected programs, enter the following OCL and control statements:[1]

```
// LOAD $MAINT,F1
// RUN
// ALLOCATE TO-R1,SOURCE-nnn,OBJECT-nnn,
   DIRSIZE-n[3]
   .
   . [2]
   .
// END
/&
```

When EJ is displayed on the CRT, you have completed building a program pack.

---

[1] Refer to *SCP Reference*.
[2] Enter a COPY statement here for each program product that you want to copy. See Appendix G.
[3] The number of tracks that you have determined are required for your source and object libraries replace the *nnn* in the ALLOCATE statement.

Figure 2-8 (Part 4 of 4). Building a Program Pack (3340)

The first part of this appendix describes the IMAGE statement and how it is used. The second part of this appendix provides the possible IMAGE statement and data statements you need when you want to change the chain image during system generation.

For the second 1403 printer, the only image that can be used is an IMAGE statement entered at system generation or the default image supplied by the supervisor.

Description of the IMAGE Statement

The printer requires characters matching those on the printer chain to be in a special area of storage called the chain-image area. When you replace the printer chain with one having different characters, you must also change the contents of the chain-image area.

The IMAGE statement instructs the system to replace the contents of the chain-image area with the characters indicated by the statement. The characters can be entered in data statements or from the source library on disk. The statement can appear anywhere among the OCL statements. The IMAGE statement format is:

```
                 ( HEX,number      )
// IMAGE        { CHAR,number     }
                 ( MEM,name,unit   )
```

(Coding only HEX, CHAR, or MEM is preferable for format, but HEXADECIMAL, CHARACTER, or MEMBER can be coded.)

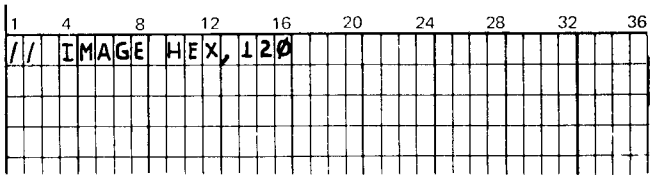
Characters on Data Statements

If you want to indicate that the new chain characters are to be read from data statements, use the following parameters:

Format: Use CHAR to indicate that the characters are in EBCDIC form. Use HEX to indicate that the characters are in hexadecimal form.

number: The number parameter must be used with HEX and CHAR. It must be a value equal to the number of columns in the data statements following the IMAGE statement that contains the new characters. This number must not exceed 240 when the characters are hexadecimal or 120 when the characters are EBCDIC.

The following sample IMAGE statement tells the system that the new characters are on data statements. The format parameter indicates that the new characters are in hexadecimal form. The number parameter indicates that there are 120 positions containing the new characters.



The following rules apply to entering the new characters on the CRT/keyboard:

1. Characters must begin in position 1.

2. Consecutive character positions must be used; however, only the first 80 positions of the statement can be used. Position 80, or the first blank, terminates the data statement. Hexadecimal requires an even number of characters for a data statement.

3. To continue characters in another statement, begin the characters in position 1.

Characters from Source Library on Disk

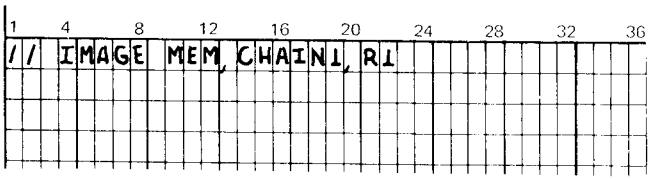
If you want to indicate that the new chain characters are to be read from the source library on disk, use the following parameters:

Format: The format parameter must be MEM.

name: The name parameter identifies the characters in the library. The only way you can place the data statements containing the characters in the source library is by using the library maintenance program ($MAINT). The name you supply in library maintenance control statements is used to identify the characters in the source library.

unit: The unit parameter must be used with the name parameter. It tells the system where the disk containing the library is located on the disk unit. The possible codes are R1, F1, R2, and F2.

The following sample IMAGE statement tells the system that the new characters are to be read from the source library on disk. The format parameter indicates that the new chain characters are in the source library. The name parameter indicates that the characters were named CHAIN1 in the source library. The unit parameter indicates that the source library containing them is on R1.



CHANGING THE CHAIN IMAGE AT SYSTEM GENERATION

If you use a chain other than the standard 48-character LC chain, the IMAGE statement with proper data statements containing the characters of the chain must be prepared. The characters on the data statements can be in either hexadecimal code or EBCDIC form.

The IMAGE statement, together with data statements, places the image of the print chain in the communication area. The IMAGE statement must be followed by data statements that contain the hexadecimal codes (two positions per character) or the EBCDIC code for the characters in the printer chain. These data statements must contain an exact image of your print chain, character for character.

The IMAGE statement and data statements needed for these print arrangement chains are illustrated in the following figures:

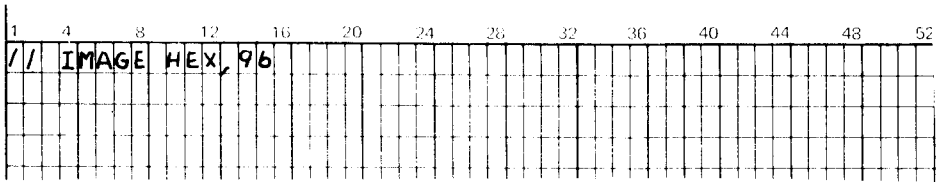
Standard 48-character AN	
Hexadecimal code	Figure A-1
EBCDIC code	Figure A-2
Standard 48-character HN	
Hexadecimal code	Figure A-3
EBCDIC code	Figure A-4
Standard 48-character LC	
Hexadecimal code	Figure A-5
EBCDIC code	Figure A-6
60-Character PN	
Hexadecimal code	Figure A-7
EBCDIC code	Figure A-8

The chain image that is in effect in main storage through an IPL, or through the use of an IMAGE statement after an IPL from the distribution disk cartridge, will be the image that is incorporated into the newly generated supervisor that is placed on F1.

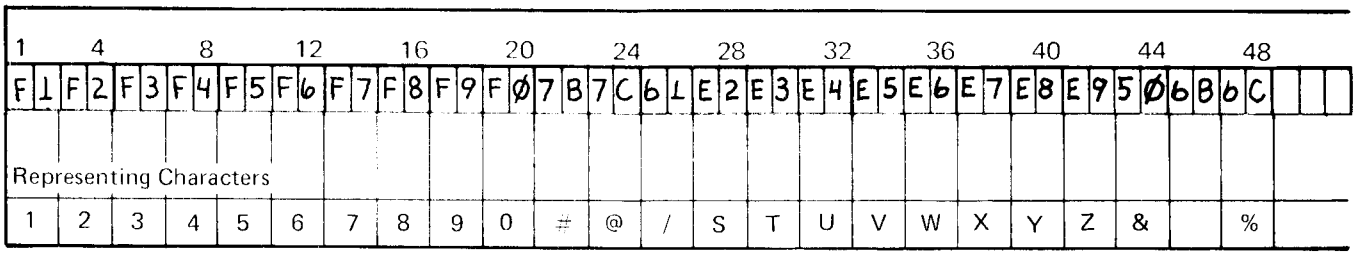
Specifying Print Chain at System Generation

To specify a print chain different from the standard, select the appropriate IMAGE and data statements from the figures in this chapter and enter the IMAGE statement followed by the data statements after you enter the system date following IPL.

IMAGE Statement:



Data Statement 1:



Data Statement 2:

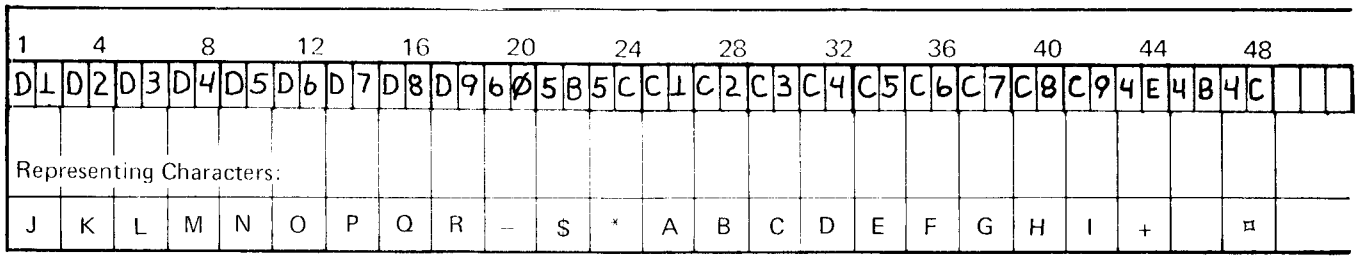
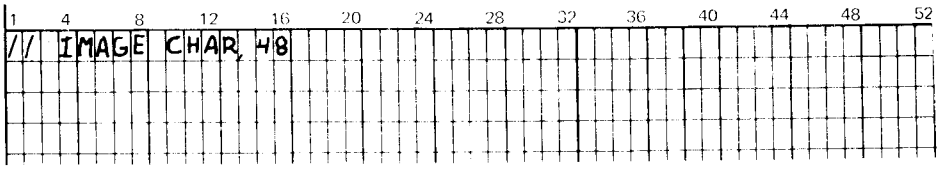


Figure A-1. IMAGE and Data Statements: Standard 48-Character AN Print Arrangement, Hexadecimal Code

IMAGE Statement:



Data Statement:

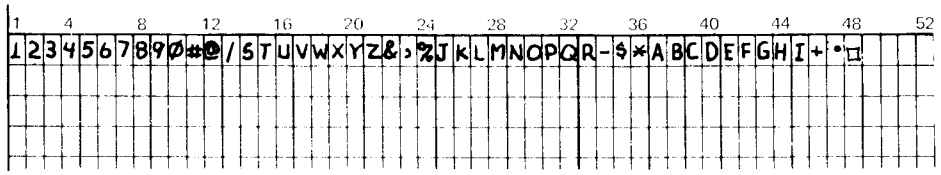
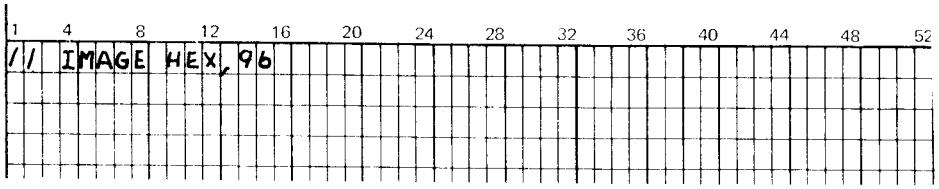
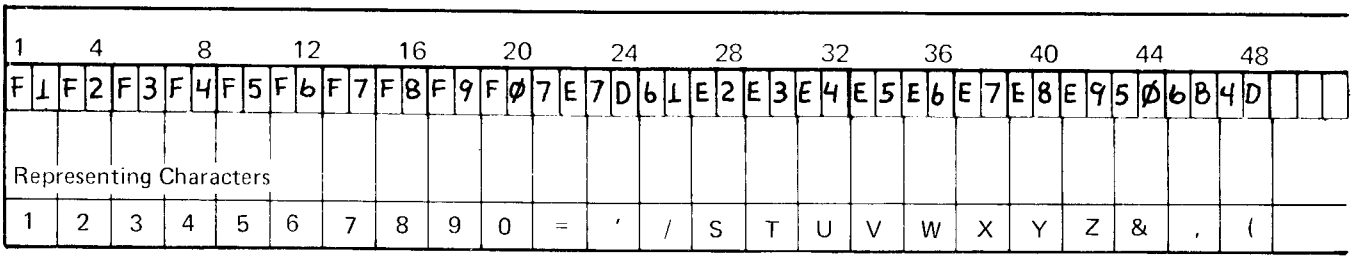


Figure A-2. IMAGE and Data Statements: Standard 48-Character AN Print Arrangement, EBCDIC Code

IMAGE Statement:



Data Statement 1:



Data Statement 2:

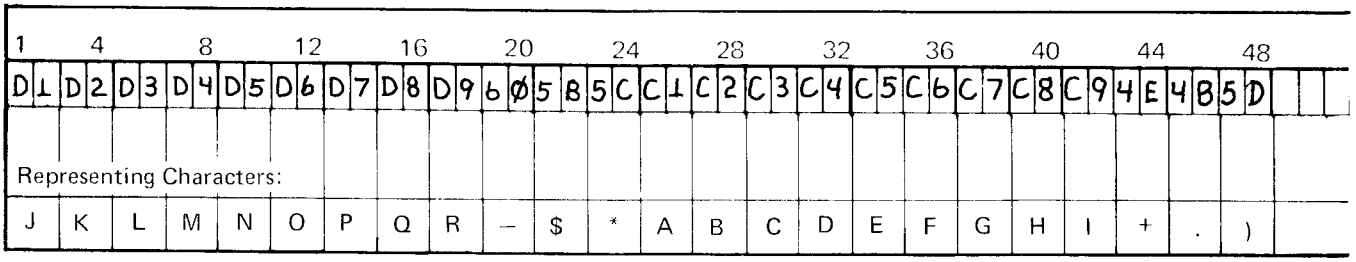
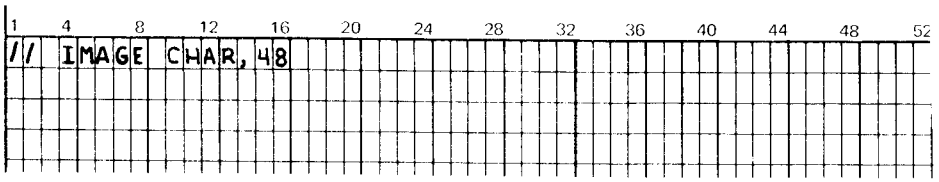


Figure A-3. IMAGE and Data Statements: Standard 48-Character HN Print Arrangement, Hexadecimal Code

IMAGE Statement:



Data Statement:

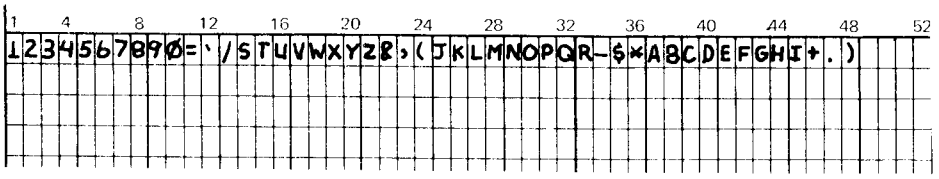
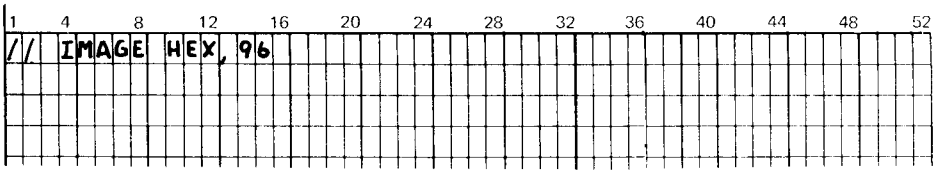
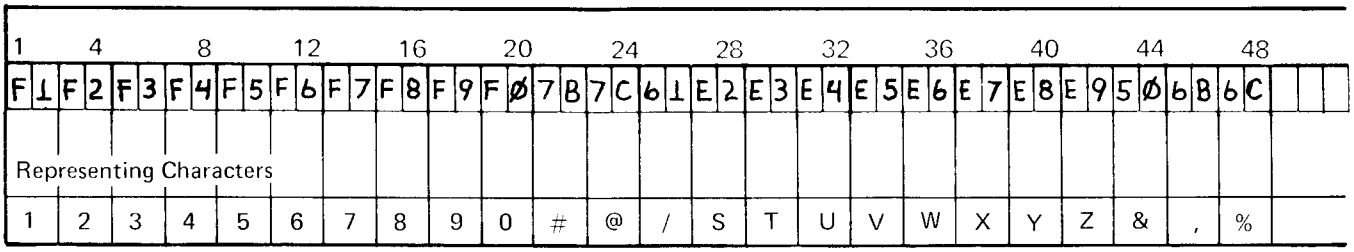


Figure A-4. IMAGE and Data Statements: Standard 48-Character HN Print Arrangement, EBCDIC Code

IMAGE Statement:



Data Statement 1:



Data Statement 2:

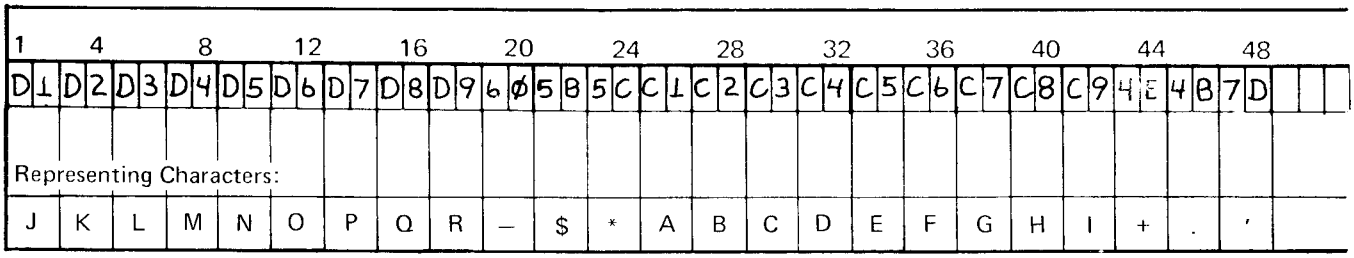
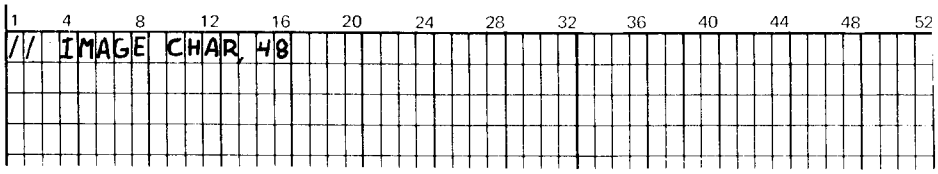


Figure A-5. IMAGE and Data Statements: Standard 48-Character LC Print Arrangement, Hexadecimal Code

IMAGE Statement:



Data Statement:

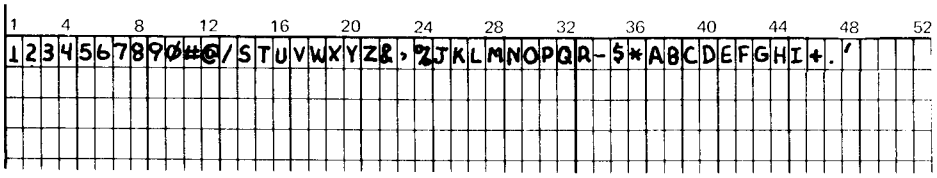
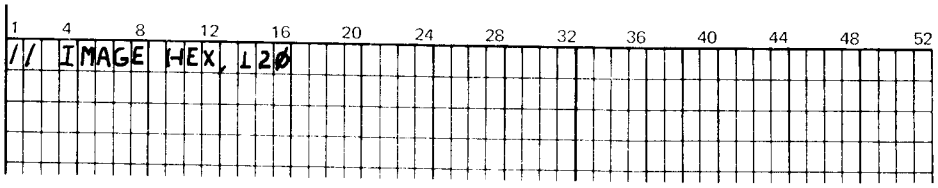
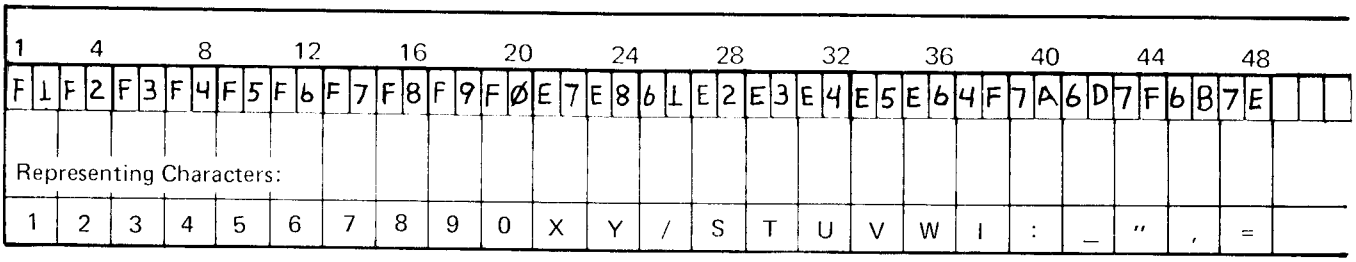


Figure A-6. IMAGE and Data Statements: Standard 48-Character LC Print Arrangement, EBCDIC Code

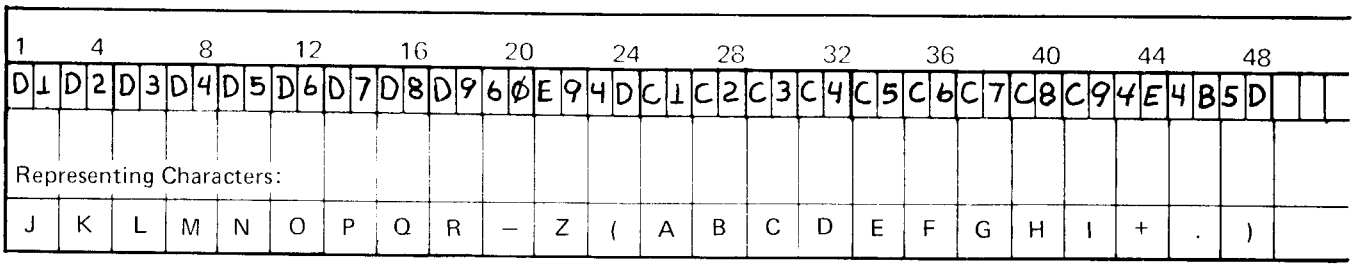
IMAGE Statement:



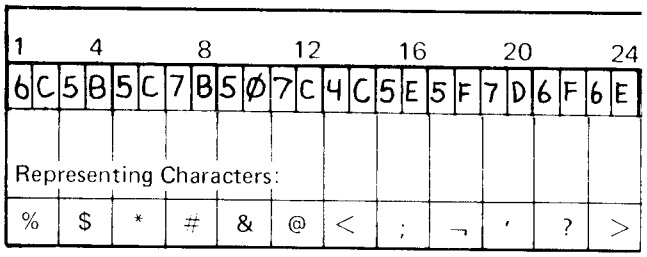
Data Statement 1:



Data Statement 2:



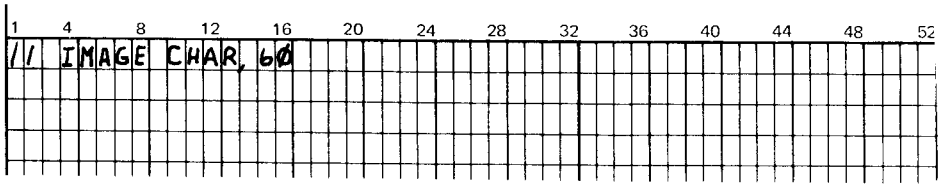
Data Statement 3:



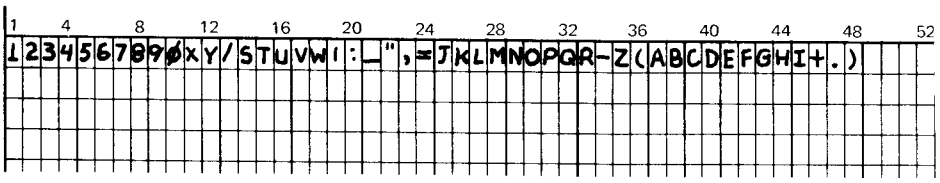
Note: If your 60-character chain contains characters not shown here, refer to the code conversions in the *Components Reference* for the hexadecimal code for these characters. The chain image data statements you use must be an exact image of your chain.

Figure A-7. IMAGE and Data Statements: 60-Character PN Print Arrangement, Hexadecimal Code

IMAGE Statement:



Data Statement 1:



Data Statement 2:

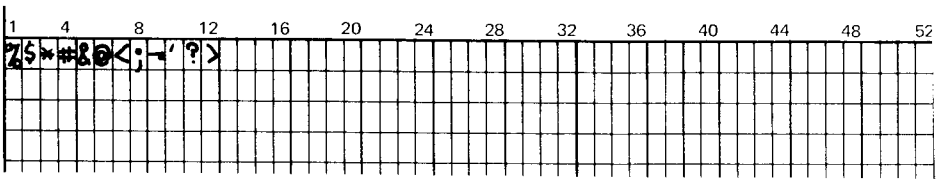


Figure A-8. IMAGE and Data Statements: 60-Character PN Print Arrangement, EBCDIC Code

Appendix B. Storage Estimates (5704-SC1)

This appendix contains estimates for IBM System/3 Model 15 system control programs (SCP), SCP options, program products, and program product options. These estimates will aid you during preinstallation planning in determining system configuration requirements and in planning for efficient use of main storage and secondary storage.

The following estimates are included:

- Main storage requirements of the supervisor and data management routines for all system configurations.
- Secondary (disk) storage requirements for individual SCP components and options, program products and options, and IBM reserved areas.
- CCP storage estimates can be found in the *CCP System Reference.*

Refer to the *Preface* for the actual release level reflected in these estimates.

MAIN STORAGE ESTIMATES

The following tables are intended to assist you in estimating the main storage requirements of the Model 15 supervisor and of the various data management modules. With this knowledge, you can estimate the amount of main storage available to your other system programs, application programs, and program products.

Supervisor Size Estimates

The size of the supervisor generated for your system depends on the options you select during system generation. Figure B-1 shows the options that affect supervisor size and also shows the system generation response to exclude the optional support. By excluding all optional support, a minimum supervisor is generated.

Use the indicated options to build the minimum supervisor. When you select an alternate for any of these options, you may increase the size of the supervisor. The size of the supervisor generated is printed for you during system generation.

If you have an application that will not fit into main storage with a large supervisor, you might want to generate an additional supervisor especially for this application. For the prompts mentioned earlier, select only those options required by the application. This would give you the smallest supervisor capable of supporting this application. However, do not select options to support devices that you do not have.

Figure B-1 can be used to determine the main storage requirements of the System/3 Model 15 supervisor for all system configurations.

Note: If your generated supervisor is larger than 48K, the overlay linkage editor will issue a warning message 'P27, which indicates that the program will not fit into the specified storage size. Use the 0 option to continue.

Calculate the main storage requirements of the supervisor as follows:	Supervisor Requirements	Prompts and the options for no support
1. To the base size of the supervisor (always included):	17.45K	
2. If you have 3340 Direct Access Storage Facility, add	0.94K	DSK33-A
3. If you have 3410/3411 magnetic tape support, add	1.16K	TAPES-A
4. If you have directly attached 3741, add	0.50K	DSK41-A
5. If you have BSCA/MLTA/SIOC support, add Additional requirements to line 5 for SIOC support, add	1.41K 0.40K	LINEB-A, MLTAS-A, SIOCS-A
6. If you have I/O storage protect support, add	0.49K	IOPRT-A
7. If you have unit record restart, add	0.34K	READY-A
8. If you have the 3284 printer, add	0.50K	MATRIX-A
9. If you have the interval timer, time of day support, add full timer support, add *Note:* The time of day only and full timer support are mutually exclusive.	0.45K 2.0K	TIMER-A
10. If you have memory resident overlay support, add	0.50K	MEMRO-A
11. If you have spooling support, add the value from Table 1 which corresponds to your level of spooling support.	(value from Table 1)	PARTN-A
12. If you have CCP support, add the value from Table 2 which corresponds to your number of user tasks.	(value from Table 2)	CCPUT-A
Total size of supervisor (round up to the next multiple of 2K bytes)	(total of values for your configuration)	

Figure B-1. Determining Supervisor Main Storage Requirements (5704-SC1)

		Level of Spooling Support																				
		Print	Print/Punch			Input/Print					Input/Print/Punch											
Printer	1403	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Punch Device	MFCU		X								X	X	X	X								
	MFCM			X											X	X	X					
	1442				X													X	X	X	X	
Input Device	MFCU					X					X							X				
	MFCM						X								X							
	1442							X				X							X			
	2501								X				X			X				X		
	3741									X				X			X					X
One Partition Storage (K bytes)		7.11	11.01	11.79	10.41	10.91	10.95	10.41	10.44	10.90	12.81	12.81	12.84	12.81	13.63	13.62	13.59	12.71	12.21	12.24	12.71	
Two Partitions Storage (K bytes)		8.43	13.46	14.25	12.86	13.36	13.40	12.85	12.88	13.35	16.39	16.38	16.41	16.38	17.21	17.20	17.16	16.29	15.78	15.81	16.28	

Table 1. Spooling Support Estimated Main Storage Requirements (5704-SC1)

Supervisor Requirements		
Number of User Tasks	5444 Systems	3340 Systems
1	1.69K	1.82K
2	2.38K	2.57K
3	2.63K	2.82K
4	2.88K	3.07K
5	3.07K	3.32K
6	3.32K	3.57K
7	3.57K	3.82K
8	3.75K	4.07K
9	4.00K	4.32K
10	4.25K	5.07K
11	4.94K	5.32K
12	5.19K	5.57K
13	5.44K	5.82K
14	5.63K	6.07K
15	5.88K	6.32K

Table 2. CCP Support Estimated Supervisor Requirements (5704-SC1)

Data Management Estimates

Data management includes the SCP modules that allow a program that is processing a data file to organize, locate, write, read, and maintain the records in the file. The data management modules discussed in this section are relocatable object modules (R modules in the object library). The modules required by a particular program are selected by the compiler and are link edited with the user program after compilation to form a complete object program.

The main storage requirements of the data management for a particular program can be estimated using the examples and tables in this section. The storage requirements can vary greatly depending on the types of devices and files being used by the program. The data management storage estimates do not include the storage required for input/output areas, buffers, DTFs (define the file areas), or IOBs (input/output blocks).

Calculating the Main Storage Requirements for Data Management

Figures B-2 through B-5 show the estimated main storage requirements of the data management modules for the 5444 disk drive, 5445 disk drive, 3340 data module, 3410/3411 magnetic tape units, and the unit record devices. Main routine bytes and total bytes for each access method are given, along with the module name. The data management subroutines are listed to the right of the module names along with their size in bytes.

The number of bytes of main storage required for disk data management depends on the type of files you are processing and how you are processing them. For example, if your program processes two sequential 5444 disk files (single volume), one as a consecutive input file and the other as a consecutive output file, you require the following access methods:

Consecutive Input – $$CSIP
Consecutive Output – $$CSOP

5444 Access Methods (MVF=multivolume file)	Main Routine (bytes)	Complete Access Method (bytes)	Module Name ($$----)	Subroutines – Name ($$----) and Size in Bytes																										
				SRLM (256)	SRBI (274)	SRBP (59)	SRBR (130)	SRCB (76)	SRCL (91)	SRCM (153)	SRDA (153)	SRDF (28)	SRDI (149)	SRIC (211)	SRIU (79)	SRLP (25)	SRMI (51)	SRMO (164)	SRRC (202)	SRRI (72)	SRSB (70)	SRSC (224)	SRSI (146)	SRSM (96)	SRSO (213)	SRTC (28)	SRTS (551)	SRUA (38)	SRLT (372)	$$SRRB (108)	
Consecutive																														
Output	29	695	CSOP			X	X					X	X					X			X					X		X		
Output – MVF	43	734	CSOM			X	X					X	X			X		X			X					X		X		
Input	39	677	CSIP			X	X						X					X			X					X		X		
Input – MVF	50	713	CSIM			X	X						X			X		X			X					X		X		
Update	164	602	CSUP			X							X					X								X		X		
Update – MVF	149	612	CSUM			X							X			X		X								X		X		
Direct																														
Binary input[1]	64	727	DAIB			X					X		X						X	X						X				
Binary input – MVF[1]	171	834	DAIT			X					X		X						X	X						X				
Decimal input	91	830	DAID			X		X			X		X						X	X						X				
Decimal input – MVF	196	935	DAIM			X		X			X		X						X	X						X				
Binary – input/output[1]	133	737	DAIO								X		X						X	X						X				
Binary update[1]	122	949	DAUB			X					X		X					X	X	X						X				
Binary update – MVF[1]	215	1042	DAUT			X					X		X					X	X	X						X				
Binary – double buffer[1]	412	1221	DADB			X		X			X		X					X		X						X				X
Decimal update	149	1052	DAUD			X		X			X		X					X	X	X						X				
Decimal update – MVF	236	1139	DAUM			X		X			X		X					X	X	X						X				
Indexed																														
Output	95	1035	IOUT		X	X	X					X	X					X			X					X		X		
Output – MVF	140	1105	IOUM		X	X	X					X	X			X		X			X					X		X		
Output add	265	1684	IOAD		X	X						X	X					X				X	X	X	X	X		X		
Output add – MVF	279	2476	IOAM		X	X						X	X			X		X	X			X	X	X	X	X	X	X		
Indexed Random																														
Input	79	1055	IRIP			X							X						X	X		X	X	X		X				
Input – MVF	316	1868	IRIM			X							X			X			X	X		X	X	X		X	X			
Update	164	1383	IRUP			X							X		X			X	X	X		X	X	X		X				
Update – MVF	383	2178	IRUM			X							X		X	X		X	X	X		X	X	X		X	X			
Input add	463	2156	IRAD		X	X						X	X					X	X	X		X	X	X	X	X		X		
Input add – MVF	683	2952	IRAM		X	X						X	X			X		X	X	X		X	X	X	X	X	X	X		
Update add	659	2431	IRUA		X	X						X	X		X			X	X	X		X	X	X	X	X		X		
Update add – MVF	848	3196	IRBM		X	X						X	X		X	X		X	X	X		X	X	X	X	X	X	X		
Indexed Sequential																														
Input	79	964	ISIP			X							X	X				X	X	X						X				
Input – MVF	97	1007	ISIM			X							X	X		X		X	X	X						X				
Input – limits	109	1275	ISIL	X		X							X	X		X		X	X	X						X				
Input-limits – MVF	130	1412	ISIB			X							X	X		X		X	X	X						X			X	
Update	150	1114	ISUP			X							X	X	X			X	X	X						X				
Update – MVF	168	1157	ISUM			X							X	X	X	X		X	X	X						X				
Update – limits	180	1425	ISUL	X		X							X	X	X	X		X	X	X						X				
Update - limits – MVF	201	1562	ISUB			X							X	X	X	X		X	X	X						X			X	
Input add	290	1657	ISAD		X	X			X			X	X	X			X	X	X	X						X		X		
Input add – MVF	321	1775	ISAM		X	X				X		X	X	X		X	X	X	X	X						X		X		
Update add	587	2033	ISUA		X	X			X			X	X	X	X		X	X	X	X						X		X		
Update add – MVF	618	2151	ISBM		X	X				X		X	X	X	X	X	X	X	X	X						X		X		
Input –variable limits	134	1300	ISIC	X		X							X	X		X		X	X	X						X				
Input - variable limits – MVF	155	1437	ISID			X							X	X		X		X	X	X						X			X	
Update – variable limits	205	1450	ISUC	X		X							X	X	X	X		X	X	X						X				
Update - variable limits – MVF	226	1587	ISUD			X							X	X	X	X		X	X	X						X			X	
Pseudo tape	527	527	PTAM																											

[1] The direct binary access methods use a disk ADDROUT file to process another disk file. See *IBM System/3 Disk Sort Reference Manual*, SC21-7522, for a description of ADDROUT files.

Figure B-2. 5444 Disk Data Management Estimated Main Storage Requirements

Main Data Area Access Methods (MVF)=multivolume file)	Main Routines (bytes)	Complete Access Method (bytes)	Module Name ($$----)	Subroutines – Names ($$----) and Size in Bytes: SFLM (289)	SFBI (287)	SFBP (118)	SFBR (132)	SFCB (76)	SFCL (91)	SFCM (153)	SFDA (227)	SFDF (31)	SFIC (301)	SFIU (79)	SRLP (25)	SFMI (51)	SFMO (164)	SFPD (214)	SFRC (259)	SFRI (88)	SFSB (77)	SFSC (434)	SFSI (223)	SFSM (142)	SFSO (224)	SRTC (28)	SFTS (554)	SFUA (38)	SFLT (402)	SFRB (165)
Consecutive																														
Output	29	831	CFOP			X	X					X					X	X		X					X		X		
Output – MVF	43	870	CFOM			X	X					X			X		X	X		X					X		X		
Input	39	810	CFIP			X	X										X	X		X					X		X		
Input – MVF	50	846	CFIM			X	X								X		X	X		X					X		X		
Update	164	726	CFUP			X											X	X							X		X		
Update – MVF	149	736	CFUM			X									X		X	X							X		X		
Direct																														
Binary Input[1]	64	998	DFIB			X					X							X	X	X						X				
Binary input – MVF[1]	171	1105	DFIT			X					X							X	X	X						X				
Decimal input	91	1101	DFID			X		X			X							X	X	X						X				
Decimal input – MVF	196	1206	DFIM			X		X			X							X	X	X						X				
Binary input/output[1]	133	737	DFIO								X							X	X	X						X				
Binary update[1]	122	1220	DFUB			X					X						X	X	X	X						X				
Binary update – MVF[1]	211	1309	DFUT			X					X						X	X	X	X						X				
Binary – double buffer[1]	412	1492	DFDB			X		X									X	X		X						X				X
Decimal update	148	1322	DFUD			X		X			X						X	X	X	X						X				
Decimal update – MVF	236	1410	DFUM			X		X			X						X	X	X	X						X				
Indexed																														
Output	95	1184	IFUT		X	X	X					X					X	X			X					X		X		
Output – MVF	140	1254	IFUM		X	X	X					X			X		X	X			X					X		X		
Output add	267	2389	IFAD		X	X	X					X					X	X			X	X	X	X	X	X		X		
Output add – MVF	474	3225	IFAM		X	X						X			X		X	X	X			X	X	X	X	X	X		X	
Indexed Random																														
Input	279	1795	IGIP			X											X	X	X		X	X	X		X					
Input – MVF	316	2411	IGIM			X									X		X	X	X		X	X	X		X	X				
Update	164	1923	IGUP			X								X			X	X	X		X	X	X		X					
Update – MVF	383	2721	IGUM			X								X	X		X	X	X		X	X	X		X					
Input add	469	2729	IGAD		X	X						X					X	X	X		X	X	X	X	X		X			
Input add – MVF	695	3534	IGAM		X	X						X			X		X	X	X		X	X	X	X	X	X	X			
Update add	672	3011	IGUA		X	X						X		X			X	X	X		X	X	X	X	X		X			
Update add – MVF	864	3782	IGUM		X	X						X		X	X		X	X	X		X	X	X	X	X	X	X			
Indexed Sequential																														
Input	79	1460	IHIP			X	X					X					X	X	X	X					X					
Input – MVF	97	1503	IHIM			X	X					X			X		X	X	X	X					X					
Input – Limits	109	1799	IHIL	X		X	X					X			X		X	X	X	X					X					
Input – limits – MVF	130	1713	IHIB			X						X			X		X	X	X									X		
Update	150	1401	IHUP			X						X		X			X	X	X						X					
Update – MVF	168	1444	IHUM			X						X		X	X		X	X	X						X					
Update – limits	180	1740	IHUL	X		X						X		X	X		X	X	X						X					
Update – limits – MVF	201	1863	IHUB			X						X		X	X		X	X	X									X		
Input add	290	1960	IHAD		X	X			X			X		X		X	X	X	X						X		X			
Input add – MVF	321	2078	IHAM		X	X				X		X		X		X	X	X	X						X		X			
Update add	594	2343	IHUA		X	X			X			X		X		X	X	X	X						X		X			
Update add – MVF	625	2461	IHBM		X	X				X		X		X	X	X	X	X	X						X		X			
Input – variable limits	134	1824	IHIC	X		X	X					X			X		X	X	X	X	X				X					
Input – variable limits – MVF	155	1738	IHID			X						X			X		X	X	X	X								X		
Update – variable limits	205	1765	IHUC	X		X						X		X	X		X	X	X	X					X					
Update – variable limits – MVF	226	1888	IHUD			X						X		X	X		X	X	X	X									X	
Pseudo tape	585	585	PTA5																											

[1] The direct binary access methods use a disk ADDROUT file to process another disk file. See *IBM System/3 Disk Sort Reference Manual*, SC21-7522, for a description of ADDROUT files.

Figure B-3. 5445 Disk Data Management Estimated Main Storage Requirements

Main Data Area Access Methods (MVF=multivolume file)	Main Routines (bytes)	Complete Access Method (bytes)	Module Name ($$----)	Subroutines – Names ($$----) and Size in Bytes: SFLM (268)	SFBI (287)	SFBP (84)	SFBR (132)	SFCB (76)	SFCL (91)	SFCM (153)	SFDA (233)	SFDF (31)	SFIC (337)	SFIU (79)	SRLP (25)	SFMI (51)	SFMO (164)	SFPD (149)	SFRC (246)	SFRI (88)	SFSB (77)	SFSC (384)	SFSI (282)	SFSM (142)	SFSO (469)	SRTC (28)	SFTS (554)	SFUA (38)	SFLT (318)	SFRB (132)
Consecutive																														
Output	29	732	CFOP			X	X					X					X	X			X					X		X		
Output – MVF	43	771	CFOM			X	X					X			X		X	X			X					X		X		
Input	39	711	CFIP			X	X										X	X			X					X		X		
Input – MVF	50	747	CFIM			X	X								X		X	X			X					X		X		
Update	164	627	CFUP			X											X	X								X		X		
Update – MVF	149	637	CFUM			X									X		X	X								X		X		
Direct																														
Binary Input[1]	64	892	DFIB			X					X							X	X	X						X				
Binary input – MVF[1]	171	999	DFIT			X					X							X	X	X						X				
Decimal input	91	995	DFID			X		X			X							X	X	X						X				
Decimal input – MVF	196	1100	DFIM			X		X			X							X	X	X						X				
Binary - input/output[1]	133	877	DFIO								X							X	X	X						X				
Binary update[1]	122	1114	DFUB			X					X						X	X	X	X						X				
Binary update - MVF[1]	211	1203	DFUT			X					X						X	X	X	X						X				
Binary – double buffer[1]	412	1098	DFDB			X					X							X		X										X
Decimal update	148	1216	DFUD			X		X			X						X	X	X	X						X				
Decimal update - MVF	236	1304	DFUM			X		X			X						X	X	X	X						X				
Indexed																														
Output	95	1085	IFUT		X	X	X					X					X	X			X					X		X		
Output – MVF	140	1155	IFUM		X	X	X					X			X		X	X			X					X		X		
Output add	267	2524	IFAD		X	X	X					X					X	X			X	X	X	X	X	X		X		
Output add – MVF	474	3347	IFAM		X	X						X			X		X	X	X			X	X	X	X	X	X	X		
Indexed Random																														
Input	279	1682	IGIP			X												X	X	X		X	X	X		X				
Input – MVF	316	2298	IGIM			X									X			X	X	X		X	X	X		X	X			
Update	164	1810	IGUP			X							X				X	X	X	X		X	X	X		X				
Update – MVF	383	2608	IGUM			X							X	X			X	X	X	X		X	X	X		X	X			
Input add	469	2851	IGAD		X	X						X					X	X	X	X		X	X	X	X	X		X		
Input add – MVF	695	3656	IGAM		X	X						X			X		X	X	X	X		X	X	X	X	X	X	X		
Update add	672	3133	IGUA		X	X						X		X			X	X	X	X		X	X	X	X	X		X		
Update add – MVF	864	3904	IGBM		X	X						X		X	X		X	X	X	X		X	X	X	X	X	X	X		
Indexed Sequential																														
Input	79	1384	IHIP			X	X						X				X	X	X	X	X					X				
Input – MVF	97	1427	IHIM			X	X						X		X		X	X	X	X	X					X				
Input – Limits	109	1707	IHIL	X		X	X						X		X		X	X	X	X	X					X				
Input - limits – MVF	130	1541	IHIB			X							X		X		X	X	X	X									X	
Update	150	1325	IHUP			X							X	X			X	X	X	X						X				
Update – MVF	168	1368	IHUM			X							X	X	X		X	X	X	X						X				
Update – limits	180	1648	IHUL	X		X							X	X	X		X	X	X	X						X				
Update - limits – MVF	201	1691	IHUB			X							X	X	X		X	X	X	X									X	
Input add	290	1884	IHAD		X	X			X			X	X			X	X	X	X	X						X		X		
Input add – MVF	321	2002	IHAM		X	X				X		X	X		X	X	X	X	X	X						X		X		
Update add	594	2267	IHUA		X	X			X			X	X	X		X	X	X	X	X						X		X		
Update add - MVF	625	2385	IHBM		X	X				X		X	X	X	X	X	X	X	X	X						X		X		
Input – variable limits	134	1732	IHIC	X		X	X						X		X		X	X	X	X	X					X				
Input - variable limits – MVF	155	1566	IHID			X							X		X		X	X	X	X									X	
Update - variable limits	205	1673	IHUC	X		X							X	X	X		X	X	X	X						X				
Update - variable limits – MVF	226	1716	IHUD			X							X	X	X		X	X	X	X									X	
Pseudo tape	585	585	PTA5																											

[1] The direct binary access methods use a disk ADDROUT file to process another disk file. See *IBM System/3 Disk Sort Reference Manual*, SC21-7522, for a description of ADDROUT files.

Figure B-4. 3340 Disk Data Management Estimated Main Storage Requirements

Tape Access Methods	Main Routine (bytes)	Complete Access Method (bytes)	Module Name ($$----)	Subroutines – Name ($$----) and Size in Bytes															
				TSAB (205)	TSOS (414)	TSBA (318)	TSBS (88)	TSCA (254)	TSCR (232)	TSMO (132)	TSRA (118)	TSSA (71)	TSSB (62)	TSAC (599)	TSRC (281)	TSSO (156)			
Fixed																			
EBCDIC input	250	702	CSIT				X		X	X									
EBCDIC output	142	568	CSOT						X	X			X						
ASCII input	343	1052	CSIA	X				X		X	X								
ASCII output	204	979	CSOA			X		X		X		X							
Variable/Fixed																			
EBCDIC input	179	680	CSII				X			X					X				
EBCDIC output	245	814	CSTO							X					X	X			
ASCII input	609	1663	CSAI	X						X	X			X					
ASCII output	368	2036	CSAO	X	X	X				X				X					
Basic																			
Single volume	411	411	BTAM																
Multivolume	491	491	BTMM																

Figure B-5. 3410/3411 Tape Data Management Estimated Main Storage Requirements

Figure B-2 shows that $$CSIP requires 677 bytes of main storage. This total includes the main routine and seven subroutines:

Main Routine	$$CSIP	39 bytes
Subroutines	$$SRUA	38 bytes
	$$SRTC	28 bytes
	$$SRSB	70 bytes
	$$SRMO	164 bytes
	$$SRDI	149 bytes
	$$SRBR	130 bytes
	$$SRBP	59 bytes
Total		677 bytes

Figure B-2 also shows that $$CSOP requires eight subroutines, seven of which are already used by $$CSIP. Because these subroutines are already used by S$CSIP, they are not duplicated. Only the main routine, S$CSOP (29 bytes) and the additional subroutine, $$SRDF (28 bytes), need be included with $$CSIP and its subroutines to provide the complete data management for a consecutive input file and a consecutive output file. Thus, the total main storage required for disk data management is 734 bytes (677 + 29 + 28).

Suppose, in addition to the two 5444 disk files just described, your program writes fixed length records on a tape file. According to Figure B-5 the data management access method $$CSOT must be included in your program to support this type of processing. The total size of this access method (main routine plus three subroutines) is 568 bytes. As in disk data management, if two or more tape access methods are used by a program, common subroutines are not duplicated.

Certain 5444 and 5445 disk data management access methods are able to support more than one type of file processing. For example, some multivolume access methods can support either single volume or multivolume files; direct and indexed random access methods that support update files also support input files. Figure B-6 and B-7 show the relationships among the access methods for 5444 and 5445/3340 disk.

In calculating the main storage requirements for data management, these relationships must be taken into account. For example, if a program consecutively processes two 5444 disk input files, a multivolume sequential input file and a single volume sequential input file, only the multivolume access method ($$CSIM) is used for data management support (see Figure B-2), because that access method can also support a single volume file.

As another example, suppose your program adds records randomly to a 5445 indexed file and reads records randomly from a separate 5445 indexed file. If these two types of processing occurred in separate programs, one program would require $$IGAD and the other program would require $$IGIP. However, because both files are used in the same program, only $$IGAD is used, because it also performs the functions of $$IGIP.

If your program includes both 5444 and 5445 files, notice that 5445 data management includes two subroutines that are also used for 5444, $$SRTC and $$SRLP. Therefore, if these subroutines have already been included in the 5444 data management totals, they are not duplicated for 5445. 5444 modules that refer to indexed or multivolume files cannot be used in simulation areas.

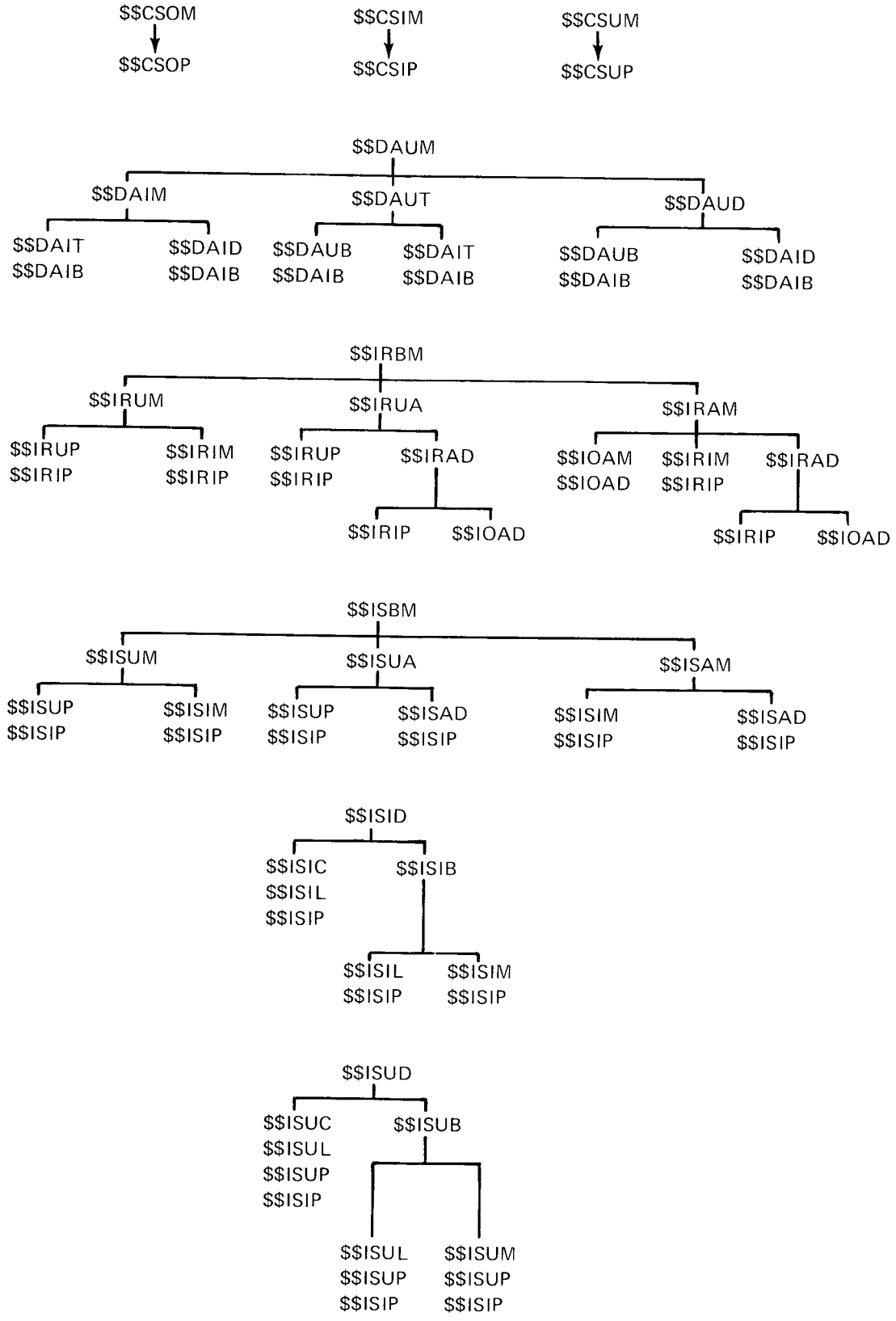


Figure B-6. 5444 Disk Data Management Access Method Relationships

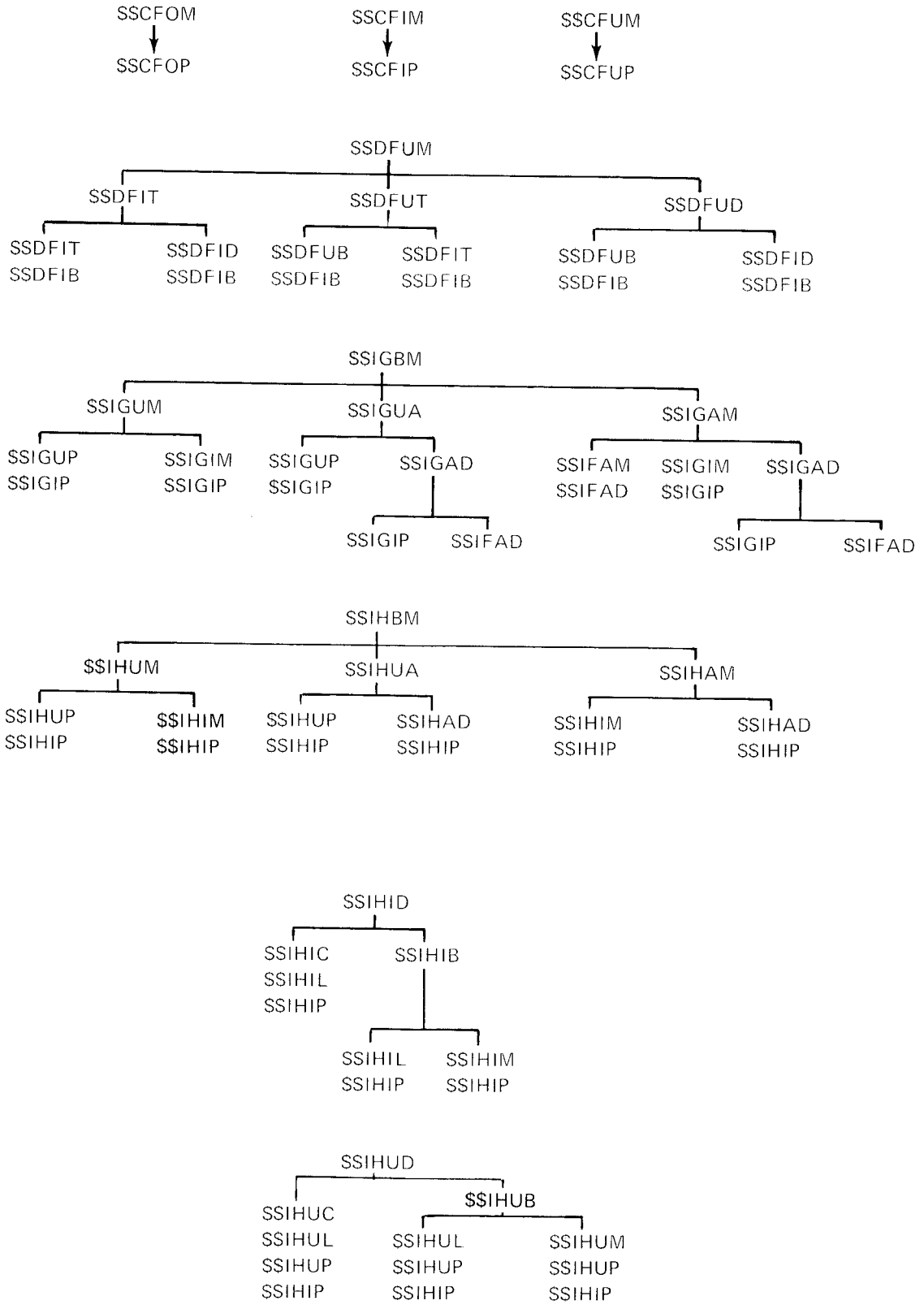


Figure B-7. 5445 or 3340 (Main Data Area) Disk Data Management Access Method Relationships

Calculating the Total Main Storage Requirement for Data Management

In order to arrive at the total main storage requirement for data management, you must add the total bytes for disk and tape data management to the totals required for the remaining I/O devices in your system that are used by your program (see Figure B-8). The total bytes for disk and tape data management calculated earlier were:

Disk data management – 734 bytes
Tape data management – 568 bytes

If your program reads cards from the MFCU and prints a report in addition to accessing the disk and tape files described earlier, calculate your total main storage requirement for data management as follows:

Disk data management	734 bytes
Tape data management	568 bytes
MFCU read ($$MFRD)	250 bytes
1403 print	240 bytes
Total data management for the program	1792 bytes

Device	Module Name	Bytes (Decimal)
1442 Card Read Punch	$$ARFF	435
3277 Display Station	$$CODM	23
5424 MFCU Read punch	$$MFRU	318
Read/print	$$MFRP	470
Read only	$$MFRD	250
Punch only	$$MFPU	119
Print only	$$MFPR	187
Print/punch	$$MFPP	297
Full function	$$MFFF	507
2501 Card Reader	$$ARRD	299
2560 MFCM Read/punch	$$MMRU	404
Read/print	$$MMRP	512
Read only	$$MMRD	267
Punch only	$$MMPU	186
Print only	$$MMPR	264
Print/punch	$$MMPP	377
Full function	$$MMFF	619
1403 Printer	$$LPRT	240
3284 Printer	$$LPMP	523
3741 Data Station/Programmable Work Station		
Input	$$CPIP	360
Output	$$CPOP	92

Figure B-8. Unit Record Data Management Main Storage Requirements

Device Independent Data Management

The device independent data management is different from the standard data management in that it allows a program to be compiled without defining the specific device that will be used for the input or output file(s). As a result, when the device independent data management is used, the program must be capable of supporting any of the available devices in the configuration; selection of devices is determined when the program is executed, rather than when it is compiled.

Calculating the Main Storage Requirement for Device Independent Data Management

Figure B-9 shows the estimated main storage requirements when the device independent data management is used. Storage requirements depend on the configuration of the system on which the program is link edited, rather than on the devices selected when the program is executed. For example, if your configuration includes magnetic tape and your program does not intend to specify a tape file, the device independent data management is included that supports tape.

As an example, assume that your configuration includes the following devices: 5444, 5445, 2560, 2501, and 1403. And assume that the following files are defined in your program:

One input file, using device independent data management
One output file, using device independent data management
One printer file, using standard data management

The main storage requirements for the data management are estimated as follows (I/O areas, buffers, DTFs and IOBs are not included):

Module Name	Bytes (Decimal)	
$$SRIA	65	
$$SRIB	239	
$$SRIS	272	
$$SRIW	231	
$$CSII	179	
$$CSIO	99	
$$SRIZ	155	
$$SRMO	164	
$$SRBP	59	
$$SRDF	28	
$$SFBP	118	
$$SFDF	+31	
	1640	Device independent data management
$$LPRT	+240	Printer data management (from Figure B-8)
	1880	Total data management requirement

	Module Name	Bytes (decimal)
Always required for input or output	$$SRIA	65
	$$SRIB	239
	$$SRIS	272
	$$SRIW	231
Required for input files	$$CSII	179
Required for output files	$$CSIO	99
Required for 5445	$$SRIZ	155
Required for 3410/3411	$$SRIT	251
Required for 2560 MFCM	$$SRIM	46
In addition, the following standard data management modules are included (common modules are not duplicated). If both device independent data management and standard data management are specified in the program, and if both require the same module, the module is used only once.		
Always required	$$SRMO	164
Required for 5444[1]	$$SRBP	59
Required for 5444[1] output files	$$SRDF	28
Required for 5445/3340	$$SFBP	118
Required for 5445/3340 output files	$$SFDF	31
[1] 5444 also includes 5444 simulation areas using 3340.		

Figure B-9. Device Independent Data Management Main Storage Requirements

The optional devices that affect the main storage requirements of the device independent data management are the 5445, 3410/3411, and the 2560 (see Figure B-9). On systems that do not support one of these devices, the device independent data management uses less storage.

If a program is link edited on one system and executed on another, both systems must be generated to support the same optional devices (5445, 3410/3411, or 2560). Alternatively, the following R-modules can be copied to the system on which the linkage editor is used:

Device	Module Names	
	Distribution Disk Cartridge	After System Generation
5445 disk storage	$5SFBP	$$SFBP
	$5SFDF	$$SFDF
	$5SRIZ	$$SRIZ
3410/3411 magnetic tape storage	$3SRIT	$$SRIT
2560 MFCM	S@SRIM	$$SRIM

SECONDARY (DISK) STORAGE ESTIMATING (5444)

Storage Requirements on the Distribution Disk Cartridge

Figure B-10 shows the estimated secondary storage requirements of the SCP and program product components on the distribution disk cartridge. The number of modules and sectors required for programs on the distribution pack is often greater than the number of modules and sectors required for the same programs on the generated system pack. This difference exists because many of the source library and object library modules that are present on the distribution pack are used only during the system generation process (such as the system generation program and sample programs). Therefore, these programs are not copied to the generated system pack.

For example, suppose you have received the SCP (5704-SC1) and RPG II (5704-RG1). You can calculate the secondary storage requirement of the distribution disk cartridge on the 5444 system as follows:

1. Using Figure B-10, determine the number of directory entries and sectors required for the source and object libraries.

	SCP	RPG II	Total
Object library directory entries	793	166	959
Object library sectors	4643	1266	5909
Source library directory entries	145	19	164
Source library sectors	1103	54	1157

2. Convert these totals to tracks for the object library. (The resulting quantities are rounded up to the next whole number.)

   Number of directory tracks:

   $$\frac{959 \text{ entries}}{288 \text{ entries/track}} = 4 \text{ tracks}$$
   (287 on the last track)

   Total tracks for object library and directory:

   $$\frac{5909 \text{ sectors}}{24 \text{ sectors/track}} + 4 \text{ tracks for directory} = 251 \text{ tracks}$$

3. Convert these totals to tracks for the source library. (The resulting quantities are rounded up to the next whole number.)

   Number of directory sectors (minimum of two sectors):

   $$\frac{164 \text{ entries}}{19 \text{ entries/sector}} = 9 \text{ sectors}$$

   Total sectors for source library and directory:

   1157 sectors/library + 9 sectors/directory = 1166 sectors

   Total tracks:

   $$\frac{1166 \text{ sectors}}{24 \text{ sectors/track}} = 49 \text{ tracks}$$

4. Find the total number of tracks required on the distribution disk cartridge by the programs you have ordered:

	Tracks
Object library and directory	251
Source library and directory	49
Scheduler work area (always required)	4
Cylinder zero (always reserved for system use)	2
System history area (always required)	2
	308

SECONDARY (DISK) STORAGE ESTIMATING (3340)

Storage Requirements on the Distribution Data Module

Figure B-10 shows the estimated secondary storage requirements of the SCP and program product components on the distribution data module. The number of modules and sectors required for programs on the distribution pack is often greater than the number of modules and sectors required for the same programs on the generated system pack. This difference exists because many of the source library and object library modules that are present on the distribution pack are used only during the system generation process (such as the system generation program and sample programs). Therefore, these programs are not copied to the generated system pack.

For example, suppose you have received the SCP (5704-SC1) and RPG II (5704-RG1). You can calculate the secondary storage requirement of the distribution data module on a 3340 system as follows:

1. Using Figure B-10, determine the number of directory entries and sectors required for the source and object libraries.

	SCP	RPG II	Total
Object library directory entries	758	166	924
Object library sectors	5010	1266	6276
Source library directory entries	143	19	162
Source library sectors	1109	54	1163

2. Convert these totals to tracks for the object library. (The resulting quantities are rounded up to the next whole number.)

   Number of directory tracks:

   $$\frac{924 \text{ entries}}{288 \text{ entries/track}} = 4 \text{ tracks}$$
   (287 on the last track)

   Total tracks for object library and directory:

   $$\frac{6276 \text{ sectors}}{24 \text{ sectors/track}} + 4 \text{ tracks for directory} = 266 \text{ tracks}$$

3. Convert these totals to tracks for the source library. (The resulting quantities are rounded up to the next whole number.)

   Number of directory sectors (minimum of two sectors):

   $$\frac{162 \text{ entries}}{19 \text{ entries/sector}} = 9 \text{ sectors}$$

   Total sectors for source library and directory:

   1163 sectors/library + 9 sectors/directory = 1172 sectors

   Total tracks:

   $$\frac{1172 \text{ sectors}}{24 \text{ sectors/track}} = 49 \text{ tracks}$$

4. Find the total number of tracks required on the distribution data module by the programs you have ordered:

	Tracks
Object library and directory	266
Source library and directory	49
Scheduler work area (always required)	4
Cylinder zero (always reserved for system use)	2
System history area (always required)	2
	323

Order and Feature Number	Program Component	Object Library		Source Library	
		Directory Entries	Sectors	Directory Entries	Sectors
System Control Programming and Features					
5704-SC1	Base SCP				
	5444	793	4643[1]	145	1103[2]
	3340	758	5010[1]	143	1109[2]
(6001/6002)	MRJE	30	333	—	—
5799-WFK	MLTA RPQ	42	118	22	207
Program Products and Features (5444/5445/3340)					
5704-RG1	Disk RPG II	166	1266	19	54
(6005/6006)	3270 Display Control Feature	24	133	13	23
5704-CB1	Subset ANS COBOL	64	703	6	17
5704-FO1	FORTRAN IV	253	962	14	48
5704-AS1	Basic Assembler	10	117	2	22
5704-SM1	Disk Sort	41	272	4	5
5704-SM2	Disk resident tape sort	31	240	1	1
5704-UT1	Disk resident card utilities	10	169	2	12
5799-ATH	CCP/Disk Sort	38	240	1	1

[1] Includes a 200-sector work space used by the system generation program.
[2] Includes a 50-sector work space used by the system generation program.

Figure B-10. Disk Storage Requirements of Program Components on the Distribution Disk Cartridge

Determining Library Requirements on Generated System Packs and Program Packs

This topic provides you with the information you need to estimate the disk space requirements of generated SCP programs and program products, and provides the COPY statement and DELETE statement parameters you will need to transfer your programs from one pack to another or delete them from a pack.

You may need this information for several reasons. Perhaps you need to know the disk storage requirements of SCP programs and program products so that you can determine the adequacy of the library allocations during system generation and modify those allocations if necessary. You might need to determine library size requirements on separate system packs you are creating or on program packs you are building for certain program products.

Perhaps you want to calculate the amount of file space available on a pack that contains one or more of your system programs.

Figure B-11 through B-13 list the library space requirements and the COPY/DELETE parameters for selected SCP programs and data management modules and for all program products. The library space requirements reflect the latest estimates for these programs.

Program	COPY/DELETE Parameters		Object Library		Source Library	
	LIBRARY-	NAME-	Directory Entries	Sectors	Directory Entries	Sectors
5704-SC1 Base SCP						
5444			666	3844	77	706
3340			621	4159	77	706
System Generation: Always Included						
5444			156	1010	—	—
3340			139	917	—	—
System Generation: Options						
MFCU or MFCM			1	3	—	—
MFCU			3	13	—	—
MFCM			3	14	—	—
1442 or 2501			1	3	—	—
1442			2	9	—	—
2501			2	7	—	—
3284			1	6	—	—
5445			37	266	—	—
3340			35	259	—	—
3410/3411			17	114	—	—
3741			4	9	—	—
BSCA			13	69	—	—
Display adapter			1	18	—	—
Memory resident overlays			1	5	—	—
Rollout/rollin			5	30	—	—
Checkpoint/restart			5	45	—	—
Base and print spool			17	77	—	—
Common read spool			4	15	—	—
Reader MFCU spool			1	8	—	—
Reader MFCM spool			1	7	—	—
Reader 1442 spool			1	7	—	—
Reader 2501 spool			1	7	—	—

Figure B-11 (Part 1 of 5). SCP Programs Library Requirements and COPY/DELETE Parameters

Program	COPY/DELETE Parameters		Object Library		Source Library	
	LIBRARY-	NAME-	Directory Entries	Sectors	Directory Entries	Sectors
Reader 3741 spool			1	7	–	–
Common punch spool			1	3	–	–
Punch MFCU spool			1	8	–	–
Punch MFCM spool			1	10	–	–
Punch 1442 spool			1	6	–	–
Trace routine	O	$TRACE	2	25	–	–
MLMP			11	58	–	–
Macro processor	O	$MPX.ALL	5	71	–	–
Total macros			–	–	64	539
MLMP macros			–	–	13	167
Other SCP						
Alternate track assignment:						
5444	O	$AL.ALL	6	43	–	–
3340	O	$AL.ALL	3	39	–	–
Add for alternate track assignment:						
5445	O		6	33	–	–
3340	O		2	10	–	–
Alternate track rebuild	O	$BU.ALL	3	20	–	–
Add for alternate track rebuild: 5445 or 3340	O		1	3	–	–
Reassign alternate track (3340)	O	$RSALT	1	19	–	–
CE diagnostics (3340)	O	SCE.ALL	29	538	–	–
Copy/dump[1]	O	$CO.ALL $CO.ALL	14	100	–	–
Add for copy disk 5445	O		2	20	–	–

Figure B-11 (Part 2 of 5). SCP Programs Library Requirements and COPY/DELETE Parameters

Program	COPY/DELETE Parameters		Object Library		Source Library	
	LIBRARY-	NAME-	Directory Entries	Sectors	Directory Entries	Sectors
Simulation area program (3340)	O	SSC.ALL	6	40	–	–
File compress (3340)	O	$FC.ALL	3	53	–	–
File delete	O	$DE.ALL	4	37	–	–
Add for file delete 5445 or 3340	O		1	17	–	–
Initialize disk 5444	O	$IN.ALL	5	53	–	–
3340	O	$IN.ALL	4	56	–	–
Add for initialize disk 5445	O		4	25	–	–
3340	O		1	4	–	–
Chain cleaning program	O	$KL.ALL	1	5	–	–
File and volume label display	O	$LA.ALL	3	35	–	–
Add for file and volume label display 5445	O		4	63	–	–
3340	O		3	45	–	–
Linkage editor	O	$OL.ALL	16	184	–	–
Library maintenance	O	$MA.ALL	37	240	–	–
Library entry retrieval	R	SUBR15	1	13	–	–
Recover index	O	$RINDX	1	43	–	–
Data interchange (5444 only)	O	$VT.ALL	3	27	–	–
1000 file VTOC conversion 5444	O	$WV.ALL	5	37	–	–
3340	O	$WV.ALL	4	33	–	–
Magnetic tape error summary	O	$TVES	1	11	–	–
Initialize tape	O	$TINIT	1	25	–	–
Dump/restore 5444	O	$DCOP.ALL	7	90	–	–
3340	O	$DCOP.ALL	9	104	–	–

[1] If copy/dump is to be included with the minimum system, the complete R-Library must be copied.

Figure B-11 (Part 3 of 5). SCP Programs Library Requirements and COPY/DELETE Parameters

Program	COPY/DELETE Parameters		Object Library		Source Library	
	LIBRARY-	NAME-	Directory Entries	Sectors	Directory Entries	Sectors
System history display	O	$HIST	1	35	–	–
Dump tape and disk	O	$DUM.ALL	3	38	–	–
MLTA RPQ			42	118	22	207
CCP support modules			3	20	–	–
Data Management and Subroutines						
(*Note:* The module names for disk, tape, and unit record devices are given in Figures B-2 through B-5 and B-8.)						
1403 data management			2	4	–	–
3284 data management			2	6	–	–
5424 MFCU data management			7	16	–	–
2560 MFCM data management			8	20	–	–
1442 data management			1	3	–	–
2501 data management			1	2	–	–
3277 data management			1	1	–	–
3741 data management			2	4	–	–
BSCA data management			12	103	–	–
MLMP data management			8	42	–	–
3881 data management			1	4	–	–
1255 data management			4	42	–	–
1255/1419 data management			3	7	–	–
1419 data management			3	32	–	–
5444 data management						
Consecutive on 5444			9	15	–	–
Consecutive on 3340			6	11	–	–

Figure B-11 (Part 4 of 5). SCP Programs Library Requirements and COPY/DELETE Parameters

Program	COPY/DELETE Parameters		Object Library		Source Library	
	LIBRARY-	NAME-	Directory Entries	Sectors	Directory Entries	Sectors
Direct on 5444			12	27	–	–
Direct on 3340			8	18	–	–
Indexed output on 5444			4	10	–	–
Indexed random on 5444			8	30	–	–
Indexed sequential on 5444			16	40	–	–
File share on 5444			1	2	–	–
Subroutines on 5444			32	53	–	–
Subroutines on 3340			18	26	–	–
5445 or 3340 data management						
Consecutive			7	12	–	–
Direct			8	17	–	–
Indexed output			4	11	–	–
Indexed random			8	31	–	–
Indexed sequential			16	41	–	–
Subroutines on 5445			27	52	–	–
Subroutines on 3340			26	51	–	–
File share on 5445			1	2	–	–
File share on 3340			1	1	–	–
3410/3411 data management			8	21	–	–
Subroutines			14	28	–	–
Basic access method						
Tape data management single volume			1	3	–	–
Tape data management multivolume			1	3	–	–
Pseudo tape data management						
5444			1	2	–	–
5445 or 3340			1	2	–	–

Figure B-11 (Part 5 of 5). SCP Programs Library Requirements and COPY/DELETE Parameters

Program	COPY/DELETE Parameters		Object Library		Source Library	
	LIBRARY-	NAME-	Directory Entries	Sectors	Directory Entries	Sectors
Customer Engineer Support Programs[1]	O	$SGFIX	1	15	–	–
	O	$SGPTF	1	17	–	–
	O	$SGPTR	1	18	–	–
	O	$SGPVR	1	15	–	–
	O	$SGLOG	1	6	–	–
	P	$SGPTR	–	–	1	1
	P	$SGPVR	–	–	1	1
	P	$SGPT2	–	–	1	1

[1] After system generation, the customer engineer support programs and procedures can be copied from the distribution pack or data module to the generated pack or data module simulation area using the $MAINT system service program. Program temporary fix (PTF) procedures that call the customer engineer support program modules expect to find these modules on R1. If the customer engineer support programs are copied to F1, a procedure override LOAD statement specifying F1 must be supplied for each CALL statement, and the CALL or LOAD statement included with the PTF must be changed to F1. Some PTFs require that a new supervisor be link-edited after the PTF is applied. Link editing a new supervisor requires that the distribution SCP programs reside on R1.

Figure B-12. Customer Engineer Support Programs Library Requirements and COPY/DELETE Parameters

Program	COPY/DELETE Parameters		Object Library		Source Library	
	LIBRARY-	NAME-	Directory Entries	Sectors	Directory Entries	Sectors
5704-RG1 RPG II[1,2]			166	1266	–	–
RPG II Options						
Base RPG II	O	$RP.ALL[4]	139	1067	–	–
	R	SUBR.ALL	–	–	–	–
	R	$$PG.ALL[4]	–	–	–	–
	P	RPG	–	–	1	1
RPG II BSCA	O/R		10	35	–	–
Auto report	O	$AU.ALL	17	164	–	–
	P	AUTO	–	–	1	1
3270 Display Control Feature	O/R	$$DU.ALL	21	76	–	–
	R	SUBR13	1	33	–	–
	R	SUBR14	1	23	–	–
	R	SUBR93	1	1	–	–
	P	DSPY	–	–	1	1
	P	NODSPY	–	–	1	1
	P	DBUG	–	–	1	1
	P	NODBUG	–	–	1	1
	P	TRC	–	–	1	1
	P	NOTRC	–	–	1	1
	P	RAF	–	–	1	1
	P	NORAF	–	–	1	1
	P	RES	–	–	1	1
	P	NORES	–	–	1	2
	S	INSVER	–	–	1	8
5704-CB1 Subset ANS COBOL[1,2]	O	$CB.ALL	64	703	–	–
	R	$CB.ALL	–	–	–	–
	R	CFTOD[5]	–	–	–	–
	P	COBOL	–	–	1	1
5704-FO1 FORTRAN IV[1,2,6]	O	$FO.ALL	253	962	–	–
	R	$FO.ALL[3]	–	–	–	–
	P	FORTRN	–	–	1	1
	P	FORTG	–	–	1	1
	P	FORTL	–	–	1	1
5704-AS1 Basic Assembler[1]	O	$AS.ALL	10	117	–	–
5704-SM1 Disk Sort	O	$DS.ALL	40	261	–	–
5799-ATH CCP/Disk Sort	O	$DG.ALL	38	240	–	–
5704-SM2 Tape Sort	O	$TS.ALL	31	240	–	–

Figure B-13 (Part 1 of 2). Program Products Library Requirements and COPY/DELETE Parameters

Program	COPY/DELETE Parameters		Object Library		Source Library	
	LIBRARY-	NAME-	Directory Entries	Sectors	Directory Entries	Sectors
5704-UT1 Card Utilities			10	169	–	–
Sort	O	$CS.ALL	6	90	–	–
Reproduce	O	$REPRO	1	23	–	–
List	O	$CLIST	1	10	–	–
Gangpunch	O	$GANGP $GPEXC	2	46	–	–

[1] To copy 5704-FO1, 5704-CB1, 5704-RG1, and 5704-AS1, also copy the overlay editor ($OL.ALL). To delete 5704-FO1 or 5704-CB1, delete only the program products.

[2] To copy 5704-FO1, 5704-CB1, and 5704-RG1, also copy all the required data management modules. (See previous figures for the data management module names.)

[3] The library names of the individual module names are:

ADD	DECA1	DUNPK	120R4	PRINT	SET0	SQRT
ALOG	DEXP	DVCHK	KEYBD	PUNCH	SET1	STACK
ALOG10	DIV	EDIT	LCOMP	PUT	SHIFT	STAK42
ATAN	DLOG	EXIT	MOVE	P1403	SHIFTR	STAK60
A1DEC	DLOG10	EXP	MPY	P2560	SIN	SUB
BUG	DMOD	FCTST	NCOMP	P3284	SKIP	S1403
COS	DPACK	FILL	NSIGN	READ	SLITE	S3284
CFTOD[5]	DSIN	GET	NZONE	READ42	SLITET	TANH
DATAN	DSQRT	IBTST	OVERFL	R2501	SPACE	TYPER
DATSW	DTANH	ICOMP	P1442	R2560	SP1403	UNPAC
DCOS	DUMP	INQCHK	PACK	SETINQ	SP3284	WHOLE
			PDUMP			

[4] Includes the BSCA feature, if present.

[5] This module is used by both COBOL (5704-CB1) and FORTRAN (5704-FO1).

[6] For multivolume tape support for FORTRAN after SCP generation, use $MAINT to delete $BTAM and rename $$BTMM to $$BTAM. $$BTAM and $$BTMM are functionally identical except $$BTMM contains multivolume tape support. If multivolume tape support is not required, $$BTMM may be deleted from the R-library.

Figure B-13 (Part 2 of 2). Program Products Library Requirements and COPY/DELETE Parameters

Determining Library Allocations

The following example uses Figures B-11 through B-13 to estimate a library allocation. Suppose you wish to generate the Base SCP (5704-SC1), RPG II, and Disk Sort. Assume that you have the following devices: MFCU, 1403 printer, and 5444 disk; you want no other SCP or program product options. You can calculate library requirements for these programs as follows:

1. Determine the number of directory entries and sectors required for the source and object libraries.

SCP Requirements	Object Library		Source Library	
	Directory Entries	Sectors	Directory Entries	Sectors
SCP (from Figure B-11)				
Minimum SCP				
Always included	156	1003	—	—
Options				
MFCU or MFCM	1	3	—	—
MFCU	3	13	—	—
Other SCP				
$ALT	6	43	—	—
$BUILD	3	20	—	—
$COPY	14	100	—	—
$DELET	4	37	—	—
$INIT	5	53	—	—
$LABEL	3	35	—	—
$OLINK	16	184	—	—
$MAINT	37	240	—	—
$VTOC	3	27	—	—
$WVTOC	5	37	—	—
$DUM	3	38	—	—
Disk data management and sub-routines				
5444 disk	82	177	—	—
Other data management and sub-routines				
1403 printer	2	4	—	—
MFCU	7	16	—	—
3277 display station	1	1	—	—
Total SCP	351	2031	—	—
Program Products (from Figure B-13)				
Base RPG II	139	1067	1	1
Disk sort	40	261	—	—
Total Program Products	179	1328	1	1
Total SCP and Program Products	530	3359	1	1

2. Convert these totals (to be used as the prompt response) for the object library. (The resulting quantities are rounded up to the next whole number.)

   Number of directory tracks (DIRSZ prompt):

   $$\frac{530 \text{ entries}}{288 \text{ entries/track}} = 2 \text{ tracks}$$

   (287 on the last track)

   Total tracks for object library and directory (OLIBR prompt):

   $$\frac{3359 \text{ sectors}}{24 \text{ sectors/track}} + 2 \text{ tracks for directory} = 142 \text{ tracks}$$

3. Convert these totals to tracks (SLIBR prompt). (The resulting quantities are rounded up to the next whole number.)

   Number of directory sectors (minimum of two sectors):

   $$\frac{1 \text{ entry}}{19 \text{ entries/sector}} = 1 \text{ sector (must use the 2-sector minimum, in this case)}$$

   Total sectors for source library and directory:

   2 sectors/directory
   1 sector/library
   3 total sectors

   Total tracks:

   $$\frac{3 \text{ sectors}}{24 \text{ sectors/track}} = 1 \text{ track}$$

In order to add user programs and provide adequate library space on the system pack for the maintenance of these programs, you should increase these allocations beyond those necessary to complete system generation.

Note: If the total number of tracks required for your system plus program products is in excess of your disk capacity, you must generate two system packs.

In addition to library allocations, space must be allocated for the system history area and additional scheduler work area if rollout/rollin or checkpoint/restart is chosen. You are allowed 392 tracks for allocation. The total allocated for libraries, system history area, and additional scheduler work area must be less than or equal to 392 tracks.

Main Storage	Scheduler Work Area Sizes in Tracks	
	Without Rollout/ Rollin or Checkpoint/Restart	**With Rollout/ Rollin and/or Checkpoint/ Restart**
48K	4	12
64K or greater	4	15

Appendix C. Storage Estimates (5704-SC2)

This appendix contains estimates for IBM System/3 Model 15 system control programs (SCP), SCP options, program products, and program product options. These estimates will aid you during preinstallation planning in determining system configuration requirements and in planning for efficient use of main storage and secondary storage.

The following estimates are included:

- Main storage requirements of the supervisor and data management routines for all system configurations.
- Secondary (disk) storage requirements for individual SCP components and options, program products and options, and IBM reserved areas.
- CCP storage estimates can be found in the *CCP System Reference.*

Refer to the *Preface* for the actual release level reflected in these estimates.

MAIN STORAGE ESTIMATES

The following tables are intended to assist you in estimating the main storage requirements of the Model 15 supervisor and of the various data management modules. With this knowledge, you can estimate the amount of main storage available to your other system programs, application programs, and program products.

Supervisor Size Estimates

The size of the supervisor generated for your system depends on the options you select during system generation. Figure C-1 shows the options that affect supervisor size and also shows the system generation response to exclude the optional support. By excluding all optional support, a minimum supervisor is generated.

Use the indicated options to build the minimum supervisor. When you select an alternate for any of these options, you may increase the size of the supervisor. The size of the supervisor generated is printed for you during system generation.

If you have an application that will not fit into main storage with a large supervisor, you might want to generate an additional supervisor especially for this application. For the prompts mentioned earlier, select only those options required by the application. This would give you the smallest supervisor capable of supporting this application. However, do not select options to support devices that you do not have.

Figure C-1 can be used to determine the main storage requirements of the System/3 Model 15 supervisor for all system configurations.

Calculate the main storage requirements of the supervisor as follows:	Supervisor Requirements	Prompts and the Options for No Support
1. To the base size of the supervisor (always included)	21.07K	
2. If you have MFCM card support, add	0.69K	CARD-K
3. If you have MFCU card support, add	0.65K	CARD-K
4. If you have 1442 card support, add	0.25K	CARD-K
5. If you have 2501 card support, add	0.21K	CARD-K
6. If you have 3410/3411 magnetic tape support, add	1.16K	TAPES-A
7. If you have directly attached 3741, add	0.50K	DSK41-A
8. If you have BSCA/BSCC/MLTA/SIOC and main storage size is 256K or less, add 384K or 512K, add Add for BSCA Add for BSCC Add for MLTA Add for SIOC	 1.16K 1.26K 0.18K 0.35K 0.09K 0.41K	 LINEB-A, LINEC-A, MLTAS-A SIOCS-A LINEB-A, LINEC-A, MLTAS-A, SIOCS-A LINEB-A LINEC-A MLTAS-A SIOCS-A
9. If you have I/O storage protect support, add	0.49K	IOPRT-A
10. If you have unit record/extended restart, add	0.25K	READY-A
11. If you have second 1403 printer support, add	2.02K	PRNTR-A
12. If you have the 3284 printer, add	0.50K	MATRIX-A
13. If you have the interval timer, Time of day support, add Full time support, add *Note:* The time of day and full timer support are mutually exclusive.	 0.47K 2.00K	TIMER-A
14. If you have memory resident overlay support, add	0.50K	MEMRO-A
15. If you have spooling support, add the value from Table 3 that corresponds to your level of spooling support.	(value from table 1)	PARTN-A
16. If you have CCP support, add the value from Table 4 that corresponds to your number of user tasks.	(value from table 2)	CCPUT-A

Figure C-1 (Part 1 of 2). Determining Supervisor Main Storage Requirements (5704-SC2)

Calculate the main storage requirements of the supervisor as follows:		Supervisor Requirements	Prompts and the Options for No Support
17.	Total size of supervisor (round up to the next multiple of 2K bytes) =	(total of values for your configuration)	
18. File share area (always required) If additional file share area, add Total file share area size		2.00K X.XXK X.XXK	
19. To determine total main storage requirement: Add total size of supervisor Add total file share area size Total main storage requirement for system		 X.XXK X.XXK X.XXK	

Figure C-1 (Part 2 of 2). Determining Supervisor Main Storage Requirements (5704-SC2)

Calculate the maximum program size for greater than 48K programs as follows:

1.	Base size of the supervisor (always included)	7.86K
2.	If you have directly attached 3741, add	0.02K
3.	If you have the 3284 printer add	0.03K
4.	If you have 3410/3411 magnetic tape support, add	0.09K
5.	If you have any spool support, add	0.38K
	If partition 1 is spooled, add	0.18K
	If partition 2 is spooled, add	0.18K
	If partition 3 is spooled, add	0.18K
6.	If you have CCP support, add the value from Table 4 that corresponds to the number of user tasks	(value from table 2)
	Total size of supervisor for translated storage (round up to next multiple of 2K bytes)	(total of values for your configuration)
7.	Subtract this rounded total from 64K	Maximum program size allowable on this system.

Figure C-2. Determining the Maximum Program Size for Programs Greater than 48K Bytes

		Level of Spooling Support																			
		Print	Print/Punch			Input/Print					Input/Print/Punch										
Printer	1403	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Punch Device	MFCU		X								X	X	X	X							
	MFCM			X											X	X	X				
	1442				X													X	X	X	X
Input Device	MFCU					X					X							X			
	MFCM						X								X						
	1442							X				X							X		
	2501								X				X			X				X	
	3741									X				X			X				X
One Partition Storage (K bytes)		7.11	11.01	11.79	10.41	10.91	10.95	10.41	10.44	10.90	12.81	12.81	12.84	12.81	13.63	13.62	13.59	12.71	12.21	12.24	12.71
Two Partitions Storage (K bytes)		8.43	13.46	14.25	12.86	13.36	13.40	12.85	12.88	13.35	16.39	16.38	16.41	16.38	17.21	17.20	17.16	16.29	15.78	15.81	16.28
Three Partitions Storage (K bytes)		9.75	15.91	16.70	15.31	15.80	15.84	15.30	15.33	15.79	19.96	19.95	19.99	19.85	20.79	20.77	20.74	19.86	19.35	19.38	19.85

Table 3. Spooling Support Estimated Main Storage Requirements (5704-SC2)

Supervisor Requirements	
Number of User Tasks	3340/3344 Systems
1	1.91K
2	2.21K
3	2.51K
4	2.82K
5	3.37K
6	3.67K
7	3.98K
8	4.28K
9	4.58K
10	5.13K
11	5.44K
12	5.74K
13	6.04K
14	6.34K
15	6.65K

Table 4. CCP Support Estimated Supervisor Requirements (5704-SC1)

Data Management Estimates

Data management includes the SCP modules that allow a program that is processing a data file to organize, locate, write, read, and maintain the records in the file. The data management modules discussed in this section are relocatable object modules (R modules in the object library). The modules required by a particular program are selected by the compiler and are link edited with the user program after compilation to form a complete object program.

The main storage requirements of the data management for a particular program can be estimated using the examples and tables in this section. The storage requirements can vary greatly depending on the types of devices and files being used by the program. The data management storage estimates do not include the storage required for input/output areas, buffers, DTFs (define the file areas), or IOBs (input/output blocks).

Calculating the Main Storage Requirements for Data Management

Figures C-3 through C-7 show the estimated main storage requirements of the data management modules for the 3340/3344, 3410/3411 magnetic tape units, and the unit record devices. Main routine bytes and total bytes for each access method are given, along with the module name. The data management subroutines are listed to the right of the module names along with their size in bytes.

The number of bytes of main storage required for disk data management depends on the type of files you are processing and how you are processing them. For example, if your program processes two sequential disk files (single volume), one as a consecutive input file and the other as a consecutive output file, you require the following access methods:

Consecutive Input – $$CSIP
Consecutive Output – $$CSOP

Main Data Area Access Methods (MVF=multivolume file)	Main Routines (bytes)	Complete Access Method (bytes)	Module Name ($$---)	Subroutines – Name ($$---) and Size in Bytes																										
				SFLM (249)	SFBI (290)	SFBP (106)	SFBR (132)	SFCB (76)	SFCL (91)	SFCM (153)	SFDA (232)	SFDF (31)	SFIC (337)	SFIU (88)	SRLP (25)	SFMI (51)	SFMO (164)	SFPD (179)	SFRC (211)	SFRI (86)	SFSB (100)	SFSC (381)	SFSI (264)	SFSM (142)	SFSO (459)	SRTC (28)	SFTS (762)	SFUA (38)	SFLT (287)	SFRB (132)	SFFS (480)
Consecutive																														
Output	56	834	CFOP			X	X				X					X	X			X					X		X			
Output – MVF	73	876	CFOM			X	X				X			X		X	X			X					X		X			
Input	39	786	CFIP			X	X									X	X			X					X		X			
Input – MVF	50	822	CFIM			X	X							X		X	X			X					X		X			
Update	232	747	CFUP			X										X	X								X		X			
Update – MVF	217	757	CFUM			X								X		X	X								X		X			
Direct																														
Binary Input[1]	64	906	DFIB			X					X						X	X	X						X					
Binary input – MVF[1]	171	1013	DFIT			X					X						X	X	X						X					
Decimal input	91	1009	DFID			X		X			X						X	X	X						X					
Decimal input – MVF	196	1114	DFIM			X		X			X						X	X	X						X					
Binary – input/output[1]	132	868	DFIO								X						X	X	X						X					
Binary update[1]	140	1146	DFUB			X					X					X	X	X	X						X					
Binary update – MVF[1]	261	1267	DFUT			X					X					X	X	X	X						X					
Binary – double buffer[1]	412	1147	DFDB			X					X						X		X									X		
Decimal update	166	1248	DFUD			X		X			X					X	X	X	X						X					
Decimal update – MVF	286	1368	DFUM			X		X			X					X	X	X	X						X					
Indexed																														
Output	95	1163	IFUT		X	X	X				X					X	X			X					X		X			
Output – MVF	140	1233	IFUM		X	X	X				X			X		X	X			X					X		X			
Output add	267	2829	IFAD		X	X					X					X	X				X	X	X	X	X		X			X
Output add – MVF	511	3860	IFAM		X	X					X			X		X	X				X	X	X	X	X	X	X			X
Indexed Random																														
Input	279	1676	IGIP			X											X	X	X		X	X	X		X					
Input – MVF	316	2500	IGIM			X								X			X	X	X		X	X	X		X	X				
Update	166	1815	IGUP			X							X			X	X	X	X		X	X	X		X					
Update – MVF	403	2839	IGUM			X							X	X		X	X	X	X		X	X	X		X	X				
Input add	469	3328	IGAD		X	X					X					X	X	X	X		X	X	X	X	X		X			X
Input add – MVF	732	4378	IGAM		X	X					X			X		X	X	X	X		X	X	X	X	X	X	X			X
Update add	674	3621	IGUA		X	X					X		X			X	X	X	X		X	X	X	X	X		X			X
Update add – MVF	940	4674	IGBM		X	X					X		X	X		X	X	X	X		X	X	X	X	X	X	X			X
Indexed Sequential																														
Input	79	1422	IHIP			X	X					X				X	X	X	X	X					X					
Input – MVF	97	1465	IHIM			X	X					X		X		X	X	X	X	X					X					
Input – Limits	109	1726	IHIL	X		X	X					X		X		X	X	X	X	X					X					
Input – limits – MVF	130	1525	IHIB			X						X		X		X	X	X	X								X			
Update	153	1352	IHUP			X						X	X			X	X	X	X						X					
Update – MVF	171	1395	IHUM			X						X	X	X		X	X	X	X						X					
Update – limits	183	1656	IHUL	X		X						X	X	X		X	X	X	X						X					
Update – limits – MVF	204	1687	IHUB			X						X	X	X		X	X	X	X								X			
Input add	351	1963	IHAD		X	X			X		X	X			X	X	X	X	X						X		X			
Input add – MVF	385	2084	IHAM		X	X				X	X	X		X	X	X	X	X	X						X		X			
Update add	687	2387	IHUA		X	X			X		X	X	X		X	X	X	X	X						X		X			
Update add – MVF	718	2505	IHBM		X	X				X	X	X	X	X	X	X	X	X	X						X		X			
Input – variable limits	134	1751	IHIC	X		X	X					X		X		X	X	X	X	X					X					
Input – variable limits – MVF	155	1550	IHID			X						X		X		X	X	X	X									X		
Update – variable limits	208	1681	IHUC	X		X						X	X	X		X	X	X	X						X					
Update – variable limits – MVF	229	1712	IHUD			X						X	X	X		X	X	X	X									X		
Pseudo tape	547	547	PTA5																											

[1] The direct binary access methods use a disk ADDROUT file to process another disk file. See *IBM System/3 Disk Sort Reference Manual*, SC21-7522 for a description of ADDROUT files.

Figure C-3. 3340/3344 Disk Data Management Estimated Main Storage Requirements

Main Data Area Access Methods (MVF=multivolume file)	Main Routines (bytes)	Complete Access Methods (bytes)	Module Name (SS--)	Subroutines Name (SS--) and Size in Bytes: EFLM (285)	EFBI (305)	SFBP (106)	EFBR (159)	SFCB (76)	SFCL (91)	SFCM (153)	SFDA (232)	SFDF (31)	EFIC (381)	EFIU (118)	SRLP (25)	SFMI (51)	EFMO (297)	SFPD (179)	SFRC (211)	SFRI (86)	SFSB (100)	EFSC (431)	EFSI (331)	SFSM (142)	EFSO (491)	SRTC (28)	EFTS (768)	SFUA (38)	EFLT (364)	SFRB (132)	EFFS (480)	EFAT (166)	EFRI (122)	EFRC (247)
Consecutive																																	
Output	56	1160	WFOP			X	X				X						X	X			X				X	X					X		
Output – MVF	73	1202	WFOM			X	X				X						X	X			X				X	X					X		
Input	39	1112	WFIP			X	X										X	X			X				X	X					X		
Input – MVF	50	1148	WFIM			X	X								X		X	X			X				X	X					X		
Update	225	1039	WFUP			X											X	X							X	X					X		
Update – MVF	233	1072	WFUM			X									X		X	X							X	X					X		
Direct																																	
Binary input	84	1389	YFIB			X				X							X	X	X	X					X						X		
Binary input – MVF[1]	191	1496	YFIT			X				X							X	X	X	X					X						X		
Decimal input	111	1492	YFID			X	X			X							X	X	X	X					X						X		
Decimal input – MVF	216	1597	YFIM			X	X			X							X	X	X	X					X						X		
Binary update	180	1485	YFUB			X				X							X	X	X	X					X						X		
Binary update – MVF[1]	301	1606	YFUT			X				X							X	X	X	X					X						X		
Binary – double buffer[1]	412	1610	YFDB			X				X							X	X		X									X		X		
Decimal update	206	1587	YFUD			X	X			X							X	X	X	X					X						X		
Decimal update – MVF	326	1707	YFUM			X	X			X							X	X	X	X					X						X		
Indexed																																	
Output	129	1538	XFOT		X	X	X				X						X	X			X				X	X					X		
Output – MVF	180	1614	XFOM		X	X	X				X				X		X	X			X				X	X					X		
Output add	265	3290	XFAD		X	X					X						X	X				X	X	X	X	X				X	X		
Output add – MVF	359	4177	XFAM		X	X					X				X		X	X				X	X	X	X	X	X	X		X	X		
Indexed Random																																	
Input	137	2186	XGIP			X											X	X			X	X	X		X						X	X	X
Input – MVF	174	3016	XGIM			X									X		X	X			X	X	X		X	X					X	X	X
Update	159	2326	XGUP			X								X			X	X			X	X	X		X						X	X	X
Update – MVF	246	3206	XGUM			X								X	X		X	X			X	X	X		X	X					X	X	X
Input add	468	3862	XGAD		X	X					X						X	X			X	X	X	X	X		X			X	X	X	X
Input add – MVF	731	4918	XGAM		X	X					X				X		X	X			X	X	X	X	X	X	X			X	X	X	X
Update add	673	4185	XGUA		X	X					X			X			X	X			X	X	X	X	X		X			X	X	X	X
Update add – MVF	789	5094	XGBM		X	X					X			X	X		X	X			X	X	X	X	X	X	X			X	X	X	X
Indexed Sequential																																	
Input	79	1864	XHIP			X	X						X				X	X			X				X							X	X	X
Input – MVF	97	1907	XHIM			X	X						X		X		X	X			X				X							X	X	X
Input – Limits	109	2098	XHIL	X			X						X		X		X	X			X				X							X	X	X
Input – limits – MVF	130	2017	XHIB			X							X		X		X	X										X				X	X	X
Update	153	1797	XHUP			X							X	X			X	X							X							X	X	X
Update – MVF	171	1840	XHUM			X							X	X	X		X	X							X							X	X	X
Update – limits	183	2137	XHUL	X		X							X	X	X		X	X							X							X	X	X
Update – limits – MVF	204	2209	XHUB			X							X	X	X		X	X										X				X	X	X
Input add	353	2513	XHAD		X	X		X			X	X	X			X	X	X							X		X					X	X	X
Input add – MVF	385	2514	XHAM		X	X			X		X	X			X	X	X	X							X		X					X	X	X
Update add	687	2847	XHUA		X	X		X			X	X	X			X	X	X							X		X					X	X	X
Update add – MVF	718	2965	XHBM		X	X			X		X	X	X	X	X	X	X	X							X		X					X	X	X
Input – variable limits	134	2229	XHIC	X		X	X						X		X		X	X			X				X							X	X	X
Input – variable limits – MVF	155	2042	XHID			X							X		X		X	X										X				X	X	X
Update – variable limits	208	2162	XHUC	X		X							X	X	X		X	X							X							X	X	X
Update – variable limits – MVF	229	2234	XHUD			X							X	X	X		X	X										X				X	X	X

[1] The direct binary access methods use a disk ADDROUT file to process another disk file. See *IBM System/3 Disk Sort Reference Manual*, SC21-7522, for a description of ADDROUT files.

Figure C-4. Main Data Area Disk Data Management Estimated Main Storage Requirements (External Buffers)

Simulation Area Access Methods	Main Routine (bytes)	Complete Access Method (bytes)	Module Name ($$----)	Subroutines – Name ($$----) and Size in Bytes												
				SRBP (59)	SRBR (130)	SRCB (76)	SRDA (153)	SRDF (28)	SRDI (149)	SRMO (164)	SRRC (202)	SRRI (70)	SRSB (93)	SRTC (28)	SRUA (38)	SRRB (106)
Consecutive																
Output	56	745	CSOP	X	X			X	X	X			X	X	X	
Input	39	700	CSIP	X	X				X	X			X	X	X	
Update	205	643	CSUP	X					X	X				X	X	
Direct																
Binary input[1]	64	725	DAIB	X			X		X		X	X		X		
Decimal input	91	828	DAID	X		X	X		X		X	X		X		
Binary – Input/output[1]	129	731	DAIO				X		X		X	X		X		
Binary update[1]	140	965	DAUB	X			X		X	X	X	X		X		
Binary – double buffer[1]	412	1219	DADB	X		X	X		X	X		X		X		X
Decimal update	167	1068	DAUD	X		X	X		X	X	X	X		X		
Pseudo Tape	525	525	PTAM													

[1] The direct binary access methods use a disk ADDROUT file to process another disk file.

See *IBM System/3 Disk Sort Reference Manual*, SC21-7522, for a description of ADDROUT files.

Figure C-5. Simulation Area Disk Data Management Estimated Main Storage Requirements

Simulation Area Access Methods (External Buffers)	Main Routine (bytes)	Complete Access Method (bytes)	Module Name ($$----)	Subroutines – Name ($$----) and Size in Bytes																								
				SRLM (256)	SRBI (274)	SRBP (59)	ERBR (157)	SRCB (76)	SRCL (91)	SRCM (153)	SRDA (153)	SRDF (28)	SRDI (149)	SRIC (211)	SRIU (79)	SRLP (25)	SRMI (51)	EFMO (297)	SRRC (202)	SRRI (70)	SRSB (93)	SRSC (224)	SRSI (146)	SRSM (96)	SRSO (213)	SRTC (28)	SRTS (551)	SRUA (38)	SRLT (372)	SRRB (108)	EFAT (166)
Consecutive																														
Output	56	1071	WSOP			X	X					X	X					X			X				X		X			X
Input	39	1026	WSIP			X	X						X					X			X				X		X			X
Update	225	962	WSUP			X							X					X							X		X			X
Direct																														
Binary[1]	84	911	YAIB			X					X		X						X	X					X					X
Decimal input	111	1014	YAID			X		X			X		X						X	X					X					X
Binary update[1]	180	1304	YAUB			X					X		X					X	X	X					X					X
Binary – double buffer[1]	412	1518	YADB			X		X			X		X					X		X					X				X	X
Decimal update	207	1407	YAUD			X		X			X		X					X	X	X					X					X

[1] The direct binary access methods use a disk ADDROUT file to process another disk file.

See *IBM System/3 Disk Sort Reference Manual*, SC21-7522, for a description of ADDROUT files.

Figure C-6. Simulation Area Disk Data Management Estimated Main Storage Requirements (External Buffers)

Tape Access Methods	Main Routine (bytes)	Complete Access Method (bytes)	Module Name (SS----)	Subroutines – Name (SS----) and Size in Bytes																	
				TSAB (205)	TSOS (414)	TSBA (318)	TSBS (88)	TSCA (254)	TSCR (232)	TSMO (132)	TSRA (118)	TSSA (71)	TSSB (62)	TSAC (599)	TSRC (281)	TSSO (156)					
Fixed																					
EBCDIC input	250	702	CSIT				X		X	X											
EBCDIC output	142	568	CSOT						X	X			X								
ASCII input	343	1052	CSIA	X				X		X	X										
ASCII output	204	979	CSOA			X		X		X		X									
Variable/Fixed																					
EBCDIC input	176	677	CSII				X			X					X						
EBCDIC output	245	814	CSTO							X					X	X					
ASCII input	609	1663	CSAI	X						X	X			X							
ASCII output	368	2036	CSAO	X	X	X				X				X							
Basic																					
Single volume	411	411	BTAM																		
Multivolume	491	491	BTMM																		

Figure C-7. 3410/3411 Tape Data Management Estimated Main Storage Requirements

Figure C-5 shows that $$CSIP requires 677 bytes of main storage. This total includes the main routine and seven subroutines:

Main Routine	$$CSIP	39 bytes
Subroutines	$$SRUA	38 bytes
	$$SRTC	28 bytes
	$$SRSB	93 bytes
	$$SRMO	164 bytes
	$$SRDI	149 bytes
	$$SRBR	130 bytes
	$$SRBP	59 bytes
Total		700 bytes

Figure C-5 also shows that $$CSOP requires eight subroutines, seven of which are already used by $$CSIP. Because these subroutines are already used by $$CSIP, they are not duplicated. Only the main routine, $$CSOP (56 bytes) and the additional subroutine, $$SRDF (28 bytes), need be included with $$CSIP and its subroutines to provide the complete data management for a consecutive input file and a consecutive output file. Thus, the total main storage required for disk data management is 784 bytes (700 + 56 + 28).

Suppose, in addition to the two files just described, your program writes fixed length records on a tape file. According to Figure C-7, the data management access method $$CSOT must be included in your program to support this type of processing. The total size of this access method (main routine plus three subroutines) is 568 bytes. As in disk data management, if two or more tape access methods are used by a program, common subroutines are not duplicated.

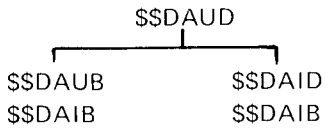
Certain disk data management access methods are able to support more than one type of file processing. For example, some multivolume access methods can support either single volume or multivolume files; direct and indexed random access methods that support update files also support input files. Figures C-8 and C-9 show the relationships among the access methods.

In calculating the main storage requirements for data management, these relationships must be taken into account. For example, if a program consecutively processes two input files, a multivolume sequential input file and a single volume sequential input file, only the multivolume access method ($$CFIM) is used for data management support (see Figure C-8), because that access method can also support a single volume file.

An another example, suppose your program adds records randomly to a indexed file and reads records randomly from a separate indexed file. If these two types of processing occurred in separate programs, one program would require $$IGAD and the other program would require $$IGIP. However, because both files are used in the same program, only $$IGAD is used, because it also performs the functions of $$IGIP.

If your program includes both files, notice that data management includes two subroutines, $$SRTC and $$SRLP. Therefore, if these subroutines have already been included in the data management totals, they are not duplicated. Modules that refer to indexed or multivolume files cannot be used in simulation areas.

Simulation Areas



Main Data Areas

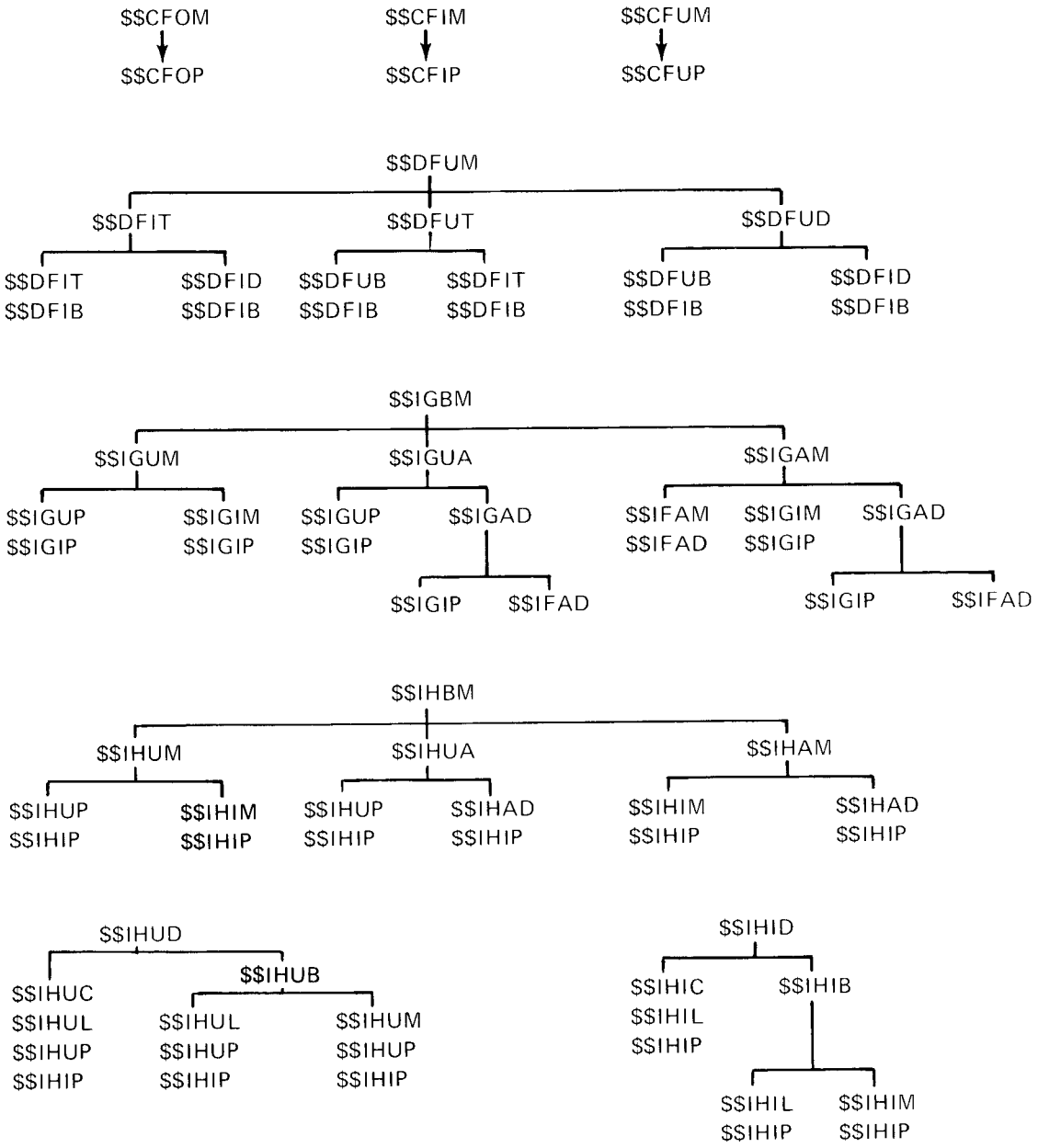


Figure C-8. 3340/3344 Disk Data Management Access Method Relationships (Internal Buffers)

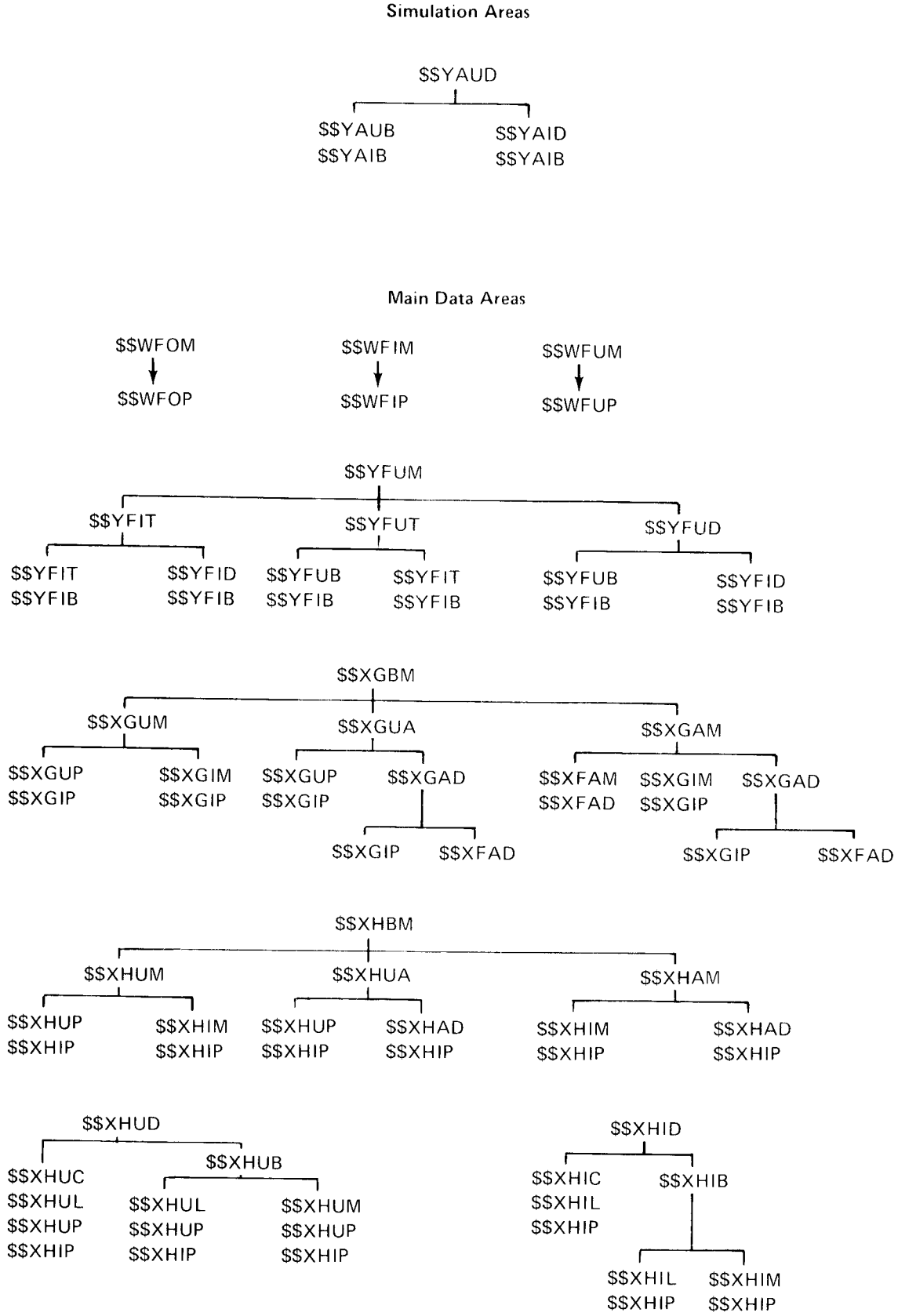


Figure C-9. 3340/3344 Disk Data Management Access Method Relationships (External Buffers)

Calculating the Total Main Storage Requirement for Data Management

In order to arrive at the total main storage requirement for data management, you must add the total bytes for disk and tape data management to the totals required for the remaining I/O devices in your system that are used by your program (see Figure C-10). The total bytes for disk and tape data management calculated earlier were:

Disk data management — 784 bytes
Tape data management — 568 bytes

If your program reads cards from the MFCU and prints a report in addition to accessing the disk and tape files described earlier, calculate your total main storage requirement for data management as follows:

Disk data management	784 bytes
Tape data management	568 bytes
MFCU read ($$MFRD)	250 bytes
1403 print	240 bytes
Total data management for the program	1842 bytes

Device	Module Name	Bytes (Decimal)
1442 Card Read Punch	$$ARFF	435
3277 Display Station	$SCODM	23
5424 MFCU Read punch	$$MFRU	318
Read/print	$$MFRP	470
Read only	$$MFRD	250
Punch only	$$MFPU	119
Print only	$$MFPR	187
Print/punch	$$MFPP	307
Full function	$$MFFF	547
2501 Card Reader	$$ARRD	299
2560 MFCM Read/punch	$$MMRU	404
Read/print	$$MMRP	512
Read only	$$MMRD	267
Punch only	$$MMPU	186
Print only	$$MMPR	264
Print/punch	$$MMPP	377
Full function	$$MMFF	660
1403 Printer	$$LPRT	240
3284 Printer	$$LPMP	523
3741 Data Station/Programmable Work Station		
Input	$$CPIP	360
Output	$$CPOP	92

Figure C-10. Unit Record Data Management Main Storage Requirements

Device Independent Data Management

The device independent data management is different from the standard data management in that it allows a program to be compiled without defining the specific device that will be used for the input or output file(s). As a result, when the device independent data management is used, the program must be capable of supporting any of the available devices in the configuration; selection of devices is determined when the program is executed, rather than when it is compiled.

Calculating the Main Storage Requirement for Device Independent Data Management

Figure C-11 shows the estimated main storage requirements when the device independent data management is used. Storage requirements depend on the configuration of the system on which the program is link edited, rather than on the devices selected when the program is executed. For example, if your configuration includes magnetic tape and your program does not intend to specify a tape file, the device independent data management is included that supports tape.

As an example, assume that your configuration includes the following devices: 2560, 2501, and 1403. And assume that the following files are defined in your program:

One input file, using device independent data management
One output file, using device independent data management
One printer file, using standard data management

The main storage requirements for the data management are estimated as follows (I/O areas, buffers, DTFs and IOBs are not included):

Module Name	Bytes (Decimal)	
$$SRIA	65	
$$SRIB	239	
$$SRIS	342	
$$SRIW	231	
$$CSII	176	
$$CSIO	99	
$$SRMO	164	
$$SRBP	59	
$$SRDF	28	
$$SFBP	106	
$$SFDF	+31	
	1540	Device independent data management
$$LPRT	+240	Printer data management (from Figure C-10)
	1780	Total data management requirement

Device Independent Data Management	Module Name	Bytes (Decimal)
Always required for input or output	$$SRIA	65
	$$SRIB	239
	$$SRIS	342
	$$SRIW	231
Required for input files	$$CSII	176
Required for output files	$$CSIO	99
Required for 3410/3411	$$SRIT	251
Required for 2560 MFCM	$$SRIM	46
In addition, the following standard data management modules are included (common modules are not duplicated). If both device independent data management and standard data management are specified in the program, and if both require the same module, the module is used only once.		
Always required	$$SRMO	164
Required for 5444[1]	$$SRBP	59
Required for 5444[1] output files	$$SRDF	28
Required for 3340/3344	$$SFBP	106
Required for 3340/3344 output files	$$SFDF	31
[1]5444 also includes simulation areas using 3340/3344		

Figure C-11. Device Independent Data Management Main Storage Requirements

The optional devices that affect the main storage requirements of the device independent data management are the 3410/3411 and the 2560 (see Figure C-11). On systems that do not support one of these devices, the device independent data management uses less storage.

If a program is link edited on one system and executed on another, both systems must be generated to support the same optional devices (3410/3411, or 2560). Alternatively, the following R-modules can be copied to the system on which the linkage editor is used:

Device	Module Names	
	Distribution Disk Cartridge	After System Generation
3410/3411 magnetic tape storage	$3SRIT	$$SRIT
2560 MFCM	$@SRIM	$$SRIM

Order and Feature Number	Program Component	Object Library		Source Library	
		Directory Entries	Sectors	Directory Entries	Sectors
System Control Programming and Features					
5704-SC2	Base SCP	916	6374[1]	157	1401[2]
	MRJE	30	360	—	—
5799-WLD	MLTA RPQ	42	119	22	206
Program Products and Features					
5704-RG2	Disk RPG II	166	1269	19	58
5704-CB2	Subset ANS COBOL	65	707	6	19
5704-FO2	FORTRAN IV	256	970	14	70
5704-AS2	Basic Assembler program	10	120	2	23
5704-SM7	CCP/Disk Sort	38	240	1	2
5704-SM8	Tape sort	31	241	1	2
5704-SM9	Disk sort	41	273	4	6
5704-UT3	Disk resident card utilities	10	169	2	14

[1] Includes a 235-sector work space used by the system generation program.
[2] Includes a 50-sector work space used by the system generation program.

Figure C-12. Disk Storage Requirements of Program Components on the Distribution Data Module

Determining Library Requirements on Generated System Packs and Program Packs

This topic provides you with the information you need to estimate the disk space requirements of generated SCP programs and program products, and provides the COPY statement and DELETE statement parameters you will need to transfer your programs from one pack to another or delete them from a pack.

You may need this information for several reasons. Perhaps you need to know the disk storage requirements of SCP programs and program products so that you can determine the adequacy of the library allocations during system generation and modify those allocations if necessary. You might need to determine library size requirements on separate system packs you are creating or on program packs you are building for certain program products.

Perhaps you want to calculate the amount of file space available on a pack that contains one or more of your system programs.

Figure C-13 lists the library space requirements and the COPY/DELETE parameters for selected SCP programs and data management modules and for all program products. The library space requirements reflect the latest estimates for these programs.

Program	COPY/DELETE Parameters		Object Library		Source Library	
	LIBRARY-	NAME-	Directory Entries	Sectors	Directory Entries	Sectors
5704-SC2 Base SCP (Total)			762	5378	78	722
System Generation: Always Included						
3340/3344 (Minimum)			206	1433	–	–
System Generation: Options						
MFCU or MFCM			1	3	–	–
MFCU			3	13	–	–
MFCM			3	14	–	–
1442 or 2501			1	3	–	–
1442			2	9	–	–
2501			2	7	–	–
3284			1	6	–	–
Magnetic tape			17	114	–	–
3741			4	9	–	–
BSCA			13	52	–	–
BSCC			7	77	–	–
Display adapter			1	18	–	–
Memory resident overlays			1	5	–	–
Checkpoint/restart			5	45	–	–
Base and print spool			21	86	–	–
Common read spool			4	18	–	–
Reader MFCU spool			1	8	–	–
Reader MFCM spool			1	7	–	–
Reader 1442 spool			1	7	–	–
Reader 2501 spool			1	7	–	–
Reader 3741 spool			1	7	–	–

Figure C-13 (Part 1 of 5). SCP Programs Library Requirements and COPY/DELETE Parameters

Program	COPY/DELETE Parameters		Object Library		Source Library	
	LIBRARY-	NAME-	Directory Entries	Sectors	Directory Entries	Sectors
Options (continued)						
Common punch spool			1	3	–	–
Punch MFCU spool			1	8	–	–
Punch MFCM spool			1	10	–	–
Punch 1442 spool			1	6	–	–
Trace routine	O	$TRACE	2	27	–	–
MLMP			11	47	–	–
Macro processor	O	$MPX.ALL	5	71	–	–
Total macros			–	–	62	551
MLMP macros			–	–	13	168
MRJE			30	357		
Other SCP						
Alternate track assignment:		$AL.ALL	5	47	–	–
Alternate track rebuild	O	$BU.ALL	4	20	–	–
Reassign alternate track	O	$RSALT	1	23	–	–
Copy/dump[1]	R	$CO.ALL	14	101	–	–
Sysdump print program	O	$CP.ALL	8	196	–	–
Disk address compare program	O	$DISK@	1	25	–	–
Chain cleaning program	O	$KL.ALL	1	5	–	–
CE diagnostics	O	$CE.ALL	34	608	–	–
Configuration record program	O	$CN.ALL	4	58	–	–
PTF programs	O	$SG.ALL	5	75	–	–
	P	$SG.ALL	–	–	4	4
Simulation area program	O	$SC.ALL	6	50	–	–
File delete	O	$DE.ALL	5	52	–	–

[1] If copy/dump is to be included with the minimum system, the complete R-library must be copied.

Figure C-13 (Part 2 of 5). SCP Programs Library Requirements and COPY/DELETE Parameters

Program	COPY/DELETE Parameters		Object Library		Source Library	
	LIBRARY-	NAME-	Directory Entries	Sectors	Directory Entries	Sectors
Other SCP (continued)						
Initialize disk	O	$IN.ALL	6	72	–	–
File and volume label display	O	$LA.ALL	6	79	–	–
Overlay linkage editor	O	$OL.ALL	16	187	–	–
Spool file copy	O	$QC.ALL	12	229	–	–
	O	[NAME][1]	1	1	–	–
Library maintenance	O	$MA.ALL	37	244	–	–
Library entry retrieval	R	SUBR15	1	13	–	–
Recover index	O	$RINDX	1	42	–	–
VTOC conversion	O	$WV.ALL	2	23	–	–
Magnetic tape error summary	O	$TVES	1	11	–	–
Initialize tape	O	$TINIT	1	25	–	–
Dump/restore	O	$DCOP.ALL	9	105	–	–
File compress	O	$FC.ALL	6	120	–	–
System history display	O	$HIST	1	35	–	–
Dump tape and disk	O	$DUM.ALL	3	43	–	–
Transaction logging	O	$TRLOG	1	31	–	–
	R	SUBR81	1	3	–	–
	R	SUBR82	1	3	–	–
CCP support modules			3	21	–	–

[1] Base module $QCOPY renamed for CCP use to NAME acceptable to CCP. If value of 00 was entered on prompt CCPUT, the rename prompt will not appear to allow the rename.

Figure C-13 (Part 3 of 5). SCP Programs Library Requirements and COPY/DELETE Parameters

Program	COPY/DELETE Parameters		Object Library		Source Library	
	LIBRARY-	NAME-	Directory Entries	Sectors	Directory Entries	Sectors
Data Management and Subroutines						
Note: The module names for disk, tape, and unit record devices are given in Figures C-3 through C-7 and C-10.						
1403 data management			2	4	–	–
3284 data management			2	6	–	–
5424 MFCU data management			7	16	–	–
2560 MFCM data management			8	20	–	–
1442 data management			1	3	–	–
2501 data management			1	2	–	–
3277 data management			1	1	–	–
3741 data management			2	4	–	–
BSCA data management			12	104	–	–
BSCC data management			3	36	–	–
MLMP data management			8	41	–	–
3881 data management			1	4	–	–
1255 data management			4	42	–	–
1255/1419 data management			3	7	–	–
1419 data management			3	34	–	–
Simulation area data management						
Consecutive (simulation area)			5	9	–	–
Direct (simulation area)			6	13	–	–
Simulation area data management (external buffers)			3	5	–	–
Direct simulation area (external buffers)			6	13	–	–
Simulation area subroutines			19	29	–	–

Figure C-13 (Part 4 of 5). SCP Programs Library Requirements and COPY/DELETE Parameters

Program	COPY/DELETE Parameters		Object Library		Source Library	
	LIBRARY-	NAME-	Directory Entries	Sectors	Directory Entries	Sectors
Data Management and Subroutines (continued)						
Main data area data management (internal buffers)						
Consecutive			6	10	–	–
Direct			10	23	–	–
Indexed output			4	11	–	–
Indexed random			8	34	–	–
Indexed sequential			16	42	–	–
Main data area data management (external buffers)						
Consecutive (external buffers)			6	10	–	–
Direct input (external buffers)			10	23	–	–
Indexed output (external buffers)			4	11	–	–
Indexed random (external buffers)			8	30	–	–
Indexed sequential (external buffers)			16	42	–	–
Main data area subroutines			41	97	–	–
3410/3411 data management			8	21	–	–
Subroutines			13	26	–	–
Basic access method						
Tape data management single volume			1	3	–	–
Tape data management multivolume			1	3	–	–
Pseudo tape data management (main data area or simulation area)			1	3	–	–

Figure C-13 (Part 5 of 5). SCP Programs Library Requirements and COPY/DELETE Parameters

Program	COPY/DELETE Parameters		Object Library		Source Library	
	LIBRARY-	NAME-	Directory Entries	Sectors	Directory Entries	Sectors
5704-RG2 RPG II[1,2]			166	1269	–	–
RPG II Options						
Base RPG II	O	$RP. ALL[4]	139	1070	–	–
	R	SUBR. ALL	–	–	–	–
	R	$$PG. ALL[4]	–	–	–	–
	P	RPG	–	–	1	1
Auto report	O	$AU. ALL	17	164	–	–
	P	AUTO	–	–	1	1
RPG II BSCA	O/R		10	35	–	–
5704-CB2 Subset ANS COBOL[1,2]	O	$CB. ALL	64	705	–	–
	R	$CB. ALL	–	–	–	–
	R	CFTOD[5]	–	–	–	–
	P	COBOL	–	–	1	1
5704-FO2 FORTRAN IV[1,2,6]	O	$FO. ALL	256	970	–	–
	R	$FO. ALL[3]	–	–	–	–
	P	FORTRN	–	–	1	1
	P	FORTG	–	–	1	1
	P	FORTL	–	–	1	1
5704-AS2 Basic Assembler[1]	O	$AS. ALL	10	120	–	–
5704-SM7 CCP/Disk Sort[1,2]	O	$DG. ALL	38	240	–	–
5704-SM8 Tape Sort	O	$TS. ALL	31	241	–	–
5704-SM9 Disk Sort[2]	O	$DS. ALL	40	262	–	–
5704-UT3 Card Utilities			10	169	–	–
Sort	O	$CS. ALL	6	90	–	–
Reproduce	O	$REPRO	1	23	–	–
List	O	$CLIST	1	10	–	–
Gangpunch	O	$GANGP $GPEXC	2	46	–	–

Figure C-14 (Part 1 of 2). Program Products Library Requirements and COPY/DELETE Parameters

[1] To copy 5704-FO2, 5704-CB2, 5704-RG2, 5704-SM7, and 5704-AS2, also copy the overlay linkage editor ($OL.ALL). To delete 5704-FO1 or 5704-CB2, delete only the program products.

[2] To copy 5704-FO2, 5704-CB2, 5704-SM7, 5704-SM9, and 5704-RG2, also copy all the required data management modules. (See previous figures for the data management module names.)

[3] The library names of the individual module names are:

ADD	DECA1	DUNPK	120R4	PRINT	SETINQ	SQRT
ALOG	DEXP	DVCHK	KEYBD	PUNCH	SET0	STACK
ALOG10	DIV	EDIT	LCOMP	PUT	SET1	STAK42
ATAN	DLOG	EXIT	MOVE	P1403	SHIFT	STAK60
A1DEC	DLOG10	EXP	MPY	P2560	SHIFTR	SUB
BUG	DMOD	FCTST	NCOMP	P3284	SIN	S1403
COS	DPACK	FILL	NSIGN	P3741	SKIP	S3284
CFTOD[5]	DSIN	GET	NZONE	READ	SLITE	TANH
DATAN	DSQRT	IBTST	OVERFL	READ42	SLITET	TYPER
DATSW	DTANH	ICOMP	P1442	R2501	SPACE	UNPAC
DCOS	DUMP	INQCHK	PACK	R2560	SP1403	WHOLE
			PDUMP	R3741	SP3284	

[4] Includes the BSCA feature, if present.

[5] This module is used by both COBOL (5704-CB2) and FORTRAN (5704-FO2).

[6] For multivolume tape support for FORTRAN after SCP generation, use $MAINT to delete $BTAM and rename $$BTMM to $$BTAM. $$BTAM and $$BTMM are functionally identical except $$BTMM contains multivolume tape support. If multivolume tape support is not required, $$BTMM may be deleted from the R-library.

Figure C-14 (Part 2 of 2). Program Products Library Requirements and COPY/DELETE Parameters

Determining Library Allocations

The following example uses Figures C-13 and C-14 to estimate a library allocation. Suppose you wish to generate the base SCP (5704-SC2), RPG II, and Disk Sort. Assume that you have the following devices: MFCU, 1403 printer, and disk; you want no other SCP or program product options. You can calculate library requirements for these programs as follows:

1. Determine the number of directory entries and sectors required for the source and object libraries.

SCP Requirements	Object Library		Source Library	
	Directory Entries	Sectors	Directory Entries	Sectors
SCP (from Figure C-13)				
Minimum SCP				
Always included	206	1433	–	–
Options				
MFCU or MFCM	1	3	–	–
MFCU	3	13	–	–
Other SCP				
$ALT	5	47	–	–
$BUILD	4	20	–	–
$COPY	14	101	–	–
$DELET	5	52	–	–
$INIT	6	72	–	–
$LABEL	6	79	–	–
$OLINK	16	187	–	–
$MAINT	37	244	–	–
$WVTOC	2	23	–	–
$SCOPY	6	50	–	–
Disk data management and sub-routines				
disk	168	402	–	–
Other data management and sub-routines				
1403 printer	2	4	–	–
MFCU	7	16	–	–
3277 display station	1	1	–	–
Total SCP	489	2747	–	–
Program Products (from Figure C-14)				
Base RPG II	139	1070	1	1
Disk Sort	40	262	–	–
Total Program Products	179	1330	1	1
Total SCP and Program Products	668	4077	1	1

2. Convert these totals (to be used as the prompt response) for the object library. (The resulting quantities are rounded up to the next whole number.)

   Number of directory tracks (DIRSZ prompt):

   $$\frac{668 \text{ entries}}{288 \text{ entries/track}} = 3 \text{ tracks}$$
   (287 on the last track)

   Total tracks for object library and directory (OLIBR prompt):

   $$\frac{4077 \text{ sectors}}{24 \text{ sectors/track}} = 170 + 3 \text{ tracks for directory} = 173 \text{ tracks}$$

3. Convert these totals to tracks for the source library (SLIBR) prompt. (The resulting quantities are rounded up to the next whole number.)

   Number of directory sectors (minimum of two sectors):

   $$\frac{1 \text{ entry}}{19 \text{ entries/sector}} = 1 \text{ sector (must use the 2-sector minimum, in this case)}$$

   Total sectors for source library and directory:

   2 sectors/directory
   1 sector/library
   3 total sectors

   Total tracks:

   $$\frac{3 \text{ sectors}}{24 \text{ sectors/track}} = 1 \text{ track}$$

In order to add user programs and provide adequate library space on the system pack for the maintenance of these programs, you should increase these allocations beyond those necessary to complete system generation.

Note: If the total number of tracks required for your system plus program products is in excess of your disk capacity, you must generate two system packs.

Of the 398 tracks on a simulation area, the system requires the following:

System history area	2 tracks
Scheduler work area	18 tracks
Checkpoint/restart (if supported)	15 tracks

You are allowed the remaining 378 tracks (363 tracks if checkpoint/restart is supported) to allocate libraries and additional system history area space.

Appendix D. Generation Prompt Summary

The following is a summary chart containing the system control program generation prompts. The prompts are listed in alphabetical order. Two items are given for each prompt:

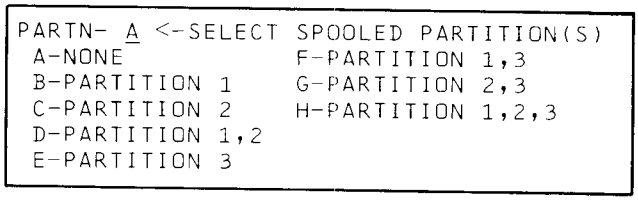
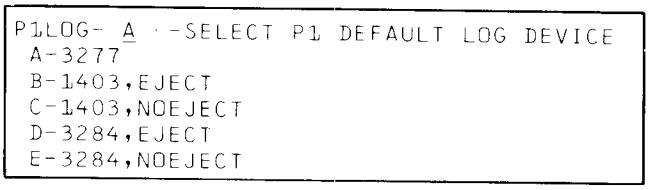
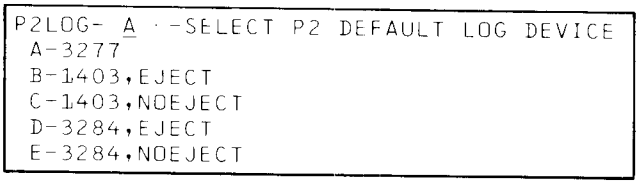
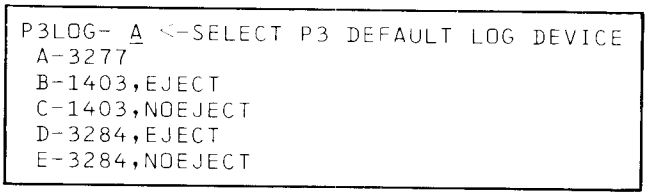
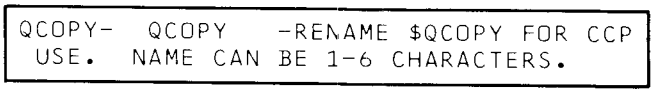
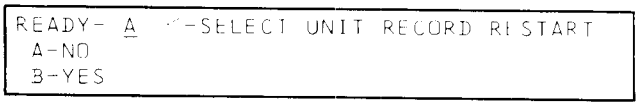
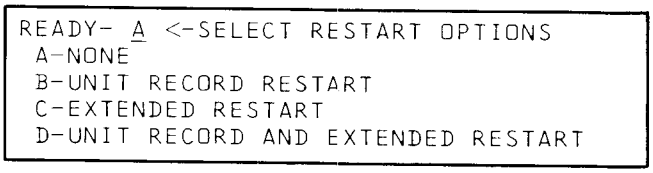
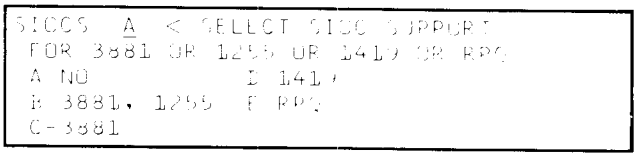
- Format of the prompt
- Synopsis of the function

Prompt	Function
ASNP1- ABEF <-ASSIGN F1,R1,F2,R2 FOR PARTITION 1 SIMULATION AREAS A-D1A E-D2A J-D3A N-D3E S-D4A W-D4E B-D1B F-D2B K-D3B P-D3F T-D4B X-D4F C-D1C G-D2C L-D3C Q-D3G U-D4C Y-D4G D-D1D H-D2D M-D3D R-D3H V-D4D Z-D4H	Defines P1 simulation area assignments (5704-SC2 only).
ASNP2- ABEF <-ASSIGN F1,R1,F2,R2 FOR PARTITION 2 SIMULATION AREAS A-D1A E-D2A J-D3A N-D3E S-D4A W-D4E B-D1B F-D2B K-D3B P-D3F T-D4B X-D4F C-D1C G-D2C L-D3C Q-D3G U-D4C Y-D4G D-D1D H-D2D M-D3D R-D3H V-D4D Z-D4H	Defines P2 simulation area assignments (5704-SC2 only).
ASNP3- ABEF <-ASSIGN F1,R1,F2,R2 FOR PARTITION 3 SIMULATION AREAS A-D1A E-D2A J-D3A N-D3E S-D4A W-D4E B-D1B F-D2B K-D3B P-D3F T-D4B X-D4F C-D1C G-D2C L-D3C Q-D3G U-D4C Y-D4G D-D1D H-D2D M-D3D R-D3H V-D4D Z-D4H	Defines P3 simulation area assignments (5704-SC2 only).
AUTST- A <-SELECT AUTO START FUNCTIONS FOR SPOOLING A-NONE B-READ C-PUNCH D-PRINT	Defines which spooling function(s) start automatically.
AUTWT- A <-SELECT AUTO-WRITE FUNCTIONS FOR SPOOLING A-NONE B-PUNCH C-PRINT D-PUNCH,PRINT	Defines which spooling output function(s) will write automatically.

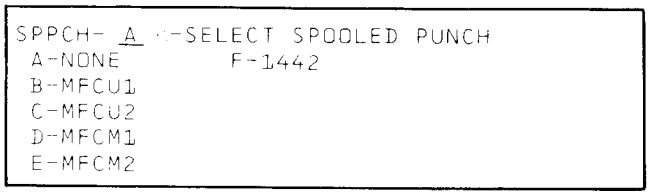
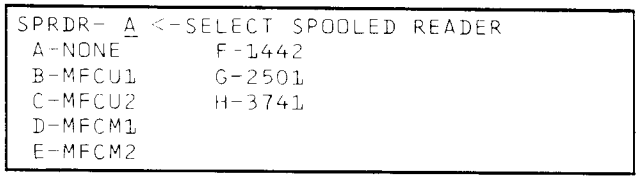
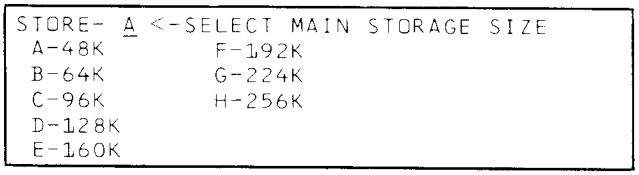
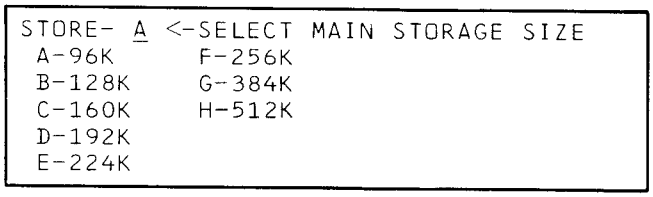
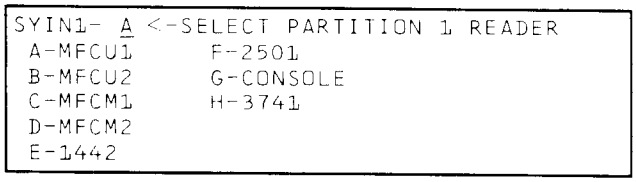
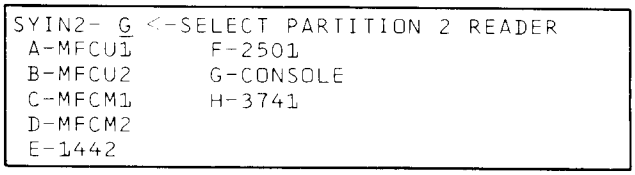
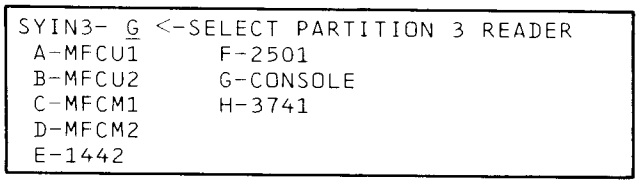
Prompt	Function
CARDD- A <-SELECT CARD I/O DEVICE(S) A-MFCU F-1442,2501 B-MFCM G-MFCU,1442 C-1442 H-MFCU,2501,1442 D-MFCU,2501 J-2501 E-MFCM,2501 K-NONE	Defines the card devices supported.
CATLG- A <-PROGRAM PACK PROTECTION FOR CATALOG A-DO NOT CATALOG TO PROGRAM PACKS B-CATALOG TO CCP PROGRAM PACKS C-CATALOG TO ALL PROGRAM PACKS	Defines program pack protection for catalog (5704-SC2 only).
CCPUT- 00<-ENTER NUMBER OF CCP USER TASKS. ANY NUMBER FROM 00 TO 15 IS VALID	Defines the amount of supervisor space to reserve for use by the CCP.
CKPRS- A <-SELECT CHECKPOINT/RESTART A-NO B-YES	Defines the checkpoint/restart support.
DATEF- A <-SELECT DATE FORMAT A-MMDDYY B-DDMMYY	Defines the date format.
DEFCN- XXX <-ENTER DEFAULT CARD TYPE ANY 1 TO 3 CHARACTERS EXCEPT COMMAS, QUOTES, BLANKS, DASHES, EQUAL SIGNS AND QUESTION MARKS ARE VALID	Defines the default card type the operator loads into the system punch device for punched output of the next job if the CARDNO parameter of the // PUNCH statement has not been used.
DEFFN- XXX <- ENTER DEFAULT FORM TYPE ANY 1 TO 3 CHARACTERS EXCEPT COMMAS, QUOTES, BLANKS, DASHES, EQUAL SIGNS AND QUESTION MARKS ARE VALID	Defines the default form type the operator mounts on the system printer for printed output of the next job if the FORMSNO parameter of the // PRINTER statement has not been used.
DIRSZ- 3 <-ENTER DIRECTORY SIZE ANY NUMBER FROM 1 TO 9 TRACKS IS VALID	Defines the object library directory size.
DSK33- A <-SELECT 3340 CONFIGURATION A-NONE B-D1,D2 C-D1,D2,D3 D-D1,D2,D3,D4	Defines the 3340 disk configuration. 5444 system: R1, F1, R2, F2 simulation area configuration supported with this prompt (5704-SC1 only).
DSK41- A <-SELECT 3741 I/O SUPPORT A-NO B-YES	Defines directly attached 3741 I/O support.

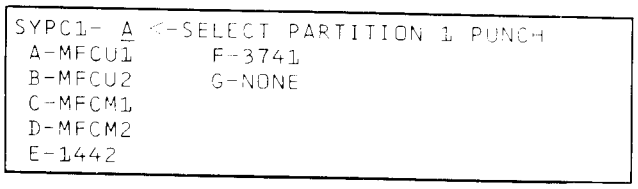
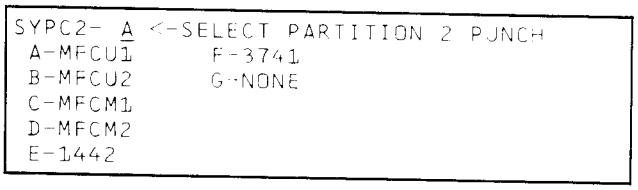
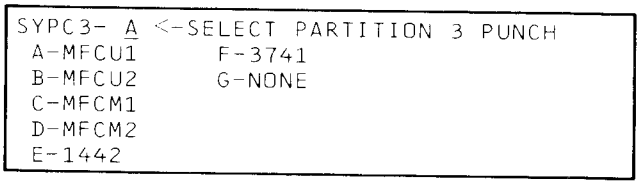
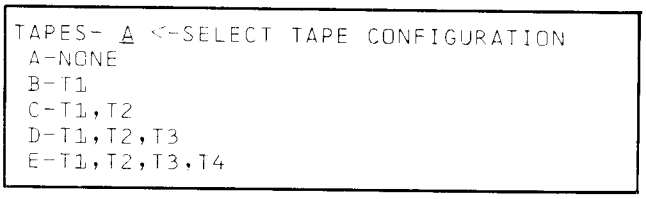
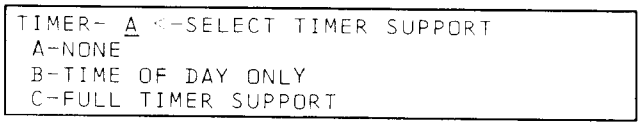
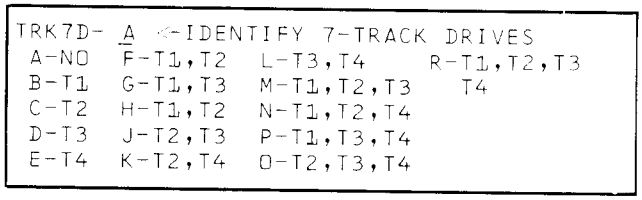
Prompt	Function
DSK44- A <-SELECT 5444 CONFIGURATION A-R1,F1 B-R1,F1,R2 C-R1,F1,R2,F2	Defines the 5444 disk configurations. Applicable only to 5444; not to 5444 simulation areas on 3340 system.
DSK45- A <-SELECT 5445 CONFIGURATION A-NONE B-D1 C-D1,D2 D-D1,D2,D3 E-D1,D2,D3,D4	Defines the 5445 disk configurations. Not applicable to 3340 configuration.
DUALD- A <-IDENTIFY DUAL DENSITY DRIVES A-NC F-T1,T2 L-T3,T4 R-T1,T2,T3, B-T1 G-T1,T3 M-T1,T2,T3 T4 C-T2 H-T1,T4 N-T1,T2,T4 D-T3 J-T2,T3 P-T1,T3,T4 E-T4 K-T2,T4 Q-T2,T3,T4	Defines the dual density 3410/3411 tape units.
D3340- A <-SELECT 3340 CONFIGURATION A-D1,D2 B-D1,D2,D3 C-D1,D2,D3,D4	Defines the 3340 disk configuration. Simulation areas R1, F1, R2, F2 are supported by this prompt (5704-SC2 only).
D3344- A <-SELECT 3344 CONFIGURATION A-NO B-D3,D4	Defines the 3344 disk configuration (5704-SC2 only).
HSTRY- 02 <-ENTER SYSTEM HISTORY AREA SIZE. ANY NUMBER FROM 02 TO 99 LESS THAN 392-(OLIBR+SLIBR) TRACKS IS VALID	Defines the system history area size (5704-SC1 only).
HSTRY- 02 <-ENTER SYSTEM HISTORY AREA SIZE. ANY NUMBER FROM 02 TO 99 LESS THAN 378-(OLIBR+SLIBR) TRACKS IS VALID	Defines the system history area size (5704-SC2 only).
INQRY- A <-SELECT ROLLOUT/ROLLIN A-NO B-YES	Defines the rollout/rollin support (5704-SC1 only).
IOPRT- A <-SELECT I/O PROTECTION A-NO B-YES	Defines the I/O protection support (Assembler user)
LINEB- A <-SELECT BSCA SUPPORT A-NONE B-LINE 1 C-LINE 1 AND LINE 2 D-LINE 1 AND DISPLAY ADAPTER E-DISPLAY ADAPTER	Defines the number of BSCA lines supported and/or display adapter.

Prompt	Function
LINEC- A <-SELECT BSCC SUPPORT A-NONE B-LINE 3 C-LINE 3 AND LINE 4	Defines the number of BSCC lines (5704-SC2 only).
LINEM- 066 <-ENTER LINES PER PAGE FOR 3284 PRINTER. ANY NUMBER FROM 012 TO 112 IS VALID	Defines the default number of lines per page (3284 printer).
LINEP- 066 <-ENTER LINES PER PAGE FOR 1403 PRINTER. ANY NUMBER FROM 012 TO 112 LINES IS VALID	Defines the default number of lines per page (1403 printer).
MATRX- A <-SELECT 3284 PRINTER SUPPORT A-NONE B-120 POSITION C-126 POSITION D-132 POSITION	Defines the 3284 printer.
MEMRO- A <-SELECT MEMORY RESIDENT OVERLAYS A-NO B-YES	Defines memory resident overlay support.
MLMPS- A <-SELECT MLMP SUPPORT A-NO B-YES	Defines the multiline/multipoint support.
MLTAS- A <-SELECT MLTA SUPPORT A-NO B-YES	Defines the multiple line terminal adapter feature support.
MRJES-A <-SELECT MRJE SUPPORT A-NO B-YES	Defines MULTI-LEAVING remote job entry work station program support.
OLIBR- 170 <-ENTER O-LIBRARY SIZE ANY NUMBER FROM 120 TO 380 TRACKS IS VALID	Defines the object library size (5704-SC1 only).
OLIBR- 170 <-ENTER O-LIBRARY SIZE ANY NUMBER FROM 120 TO 366 TRACKS IS VALID	Defines the object library size (5704-SC2 only).
PARTN- A <-SELECT SPOOLED PARTITION(S) A-NONE B-PARTITION 1 C-PARTITION 2 D-PARTITION 1 AND PARTITION 2	Defines spooled partitions and indicates if spooling is supported (5704-SC1 only).

Prompt	Function
	Defines spooled partitions and indicates if spooling is supported (5704-SC2 only).
	Defines the partition 1 default LOG device.
	Defines the partition 2 default LOG device.
	Defines the partition 3 default LOG device (5704-SC2 only).
	Defines the number of 1403 printers supported (5704-SC2 only).
	Defines an additional name of $QCOPY acceptable to CCP (5704-SC2 only).
	Defines unit record restart support (5704-SC1 only).
	Defines unit record and extended restart support (5704-SC2 only).
	Defines the serial I/O channel support.

Prompt	Function
SIOCS- A <-SELECT SIOC SUPPORT FOR 3881 OR 1255 OR 1419 OR RPQ A-NO D-1419 B-1255 E-RPQ C-3881	Defines the serial I/O channel support (5704-SC2 only).
SLIBR- 020 <-ENTER S-LIBRARY SIZE ANY NUMBER FROM 010 TO (390-OLIBR) TRACKS IS VALID	Defines the size of the source library (5704-SC1 only).
SLIBR- 020 <-ENTER S-LIBRARY SIZE ANY NUMBER FROM 010 TO (376-OLIBR) TRACKS IS VALID	Defines the size of the source library (5704-SC2 only).
SPCYL- 050 <-ENTER SPOOL FILE SIZE ANY NUMBER FROM 001 TO 199 CYLINDERS IS VALID FOR 5445, FROM 001 TO 166 CYLINDERS FOR 3340	Defines the total number of cylinders for the spooling file (5704-SC1 only).
SPCYL- 050 <-ENTER SPOOL FILE SIZE ANY NUMBER FROM 001 TO 166 CYLINDERS IS VALID FOR 3340, FROM 001 TO 186 CYLINDERS FOR 3344.	Defines the total number of cylinders for the spooling file (5704-SC2 only).
SPDSK- A <-SELECT DISK FOR SPOOL FILE A-D1 B-D2 C-D3 D-D4	Defines the 5445/3340 drive used for the spooling file (5704-SC1 only).
SPDSK- A <-SELECT DISK FOR SPOOL FILE A-D1 F-D34 B-D2 G-D4(D41) C-D3(D31) H-D42 D-D32 J-D43 E-D33 K-D44	Defines the 3340/3344 drive used for the spooling file (5704-SC2 only).
SPEXT- B <-SELECT SPOOL TRACK GROUP SIZE A-2 TRACKS B-4 TRACKS C-5 TRACKS D-10 TRACKS E-1 TRACK	Defines the spooling track group size (5704-SC1 only).
SPEXT- C <-SELECT SPOOL TRACK GROUP SIZE A-1 TRACK B-2 TRACKS C-4 TRACKS D-5 TRACKS E-10 TRACKS	Defines the spooling track group size (5704-SC2 only).

Prompt	Function
	Defines the system punch device that punches the cards associated with the spooling job stream.
	Defines the input device that reads the records associated with the spooling job stream.
	Defines the spool time recording support.
	Defines the processing unit main storage size (5704-SC1 only).
	Defines the processing unit main storage size (5704-SC2 only).
	Defines the partition 1 system input device used to enter OCL, control, and data statements.
	Defines the partition 2 system input device used to enter OCL, control, and data statements.
	Defines the partition 3 system input device used to enter OCL, control, and data statements (5704-SC2 only).

Prompt	Function
	Defines the partition 1 system punch device.
	Defines the partition 2 system punch device.
	Defines the partition 3 system punch device (5704-SC2 only).
	Defines the partition 1 system print device used by IBM supplied programs.
	Defines the partition 2 system print device used by IBM supplied programs.
	Defines the partition 3 system print device used by IBM supplied programs (5704-SC2 only).
	Defines the 3410/3411 tape configurations.
	Defines the interval timer support.
	Defines the 7-track 3410/3411 tape units.

Appendix E. Distribution Tape Reels (DTRs)

This appendix describes how to prepare for a system generation if you have received SCP, program products, and/or CCP on distribution tape reels (DTRs).

System/3 programs from the program library are available on DTRs for Model 15 users having access to tape drives.

A user can receive one or more DTRs, each of which contains a copy of a simulation area from a data module. Programs from the DTRs must be restored to a data module prior to system generation.

The DTRs should be restored to a data module mounted on D2. This is necessary to protect the current generated system on D1, which is required to restore a DTR to disk.

After the DTRs have been restored to the D2 data module, the data module from D2 is placed on D1 and system generation is performed.

Data Module Format

The data module is composed of five areas: one main data area and four simulation areas.

Main Data Area	Simulation Area A	Simulation Area B	Simulation Area C	Simulation Area D

The simulation areas are called simulation area A, B, C, and D (D2A would be simulation area A on drive 2 etc). Programs should be placed only in three of the simulation areas.

Simulation Area A must always be left open to allow for system generation into this area. The three remaining simulation areas can each contain up to 200 cylinders of stackable programs or one nonstackable program.

Simulation Area B must contain the SCP and can also include selected stackable program products. The DTR containing the base SCP must be placed in simulation area B. If more than one DTR is required for the programs ordered, the additional stackable programs are on one or more additional DTRs.

Simulation Area C can contain the overflow program products or a nonstackable program or feature such as CCP.

Simulation Area D can contain other stackable programs or one nonstackable program.

Copying DTRs to a Data Module

System generation procedures require that the main data area of the data module being prepared to receive the distribution programs on DTRs must be named PID001. The $INIT system service program can be used to initialize the main data area and give it the name PID001. The rename function of $INIT can be used to change the name of a previously initialized data module to PID001 without disturbing the contents of the main data area.

The 3340 simulation area program $SCOPY must be used to clear simulation area B and give it the name PID001. If backup simulation areas C and D are to be used, $SCOPY must be used to clear them and give them a name other than PID001.

The following is a sequence of steps that may be used to restore DTRs to a data module:

1. Restore DTRs that do not contain the SCP:
   a. Use the dump/restore program ($DCOPY) to restore the first non-SCP DTR, if there is one, to simulation area B. Then use $SCOPY to move simulation area B to simulation area D.
   b. Use the dump/restore program ($DCOPY) to restore the second non-SCP DTR, if there is one, to simulation area B. Then use $SCOPY to move simulation area B to simulation area C.
2. Use the dump/restore program ($DCOPY) to restore the DTR with SCP to area B using SYSTEM-YES keyword.
3. Proceed to Figure 2-1 or 2-5 in Chapter 2.

Adding Program Products to an Existing System

1. Use the allocate function of $MAINT if you need to increase the size of your tailored system libraries prior to adding new program products. Your tailored system must reside in the F1 (D1A) simulation area.

2. Back up R1 (D1B) simulation area if required.

3. Use the dump/restore program ($DCOPY) to restore the DTR to simulation area B.

4. Proceed to Figure 2-2 or 2-6 in Chapter 2.

OCL Considerations

Following is a sample of OCL that can be used to restore a DTR to simulation area B:

```
// LOAD $DCOPY,F1
// FILE NAME-BACKUP,UNIT-T1,REEL-NL
// RUN
// COPYPACK TO-R2,PACK-PID001[,SYSTEM-YES]
// END
```

The SYSTEM-YES keyword of $DCOPY updates the system IPL records to the highest release level available at the time of program library shipment and must only be used when copying the DTR to the simulation area that will contain the new SCP programs.

Following is a sample of the OCL and control statements that can be used to move one simulation area to another simulation area:

```
// LOAD $SCOPY,F1
// RUN
// MOVE FROM-D2B,TO-D2D,PACK-PID001
    ,AREA-PID001[,SYSTEM-YES]
// END
```

The SYSTEM-YES keyword of $SCOPY copies IPL records from cylinder 0 of the data module mounted on D1 to cylinder 0 of the data module indicated by the TO parameter on the control statement. This should only be used when it is necessary to update the IPL records and after checking the release level of the system from which IPL was performed.

If a simulation area previously contained distribution programs from the program library, the simulation area name is PID001. Any attempt to clear or copy an area to this simulation area results in a 6FDA message. The AREA-PID001 parameter on the CLEAR statement allows you to clear this area. Also, if you plan to copy to this area, the CLRNAME-name parameter on the CLEAR statement must be a name other than PID001.

For a complete description of library maintenance program ($MAINT), disk initialization program ($INIT), simulation area program ($SCOPY), and dump/restore program ($DCOPY), refer to the appropriate *SCP Reference.*

This chart shows the more common configuration options for the IBM System/3. Each block letter represents a valid configuration for that device category. One configuration (or combination on a single line) is required for each device category unless the category is left blank (not supported) or is designated as optional additions. To use this chart, refer to the following explanation of keys and select one configuration or combination in each category for a particular processor:

Key	Explanation	Key	Explanation
A	Standard	C	RPQ (with program support)
B	Optional in addition to the standard	D	RPQ (without program support)

Device Category	Device	5404	5406	5408	5410 C	5410 D	5412	5415 A	5415 B	5415 C	5415 D
Processor Storage (times 1024 bytes)	8		A		A						
	12		A		A	A					
	16		A	A	A	A					
	24		C			A					
	32		C	A		A	A				
	48			A		A	A	A	A		
	64	A		A		C	A	A	A		
	80						A				
	96						A	A	A		A
	128							A	A		A
	160									A	A
	192									A	A
	224									A	A
	256									A	A
	384										A
	512										A
Console	3277 Display Station	A						A	A	A	A
	5471 Printer-Keyboard		A		B	B					
Card Devices	129 Card Data Recorder – Mdl 1, 2, or 3		B								
	1442 Card Read Punch – Mdl 6 or 7				D	A	A	A	A	A	A
	1442-6 or -7 and 2501-A1 or -A2				C	C	C	A	A	A	A
	1442-6 or -7 and 5424-A1 or -A2				C	C	C	C	C	C	C
	2501 Card Reader – Mdl A1 or A2				C	C	C	A	A	A	A
	2501-A1 or -A2 and 2560-A1 or -A2							A	A	A	A
	2501-A1 or -A2 and 5424-A1 or -A2				C	C	C	A	A	A	A
	2560 Multi-Function Card Machine – Mdl A1 or A2							A	A	A	A
	5424 Multi-Function Card Unit – Mdl A1 or A2				A	A	A	A	A	A	A
	5496 Data Recorder – Mdl 1		B								
	No Card I/O (3741 not required)*		A	A		C		A			
	No Card I/O (3741 required)								A	A	A
Diskette	3741 Data Station – Mdl 1 or 2**		B	A		B	B	B	B	B	B
	3741 Programmable Work Station – Mdl 3 or 4**		B	A		B	B	B	B	B	B
Printer	1403 Printer – Mdl 2 or N1				C	A	A	A	A	A	A
	1403 Printer – Mdl 5				C			A	A	A	A
	2222 Printer – Mdl 1 or 2		A								
	3284 Printer – Mdl 1 or 2								B	B	B
	5203 Printer – Mdl 1, 2, or 3				A	A	A	A			
	5213 Printer – Mdl 1 or 2		A								
	5213 Printer – Mdl 3		A								

Device Category	Device	No. of Drives	5404	5406	5408	5410 C	5410 D	5412	5415 A	5415 B	5415 C	5415 D
Direct Access Storage Device	3340 Direct Access Storage Facility – Mdl A2	2								A	A	A
	3340-A2 and 3340-B1	3								A	A	A
	3340-A2 and 3340-B2	4								A	A	A
	3340-C2	2						A				
	3344 Direct Access Storage – Mdl B2	2										
	3344-B2 and 3340-A2	4										A
	5444 Disk Storage Drive – Mdl 1	2		A			A					
	5444-2	2		A			A					
	5444-2 and 5444-3	3		A			A					
	5444-2 and 5444-2	4		A			A					
	5444-A1	2		C	A		A					
	5444-A2	2		C	A		A		A			
	5444-A2 and 5444-A3	3		C	A		A		A			
	5444-A2 and 5444-A2	4		C	A		A		A			
	5445 Disk Storage – Mdl 1	1					B		B			
	5445-1 and 5445-2	2					B		B			
	5445-1 and 5445-3	3							B			
	5445-3	2					B		B			
	5445-1, 5445-1, and 5445-2	3							B			
	5445-1, 5445-1, 5445-2, and 5445-2	4							B			
	5445-1, 5445-2, and 5445-3	4							B			
	5445-3 and 5445-3	4							B			
	5447 Disk Storage and Control – Mdl A1	2	A									
	5447-A2	4	A									
	5448 Disk Storage Drive – Mdl A1	2										
	5448-A1 and 5444-2	4					A					
	5448-A1 and 5444-A2	4			A		A					
	5448-A1, 5444-2, and 5444-3	5					A					
	5448-A1, 5444-A2, and 5444-A3	5			A		A					
	5448-A1, 5444-2, and 5444-2	6					A					
	5448-A1, 5444-A2, and 5444-A2	6			A		A					
Tape	3411 Magnetic Tape Unit and Control	1			B	B	B	B	B	B	B	B
	3411 and 3410	2			B	B	B	B	B	B	B	B
	3411, 3410, and 3410	3			B	B	B	B	B	B	B	B
	3411, 3410, 3410, and 3410	4			B	B	B	B	B	B	B	B
Miscellaneous	1017 Paper Tape Reader – Mdl 1 or 2		C	C	C	C	C	C	C	C	C	C
	1018 Paper Tape Punch – Mdl 1					C	C	C	C	C	C	C
	1231 Optical Mark Page Reader – Mdl 1				D	D	D	D	D	D	D	D
	1255 Magnetic Character Reader – Mdl 1, 2, or 3		C	B	B		B	B	B	B	B	B
	1419 Magnetic Character Reader – Mdl 1				D	D	D	D	C	C	C	C
	1627 Plotter – Mdl 1			C			C					
	2265 Display Station – Mdl 2			B								
	3881 Optical Mark Reader – Mdl 1				B	B	B	B	B	B	B	B
	5475 Data Entry Keyboard					B	B					
	Local Work Stations (1 or 2)***		A									
	Local Work Stations (3 to 5)***		B									

*3741 is not required if 5471 is attached to System/3 Model 8.

**Directly attached.

***Local work stations can be attached to System/3 Model 4 in any combination of the following devices:

3277 Mdl 1 or 2	3286 Mdl 1 or 2
3284 Mdl 1 or 2	3288 Mdl 2

Note: RPQs (requests for price quotation) are special features. Contact your marketing representative for more information.

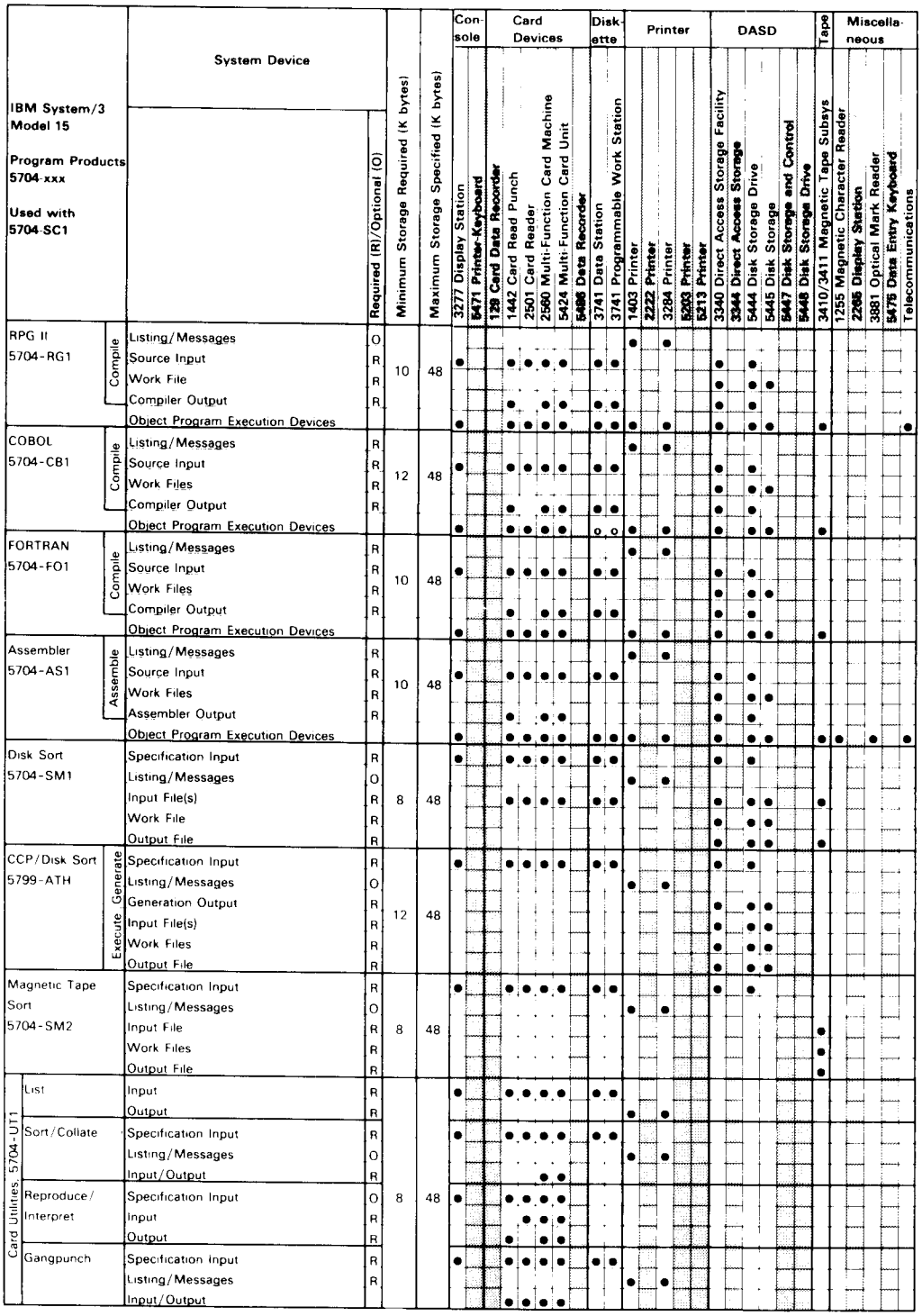
IBM System/3 Configuration Summary

The following charts show the devices supported by the IBM System/3 program products. The *system device* is the hardware required by or available to an executing program to complete its assigned tasks. The definitions of these devices are:

- *Listing/Messages* – The device used to output program listings and diagnostic messages.
- *Source Input* – The device that contains the program to be compiled or assembled.
- *Work Files* – The files used as temporary storage as a program is executing its various phases.
- *Compiler* or *Assembler Output* – The device used to write the object program.
- *Specification Input* – The device that is to be used to enter required control information.
- *Object Program Execution Devices* – The devices that can be used by object programs during execution.
- *Input and Output Files* – The devices used as data input and output files during program execution.

The system devices that are mandatory are designated by an R in the *Required/Optional* column; those that are optional are designated by an O. The bullet (●) in the chart indicates that the device is supported by standard programming; for COBOL, those devices designated by a circle (o) are supported only by the ACCEPT verb. The devices in the shaded columns are not supported on that model.

Minimum Storage Required is defined as the main storage required for a program to execute, exclusive of supervisor and other SCP requirements.



Program Product Support with 5704-SC1

IBM System/3 Model 15 Program Products 5704-xxx Used with 5704-SC2		System Device	Required (R)/Optional (O)	Minimum Storage Required (K bytes)	Maximum Storage Specified (K bytes)	Console		Card Devices						Diskette	Printer			DASD							Tape	Miscellaneous			
						3277 Display Station	5471 Printer-Keyboard	129 Card Data Recorder	1442 Card Read Punch	2501 Card Reader	2560 Multi-Function Card Machine	5424 Multi-Function Card Unit	5496 Data Recorder	3741 Data Station	3741 Programmable Work Station	1403 Printer	2222 Printer	3284 Printer	5203 Printer	5213 Printer	3340 Direct Access Storage Facility	3344 Direct Access Storage	5444 Disk Storage Drive	5445 Disk Storage	5447 Disk Storage and Control	5448 Disk Storage Drive	3410/3411 Magnetic Tape Subsys	1255 Magnetic Character Reader	2265 Display Station	3881 Optical Mark Reader	5475 Data Entry Keyboard	Telecommunications
RPG II 5704-RG2	Compile	Listing/Messages	O	10	56											●		●													
		Source Input	R			●			●		●		●	●						●											
		Work File	R																		●										
		Compiler Output	R						●			●	●	●							●										
		Object Program Execution Devices				●			●	●		●	●	●		●		●		●	●					●					●
COBOL 5704-CB2	Compile	Listing/Messages	R	12	56											●		●													
		Source Input	R			●			●		●		●	●						●											
		Work Files	R																		●										
		Compiler Output	R						●			●	●	●							●										
		Object Program Execution Devices				●			●	●		●	●	o	o	●		●		●	●					●					
FORTRAN 5704-FO2	Compile	Listing/Messages	R	10	56											●		●													
		Source Input	R			●			●		●		●	●						●											
		Work Files	R																		●										
		Compiler Output	R						●			●	●	●							●										
		Object Program Execution Devices				●			●	●		●	●	●		●		●		●	●					●					
Assembler 5704-AS2	Assemble	Listing/Messages	R	10	56											●		●													
		Source Input	R			●			●		●		●	●						●											
		Work Files	R																		●										
		Assembler Output	R						●			●	●	●							●										
		Object Program Execution Devices				●			●	●		●	●	●		●		●		●	●					●	●		●		●
Disk Sort 5704-SM9		Specification Input	R	8	56	●			●		●		●	●						●											
		Listing/Messages	O													●		●													
		Input File(s)	R						●		●		●	●						●							●					
		Work File	R																		●										
		Output File	R																		●						●				
CCP/Disk Sort 5704-SM7	Generate	Specification Input	R	12	48	●			●		●		●	●						●											
		Listing/Messages	O													●		●													
		Generation Output	R																		●										
	Execute	Input File(s)	R																		●										
		Work Files	R																		●										
		Output File	R																		●						●				
Magnetic Tape Sort 5704-SM8		Specification Input	R	8	56	●			●		●		●	●						●											
		Listing/Messages	O													●		●													
		Input File	R																								●				
		Work Files	R																								●				
		Output File	R																								●				
Card Utilities 5704-UT3	List	Input	R	8	56	●			●		●		●	●																	
		Output	R													●		●													
	Sort/Collate	Specification Input	R			●			●		●		●	●																	
		Listing/Messages	O													●		●													
		Input/Output	R									●	●																		
	Reproduce/ Interpret	Specification Input	O			●			●		●		●																		
		Input	R								●		●																		
		Output	R						●			●	●																		
	Gangpunch	Specification Input	R			●			●		●		●	●																	
		Listing/Messages	R													●		●													
		Input/Output							●	●	●	●	●																		

Program Product Support with 5704-SC2

This appendix contains the statements you need to copy selected SCP features and program products.

Data management support must be copied in addition to the listed modules for ASSEMBLER, COBOL, FORTRAN, DISK SORT, CCP DISK SORT, and RPG. See Appendix B for data management modules for 5704-SC1 or Appendix C for data management modules for 5704-SC2.

COPY STATEMENTS REQUIRED FOR PROGRAM PRODUCTS

Basic Assembler

```
// COPY FROM-R1,TO-F1,LIBRARY-O,RETAIN-P,NAME-$AS.ALL
```

Card Utilities

```
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-O,NAME-$CS.ALL    MFCU sort/collate
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-O,NAME-$REPRO     MFCU reproduce/interpret
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-O,NAME-$CLIST     MFCU list
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-O,NAME-$GANGP  }  Gangpunch
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-O,NAME-$GPEXC  }
```

CCP/Disk Sort

```
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-O,NAME-$DG.ALL
```

COBOL Compiler

```
// COPY FROM-R1,TO-F1,LIBRARY-P,RETAIN-R,NAME-COBOL
// COPY FROM-R1,TO-F1,LIBRARY-O,RETAIN-R,NAME-$CB.ALL
// COPY FROM-R1,TO-F1,LIBRARY-R,RETAIN-R,NAME-$CB.ALL
// COPY FROM-R1,TO-F1,LIBRARY-R,RETAIN-R,NAME-CFTOD
```

Disk Sort

```
// COPY FROM-R1,TO-F1,LIBRARY-O,RETAIN-P,NAME-$DS.ALL
```

```
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-P,NAME-FORT.ALL
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-O,NAME-$FO.ALL
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$FO.ALL
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-ADD
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-ALOG
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-ALOG10
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-ATAN
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-A1DEC
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-BUG
//   COPY   FROM-R1,TO-F1,RETAIN-R,LIBRARY-R,NAME-CFTOD
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-COS
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-DATAN
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-DATSW
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-DCOS
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-DECA1
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-DEXP
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-DIV
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-DLOG
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-DLOG10
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-DMOD
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-DPACK
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-DSIN
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-DSQRT
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-DTANH
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-DUMP
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-DUNPK
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-DVCHK
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-EDIT
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-EXIT
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-EXP
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-FCTST
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-FILL
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-GET
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-IBTST
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-ICOMP
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-INQCHK
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-I2OR4
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-KEYBD
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-LCOMP
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-MOVE
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-MPY
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-NCOMP
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-NSIGN
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-NZONE
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-OVERFL
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-PACK
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-PDUMP
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-PRINT
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-PUNCH
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-PUT
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-P1403
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-P1442
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-P2560
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-P3284
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-P3741
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-READ
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-READ42
//   COPY   FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-R2501
```

```
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-R2560
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-R3741
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-SETO
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-SET1
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-SETINQ
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-SHIFT
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-SHIFTR
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-SIN
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-SKIP
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-SLITE
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-SLITET
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-SPACE
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-SP1403
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-SP3284
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-SQRT
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-STACK
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-STAK42
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-STAK60
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-SUB
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-S1403
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-S3284
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-TANH
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-TYPER
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-UNPAC
//  COPY  FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-WHOLE
```

RPG II Compiler/RPG II Telecommunications

```
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-P,NAME-RPG
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-O,NAME-$RP.ALL
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$PG.ALL
// COPY FROM-R1,TO-F1,LIBRARY-R,RETAIN-P,NAME-SUBR.ALL
```

RPG II Auto Report

```
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-O,NAME-$AU.ALL
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-P,NAME-AUTO
```

RPG II 3270 Display Control Feature (5704-SC1 Only)

```
// COPY FROM-R1,TO-F1,LIBRARY-O,RETAIN-R,NAME-$$DU.ALL
// COPY FROM-R1,TO-F1,LIBRARY-R,RETAIN-R,NAME-$$DU.ALL
// COPY FROM-R1,TO-F1,LIBRARY-R,RETAIN-R,NAME-SUBR13
// COPY FROM-R1,TO-F1,LIBRARY-R,RETAIN-R,NAME-SUBR14
// COPY FROM-R1,TO-F1,LIBRARY-R,RETAIN-R,NAME-SUBR93
// COPY FROM-R1,TO-F1,LIBRARY-P,RETAIN-R,NAME-RES
// COPY FROM-R1,TO-F1,LIBRARY-P,RETAIN-R,NAME-NORES
// COPY FROM-R1,TO-F1,LIBRARY-P,RETAIN-R,NAME-DSPY
// COPY FROM-R1,TO-F1,LIBRARY-P,RETAIN-R,NAME-NODSPY
// COPY FROM-R1,TO-F1,LIBRARY-P,RETAIN-R,NAME-TRC
// COPY FROM-R1,TO-F1,LIBRARY-P,RETAIN-R,NAME-NOTRC
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-R,NAME-INSVER
// COPY FROM-R1,TO-F1,LIBRARY-P,RETAIN-R,NAME-DBUG
// COPY FROM-R1,TO-F1,LIBRARY-P,RETAIN-R,NAME-NODBUG
// COPY FROM-R1,TO-F1,LIBRARY-P,RETAIN-R,NAME-RAF
// COPY FROM-R1,TO-F1,LIBRARY-P,RETAIN-R,NAME-NORAF
```

Tape Sort

```
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-O,NAME-$TS.ALL
```

COPY STATEMENTS REQUIRED FOR SYSTEM CONTROL PROGRAMMING SUPPORT

$COPY/DUMP Support (Models 15A, 15B, and 15C)

```
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-O,NAME-$CO.ALL
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$CO.ALL
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$DIAB
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSIP
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSOP
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRDA
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRBP
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRBR
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRDF
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRDI
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRMC
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRRC
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRRI
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRSB
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRTC
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRUA
```

5444 Simulation

```
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSIM
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSOM
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$DAIT
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$IOUM
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$ISIL
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$ISIM
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRBI
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRBP
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRBR
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRDA
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRDF
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRDI
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRIC
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRIU
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRLP
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRMO
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRRC
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRRI
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRSB
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRTC
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRUA
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRLT
```

5444

```
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CFIM
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CFOM
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$DFIT
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$IFUM
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$IHIB
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$IHIM
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFBI
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFBP
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFBR
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFDA
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFDF
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFIC
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRLP
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFMO
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFPD
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFRC
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFRI
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFSB
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRTC
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFUA
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSAI
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSAO
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSIA
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSIT
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSOA
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSOT
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSTI
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSTO
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$TS.ALL
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSII
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRIA
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRIB
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRIS
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRIW
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSII
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSIC
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRIZ
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRIT
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRIM
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRMO
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRBP
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRDF
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFBP
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFDF
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSIC
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$LPRT
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$LPMP
```

5445/3340

Tape

5424, 2560, 3741, 1442, 2501

5424, 2560, 3741, 1442

1403

3284

$COPY/DUMP Support (Model 15D)

```
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-O,NAME-$CO.ALL
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$CO.ALL
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$DAIB
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSIP
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSOP
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRBP
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRBR
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRDF
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRDI
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRMO
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRRC
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRRI
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRSB
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRTC
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRUA
```

5444 Simulation Area

```
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CFIM
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CFOM
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$DFIT
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$IFUM
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$IHUB
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$IHIM
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFBI
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRBP
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFBR
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFDA
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFDF
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFIC
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFIU
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRLP
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFMO
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFPD
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFRC
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFRI
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFSB
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRTC
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFUA
```

3340/3344

```
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSAI
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSAO
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSIA
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSIT
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSOA
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSOT
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSTI
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSTO
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$TS.ALL
```

Tape

```
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSII
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRIA
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRIB
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRIS
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRIW
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSII
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSIO
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRIT
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRIM
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRMO
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRBP
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRDF
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SRBP
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$SFDF
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$CSIO
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$LPRT
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$LPMP
```

5424, 2560, 3741, 1442, 2501

5424, 2560, 3741, 1442

1403

3284

Customer Engineering Diagnostic Support

```
// COPY FROM-R1,TO-F1,RETAIN-R,LIBRARY-O,NAME-$CE.ALL
```
Copies all the CE diagnostic programs

```
// COPY FROM-R1,TO-F1,RETAIN-R,LIBRARY-O,NAME-$CEOLD
```
Always required

```
// COPY FROM-R1,TO-F1,RETAIN-R,LIBRARY-O,NAME-$CEF0.ALL
```
MFCU support

```
// COPY FROM-R1,TO-F1,RETAIN-R,LIBRARY-O,NAME-$CEF2.ALL
```
MFCM support

```
// COPY FROM-R1,TO-F1,RETAIN-R,LIBRARY-O,NAME-$CEE1.ALL
```
1403 support

```
// COPY FROM-R1,TO-F1,RETAIN-R,LIBRARY-O,NAME-$CEE2.ALL
```
Second 1403 support

```
// COPY FROM-R1,TO-F1,RETAIN-R,LIBRARY-O,NAME-$CE31.ALL
```
2501 support

```
// COPY FROM-R1,TO-F1,RETAIN-R,LIBRARY-O,NAME-$CEC1B
```
3340 scan support

```
// COPY FROM-R1,TO-F1,RETAIN-R,LIBRARY-O,NAME-$CE5.ALL
```
1442 support

```
// COPY FROM-R1,TO-F1,RETAIN-R,LIBRARY-O,NAME-$CE80E
```
BSCA support

```
// COPY FROM-R1,TO-F1,RETAIN-R,LIBRARY-O,NAME-$CELST
```
List function support

```
// COPY FROM-R1,TO-F1,RETAIN-R,LIBRARY-O,NAME-$CEFF.ALL
```
3340 ERAP support

```
// COPY FROM-R1,TO-F1,RETAIN-R,LIBRARY-O,NAME-$CE404
```
3741 support

```
// COPY FROM-R1,TO-F1,RETAIN-R,LIBRARY-O,NAME-$CE7.ALL
```
Tape support

Macro Processor and I/O Macros Support

```
// COPY FROM-R1,TO-F1,LIBRARY-O,RETAIN-P,NAME-$MPX.ALL
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$ALOC
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$CHK
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$CKL
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$CLOS
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$COMN
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$CQEP
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$CTLT
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$DATE
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$DTFC
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$DTFD
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$DTFI
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$DTFK
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$DTFO
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$DTFP
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$DTFS
```

```
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$DTFT
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$EOJ
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$FIND
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$FTCH
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$GETC
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$GETD
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$GETI
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$GETK
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$GETS
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$GETT
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$GPC
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$IOBD
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$IOED
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$LMSG
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$LOAD
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$LOG
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$LOGD
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$LWTO
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$OPEN
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$PFKT
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$PFKY
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$PGS
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$PUTC
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$PUTD
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$PUTI
// COPY FROM-R1,TO-F1,LIBRARY-S,RETAIN-P,NAME-$PUTK
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$PUTP
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$PUTS
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$PUTT
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$RDD
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$RDT
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$READ
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$RIT
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$RLSD
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$RLST
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$ROLL
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$SIT
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$SNAP
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$TIOB
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$TOD
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$TRAN
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$TRL
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$TRTB
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$WAIT
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$WRTD
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$WRTT
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$WTT
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$XCTL
```

MLMP (Multiline/Multipoint) Support

```
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-O,NAME-$$BS.ALL
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-R,NAME-$$BS.ALL
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$BCPL
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$DTOB
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$CANB
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$DTFB
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$GETB
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$POLB
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S.NAME-$PUTB
// COPY FROM-R1,TO-F1,RETAIN-P.LIBRARY-S,NAME-$RFT
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$CHGB
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$BCSW
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$SWIB
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$RFTL
// COPY FROM-R1,TO-F1,RETAIN-P,LIBRARY-S,NAME-$LOGB
```

PTF Support

```
// COPY FROM-R1,TO-F1,LIBRARY-P,RETAIN-R,NAME-$SGPT2
// COPY FROM-R1,TO-F1,LIBRARY-P,RETAIN-R,NAME-$@G.ALL,NEWNAME-$SG
// COPY FROM-R1,TO-F1,LIBRARY-O,RETAIN-R,NAME-$SGFIX
// COPY FROM-R1,TO-F1,LIBRARY-O,RETAIN-R,NAME-$SGLOG
// COPY FROM-R1,TO-F1,LIBRARY-O,RETAIN-R,NAME-$SGPTF
// COPY FROM-R1,TO-F1,LIBRARY-O,RETAIN-R,NAME-$SGPTR
// COPY FROM-R1,TO-F1,LIBRARY-O,RETAIN-R,NAME-$SGPVR
```

// IMAGE (see IMAGE OCL statement)

$@MCRI/$$MCRI module (see display adapter support)

$ALT (see alternate track assignment)

$BTAM/$BTMM (see FORTRAN multivolume tape support)
$BUILD (see alternate track rebuild)

$CNFIG (see configuration record)
$COPY (see copy/dump)
$CPRNT (see sysdump print)

$DCOPY (see dump/restore)
$DELET (see file delete)
$DISK@ (see disk address compare)

$FCOMP (see file compress)

$HIST (see system history area display)

$INIT (see disk initialization)

$KLEAN (see chain cleaning)

$LABEL (see file and volume label display)

$MAINT (see library maintenance)

$OLINK (see linkage editor)

$QCOPY (see spool file copy)

$RINDX (see recover index)
$RSALT (see reassign alternate track)

$SCOPY (see simulation area program)
$SGASM/$SGAS2 (see Basic Assembler)
$SGATH (see CCP/Disk Sort)
$SGAU/$SGAU2 (see RPG II auto report)
$SGBSC/$SGBS2 (see RPG II BSCA telecommunications)
$SGCB2 (see COBOL compiler)
$SGCED/$SGCE2 (see CE diagnostics support)
$SGCOB (see COBOL compiler)
$SGDCF (see RPG II 3270 DCF)
$SGDST (see CCP/Disk Sort)
$SGEN program, calling
  5704-SC1 2-7
  5704-SC2 2-32
$SGFIX (see CE support, PTF program support)
$SGFTN/$SGFT2 (see FORTRAN compiler)
$SGLOG (see CE support, PTF program support)
$SGMAC/$SGMA2 (see macro processor support)
$SGPTF (see CE support, PTF program support)
$SGPTR (see CE support, PTF program support)
$SGPT2 (see CE support, PTF program support)
$SGRG2/$SGRPG (see RPG II compiler)
$SGSRT/$SGSR2 (see Disk Sort)
$SGSVE source module, copying
  5704-SC1 2-6
  5704-SC2 2-31
$SGTST/$SGTS2 (see Tape Sort)
$SGUTL/$SGUT3 (see Card Utilities)
$SPOOL (see spool file)

$TINIT (see tape initialization)
$TRACE (see trace routine)
$TRLOG (see transaction logging)
$TVES (see tape error summary)

$VTOC (see data interchange)

$WVTOC (see VTOC conversion)

access method relationships, disk
  main data area (5704-SC1) B-11
  3340 (5704-SC1) B-11
  3340/3344
    external buffers C-12
    internal buffers C-11
  5444 B-10
  5445 B-11
access methods disk
  main data area
    external buffers C-7
    internal buffers C-6
  simulation area C-8
  3340 (5704-SC1) B-7
  3344
    external buffers C-7
    internal buffers C-7
  5444 B-5
  5445 B-6
access methods, tape
  5704-SC1 B-8
  5704-SC2 C-9
active data files, restoring 2-27, 2-57
active library cataloging considerations 1-7

alternate track assignment
COPY/DELETE parameters
5704-SC1 B-18
5704-SC2 C-17
library requirements, system/program pack
5704-SC1 B-18
5704-SC2 C-17
alternate track rebuild
COPY/DELETE parameters
5704-SC1 B-18
5704-SC2 C-17
library requirements, system/program pack
5704-SC1 B-18
5704-SC2 C-17
AN print arrangement A-3
ANS COBOL (see COBOL)
area assignment (see simulation area assignment)
ASNPn (simulation area assignment) prompt 2-42
assembler (see Basic Assembler)
ASSIGN OCL statement considerations 1-7
assignment considerations, simulation area 1-7
auto report (see RPG II auto report)
automatic starting (see autostart)
automatic writing (see autowrite)
autostart
considerations 1-4
prompt (AUTST)
5704-SC1 2-20
5704-SC2 2-49
autowrite
considerations 1-4
prompt (AUTWT)
5704-SC1 2-20
5704-SC2 2-49
AUTST (spooling autostart) prompt
5704-SC1 2-20
5704-SC2 2-49
AUTWT (spooling autowrite) prompt
5704-SC1 2-20
5704-SC2 2-49
auxiliary storage (see disk storage)

backup
distribution programs 2-22, 2-51
F1 2-23
F1/R1 2-52
resident system 2-4
Basic Assembler
COPY/DELETE parameters
5704-SC1 B-23
5704-SC2 C-21
COPY statements G-1
device support F-3
generation
3340 system 2-54
5444 system 2-24
Basic Assembler (continued)
library requirements
distribution data module C-15
distribution disk cartridge B-16
system/program pack, 5704-SC1 B-23
system/program pack, 5704-SC2 C-21
binary synchronous communications adapter (see BSCA)
binary synchronous communications
controller (see BSCC)
BSCA
(see also RPG II BSCA telecommunications)
data management library requirements
system/program pack, 5704-SC1 B-20
system/program pack, 5704-SC2 C-19
library requirements
system/program pack, 5704-SC1 B-17
system/program pack, 5704-SC2 C-16
line support (LINEB) prompt
5704-SC1 2-16
5704-SC2 2-44
supervisor size requirements
5704-SC1 B-2
5704-SC2 C-2
BSCC
data management library
requirements C-19
library requirements, system/program
pack C-16
line support (LINEC) prompt 2-44
supervisor size requirements C-2
support considerations 1-6
build
minimal resident system 2-25, 2-56
program pack
3340 system 2-58
5444 system 2-28
bulk storage (see disk storage)

cancel option 2-7, 2-32
card gangpunch (see Card Utilities)
card I/O support (CARDD) prompt
5704-SC1 2-13
5704-SC2 2-39
card list (see Card Utilities)
card read punch (see 1442 card read punch)
card reader (see 2560 card reader)
card reproduce (see Card Utilities)
card sort (see Card Utilities
card type default
considerations 1-5
prompt (DEFCN)
5704-SC1 2-19
5704-SC2 2-48
Card Utilities
COPY/DELETE parameters
5704-SC1 B-24
5704-SC2 C-21
COPY statements G-1

Card Utilities (continued)
device support F-3
generation
3340 system 2-54
5444 system 2-24
library requirements
distribution data module C-15
distribution disk cartridge B-16
system/program pack, 5704-SC1 B-24
system/program pack, 5704-SC2 C-21
CARDD (card I/O support) prompt
5704-SC1 2-13
5704-SC2 2-39
cartridge (see disk cartridge)
cataloging support considerations 1-7
CATLG (program pack protection) prompt 2-36
CCP $QCOPY rename (QCOPY) prompt 2-47
CCP/Disk Sort
COPY/DELETE parameters
5704-SC1 B-23
5704-SC2 C-21
COPY statements G-1
device support F-3
generation
3340 system 2-54
5444 system 2-24
library requirements
distribution data module C-15
distribution disk cartridge B-16
system/program pack 5704-SC1 B-23
system/program pack 5704-SC2 C-21
CCP library cataloging considerations 1-7
CCP support
considerations 1-6
library requirements, system/program pack
5704-SC1 B-20
5704-SC2 C-18
supervisor requirements
5704-SC1 B-3
5704-SC2 C-5
supervisor size requirements
5704-SC1 B-2
5704-SC2 C-2
CCP timer support (TIMER) prompt
5704-SC1 2-16
5704-SC2 2-43
CCP user task support (CCPUT) prompt
5704-SC1 2-18
5704-SC2 2-46
CCPUT (CCP user task support) prompt
5704-SC1 2-18
5704-SC2 2-46
CE diagnostics support
considerations 1-6
COPY/DELETE parameters
5704-SC1 B-18
5704-SC2 C-17
COPY statements G-4
generation
5704-SC1 2-20
5704-SC2 2-50
CE diagnostics support (continued)
library requirements, system/program pack
5704-SC1 B-18
5704-SC2 C-17
CE support programs
(see also PTF programs)
COPY/DELETE parameters B-22
library requirements, system/program pack B-22
chain (see print chain)
chain cleaning
COPY/DELETE parameters
5704-SC1 B-19
5704-SC2 C-17
library requirements, system/program pack
5704-SC1 B-19
5704-SC2 C-17
CHAR parameter, IMAGE statement A-1
checklist, preinstallation planning
5704-SC1 1-8
5704-SC2 1-10
checkpoint/restart
library requirements, system/program pack
5704-SC1 B-17
5704-SC2 C-16
supervisor size requirements
5704-SC1 B-2
5704-SC2 C-2
support (CKPRS) prompt
5704-SC1 2-17
5704-SC2 2-46
CKPRS (checkpoint/restart support) prompt
5704-SC1 2-17
5704-SC2 2-46
clearing
F1 2-23, 2-28, 2-58
F1/R1 2-52
COBOL compiler
COPY/DELETE parameters
5704-SC1 B-23
5704-SC2 C-21
COPY statements G-1
device support F-3
generation
3340 system 2-54
5444 system 2-24
library requirements
distribution data module C-15
distribution disk cartridge B-16
system/program pack, 5704-SC1 B-23
system/program pack, 5704-SC2 C-21
common area considerations 1-7
communications control program (see CCP)
communications support
combinations, 5704-SC2 2-43
prompts
5704-SC1 2-16
5704-SC2 2-43
configuration record
COPY/DELETE parameters C-17
library requirements, system/program pack C-17

configurations, system F-1
CONSOLE system input device support (SYINn)
prompt
5704-SC1 2-14
5704-SC2 2-40
copy
program 2-29, 2-59
program pack 2-30, 2-60
resident system 2-5
tailored system 2-23, 2-25, 2-53, 2-55
copy/dump
COPY/DELETE parameters
5704-SC1 B-18
5704-SC2 C-17
library requirements, system/program pack
5704-SC1 B-18
5704-SC2 C-17
COPY parameters
alternate track assignment
5704-SC1 B-18
5704-SC2 C-17
alternate track rebuild
5704-SC1 B-18
5704-SC2 C-17
Basic Assembler
5704-SC1 B-23
5704-SC2 C-21
Card Utilities
5704-SC1 B-24
5704-SC2 C-21
CCP/Disk Sort
5704-SC1 B-23
5704-SC2 C-21
CE diagnostics
5704-SC1 B-18
5704-SC2 C-17
CE support programs
(see also PTF programs)
5704-SC1 B-22
chain cleaning
5704-SC1 B-19
5704-SC2 C-17
COBOL compiler
5704-SC1 B-23
5704-SC2 C-21
configuration record C-17
copy/dump
5704-SC1 B-18
5704-SC2 C-17
data interchange B-19
disk address compare C-17
disk initialization
5704-SC1 B-19
5704-SC2 C-18
Disk Sort
5704-SC1 B-23
5704-SC2 C-21
dump/restore
5704-SC1 B-19
5704-SC2 C-18
COPY parameters (continued)
dump tape/disk
5704-SC1 B-20
5704-SC2 C-18
file compress
5704-SC1 B-19
5704-SC2 C-18
file delete
5704-SC1 B-19
5704-SC2 C-17
file/volume label display
5704-SC1 B-19
5704-SC2 C-18
FORTRAN compiler
5704-SC1 B-23
5704-SC2 C-21
library entry retrieval C-18
library maintenance
5704-SC1 B-19
5704-SC2 C-18
linkage editor
5704-SC1 B-19
5704-SC2 C-18
macro processor
5704-SC1 B-18
5704-SC2 C-17
PTF programs
(see also CE support)
5704-SC2 C-17
reassign alternate track
5704-SC1 B-18
5704-SC2 C-17
recover index
5704-SC1 B-19
5704-SC2 C-18
RPG II auto report
5704-SC1 B-23
5704-SC2 C-21
RPG II BSCA telecommunications
5704-SC1 B-23
5704-SC2 C-21
RPG II compiler
5704-SC1 B-23
5704-SC2 C-21
RPG II 3270 DCF B-23
simulation area program
5704-SC1 B-19
5704-SC2 C-17
spool file copy C-18
sysdump print C-17
system history area display
5704-SC1 B-20
5704-SC2 C-18
tape error summary
5704-SC1 B-19
5704-SC2 C-18
tape initialization
5704-SC1 B-19
5704-SC2 C-18
Tape Sort
5704-SC1 B-23
5704-SC2 C-21

COPY parameters (continued)
trace routine
5704-SC1 B-18
5704-SC2 C-17
transaction logging C-18
VTOC conversion
5704-SC1 B-19
5704-SC2 C-18
COPY statements
program products G-1
SCP support G-4
COPYIPL function considerations 1-6
core (see main storage)
CPU (see processing unit)
CRT/keyboard (see CONSOLE, 3270)
customer engineering (see CE)
cylinder 0 considerations 1-6
cylinders for spool file (see spool file size)

DA (see display adapter)
data files, restoring 2-27, 2-57
data interchange
COPY/DELETE parameters B-19
library requirements, system/program pack B-19
data management estimates
5704-SC1 B-3
5704-SC2 C-5
data management library requirements, system/program pack
5704-SC1 B-20
5704-SC2 C-19
data management main storage requirements
device independent
5704-SC1 B-12
5704-SC2 C-13
disk simulation area C-8
unit record
5704-SC1 B-12
5704-SC2 C-13
1403 printer
5704-SC1 B-12
5704-SC2 C-13
1442 card read punch
5704-SC1 B-12
5704-SC2 C-13
2501 card reader
5704-SC1 B-12
5704-SC2 C-13
2560 MFCM
5704-SC1 B-12
5704-SC2 C-13
3277 display station
5704-SC1 B-12
5704-SC2 C-13
3284 printer
5704-SC1 B-12
5704-SC2 C-13
data management main storage requirements (continued)
3340 disk
external buffers C-7
internal buffers C-6
5704-SC1 B-7
3344 disk
external buffers C-7
internal buffers C-6
3410/3411 tape
5704-SC1 B-8
5704-SC2 C-9
3741 data station
5704-SC1 B-12
5704-SC2 C-13
5424 MFCU
5704-SC1 B-12
5704-SC2 C-13
5444 disk B-5
5445 disk B-6
data module
(see also disk)
format E-1
data statements (for IMAGE statements) A-1
data station (see 3741)
date format (DATEF) prompt
5704-SC1 2-11
5704-SC2 2-37
DATEF (date format) prompt
5704-SC1 2-11
5704-SC2 2-37
DCF (see RPG II 3270 DCF)
default card type
considerations 1-5
prompt (DEFCN)
5704-SC1 2-19
5704-SC2 2-48
default forms type
considerations 1-5
prompt (DEFFN)
5704-SC1 2-19
5704-SC2 2-48
default lines/page
1403 printer
5704-SC1 2-11
5704-SC2 2-37
3284 printer
5704-SC1 2-12
5704-SC2 2-38
default log device (PnLOG) prompts
5704-SC1 2-13
5704-SC2 2-39
DEFCN (default card type) prompt
5704-SC1 2-19
5704-SC2 2-48
DEFFN (default forms type) prompt
5704-SC1 2-19
5704-SC2 2-48

DELETE parameters
alternate track assignment
5704-SC1 B-18
5704-SC2 C-17
alternate track rebuild
5704-SC1 B-18
5704-SC2 C-17
Basic Assembler
5704-SC1 B-23
5704-SC2 C-21
Card Utilities
5704-SC1 B-24
5704-SC2 C-21
CCP/Disk Sort
5704-SC1 B-23
5704-SC2 C-21
CE diagnostics
5704-SC1 B-18
5704-SC2 C-17
CE support programs
(see also PTF programs)
5704-SC1 B-22
chain cleaning
5704-SC1 B-19
5704-SC2 C-17
COBOL compiler
5704-SC1 B-23
5704-SC2 C-21
configuration record C-17
copy/dump
5704-SC1 B-18
5704-SC2 C-17
data interchange B-19
disk address compare C-17
disk initialization
5704-SC1 B-19
5704-SC2 C-18
Disk Sort
5704-SC1 B-23
5704-SC2 C-21
dump/restore
5704-SC1 B-19
5704-SC2 C-18
dump tape/disk
5704-SC1 B-20
5704-SC2 C-18
file compress
5704-SC1 B-19
5704-SC2 C-18
file delete
5704-SC1 B-19
5704-SC2 C-17
file/volume label display
5704-SC1 B-19
5704-SC2 C-18
FORTRAN compiler
5704-SC1 B-23
5704-SC2 C-21
DELETE parameters (continued)
library entry retrieval C-18
library maintenance
5704-SC1 B-19
5704-SC2 C-18
linkage editor
5704-SC1 B-19
5704-SC2 C-18
macro processor
5704-SC1 B-18
5704-SC2 C-17
PTF programs
(see also CE support)
5704-SC2 C-17
reassign alternate track
5704-SC1 B-18
5704-SC2 C-17
recover index
5704-SC1 B-19
5704-SC2 C-18
RPG II auto report
5704-SC1 B-23
5704-SC2 C-21
RPG II BSCA telecommunications
5704-SC1 B-23
5704-SC2 C-21
RPG II compiler
5704-SC1 B-23
5704-SC2 C-21
RPG II 3270 DCF B-23
simulation area program
5704-SC1 B-19
5704-SC2 C-17
spool file copy C-18
sysdump print C-17
system history area display
5704-SC1 B-20
5704-SC2 C-18
tape error summary
5704-SC1 B-19
5704-SC2 C-18
tape initialization
5704-SC1 B-19
5704-SC2 C-18
Tape Sort
5704-SC1 B-23
5704-SC2 C-21
trace routine
5704-SC1 B-18
5704-SC2 C-17
transaction logging C-18
VTOC conversion
5704-SC1 B-19
5704-SC2 C-18
device codes 2-1
device independent data management main storage requirements
5704-SC1 B-12
5704-SC2 C-13

DEVICE SELECTED IS NOT SUPPORTED
message 2-9, 2-34
device support, program products F-3
diagnostics support, CE
considerations 1-6
generation
5704-SC1 2-20
5704-SC2 2-50
directory size (DIRSZ) prompt
5704-SC1 2-10
5704-SC2 2-35
DIRSZ (object library directory size)
prompt
5704-SC1 2-10
5704-SC2 2-35
disk access method relationships
main data area
5704-SC1 B-11
5704-SC2 C-11, C-12
simulation area (5704-SC2) C-11, C-12
3340 (5704-SC1) B-11
3340/3344
external buffers C-12
internal buffers C-11
5444 B-10
5445 B-11
disk access methods
main data area
external buffers C-7
internal buffers C-6
simulation area C-8
3340 (5704-SC1) B-7
3344
external buffers C-7
internal buffers C-6
5444 B-5
5445 B-6
disk address compare
COPY/DELETE parameters C-17
library requirements, system/program
pack C-17
disk cartridge initialization 2-5
disk data management (see data management)
disk device support prompts
5704-SC1 2-15
5704-SC2 2-41
Disk FORTRAN IV (see FORTRAN)
disk initialization
COPY/DELETE parameters
5704-SC1 B-19
5704-SC2 C-18
library requirements, system/program pack
5704-SC1 B-19
5704-SC2 C-18
disk-resident card utilities (see Card Utilities)
disk-resident tape sort (see Tape Sort)
Disk RPG II (see RPG II)
Disk Sort
COPY/DELETE parameters
5704-SC1 B-23
5704-SC2 C-21
Disk Sort (continued)
COPY statements G-1
device support F-3
generation
3340 system 2-54
5444 system 2-24
library requirements
distribution data module C-15
distribution disk cartridge B-16
system/program pack, 5704-SC1 B-23
system/program pack, 5704-SC2 C-21
disk storage estimates
5704-SC1 B-14
5704-SC2 C-14
disk storage requirements
(see also library requirements)
distribution data module C-15
distribution disk cartridge B-16
display adapter
library requirements, system/program pack
5704-SC1 B-17
5704-SC2 C-16
prompt (LINEB)
5704-SC1 2-16
5704-SC2 2-44
support considerations 1-6
display control feature (see RPG II 3270 DCF)
display station (see 3277 display station, console)
distribution data module
care 1-1
storage requirements
5704-SC1 B-15
5704-SC2 C-14
distribution disk cartridge
care 1-1
storage requirements B-14
distribution program backup 2-20, 2-51
distribution tape reels (DTRs) E-1
DRIVE SELECTED IS NOT SUPPORTED message 2-9, 2-34
DSK33 (3340 disk configuration) prompt 2-15
DSK41 (3741 I/O support) prompt
5704-SC1 2-13
5704-SC2 2-39
DSK44 (5444 disk configuration) prompt 2-15
DSK45 (5445 disk configuration) prompt 2-15
DTRs (distribution tape reels) E-1
dual density tape support (DUALD) prompt
5704-SC1 2-15
5704-SC2 2-43
DUALD (dual density tape support) prompt
5704-SC1 2-15
5704-SC2 2-43
dump/restore
COPY/DELETE parameters
5704-SC1 B-19
5704-SC2 C-18
library requirements, system/program pack
5704-SC1 B-19
5704-SC2 C-18

dump tape/disk
COPY/DELETE parameters
5704-SC1 B-20
5704-SC2 C-18
library requirements, system/program pack
5704-SC1 B-20
5704-SC2 C-18
D1A (see F1)
D1B (see R1)
D3340 (3340 disk configuration) prompt 2-41
D3344 (3344 disk configuration) prompt 2-41

EBCDIC code print arrangements A-3
EJECT log device option support
5704-SC1 2-13
5704-SC2 2-39
ENTER procedure 2-1
error message meanings 2-9, 2-34
extended binary coded decimal interchange code (see EBCDIC)
extended restart option
prompt (READY) 2-36
supervisor size requirements C-2
external buffers
disk data management main storage requirements C-7
main data area disk access methods C-7
3340/3344 disk access method relationships C-12

file compress
COPY/DELETE parameters
5704-SC1 B-19
5704-SC2 C-18
library requirements, system/program pack
5704-SC1 B-19
5704-SC2 C-18
file delete
COPY/DELETE parameters
5704-SC1 B-19
5704-SC2 C-17
library requirements, system/program pack
5704-SC1 B-19
5704-SC2 C-17
file share area
considerations 1-7
supervisor size requirements C-3
file/volume label display
COPY/DELETE parameters
5704-SC1 B-19
5704-SC2 C-18
library requirements, system/program pack
5704-SC1 B-19
5704-SC2 C-18
files
clearing from F1 2-23
clearing from F1/R1 2-52
deleting 2-28, 2-58
format
date (see date format)
prompt (see prompt format)
forms type default
considerations 1-5
5704-SC1 2-19
5704-SC2 2-48
prompt (DEFFN)
FORTRAN compiler
COPY/DELETE parameters
5704-SC1 B-23
5704-SC2 C-21
COPY statements G-2
device support F-3
generation
3340 system 2-54
5444 system 2-24
library requirements
distribution data module C-15
distribution disk cartridge B-16
system/program pack, 5704-SC1 B-23
system/program pack, 5704-SC2 C-21
FORTRAN multivolume tape support B-24, C-22
forty-eight character (see 48-character)
FUNCTION SELECTED IS NOT SUPPORTED message 2-9, 2-34

gangpunch cards program (see Card Utilities)
generation
checklist
5704-SC1 1-8
5704-SC2 1-10
overview
5704-SC1 1-2
5704-SC2 1-3
prompt summary D-1

HEX parameter, IMAGE statement A-1
hexadecimal code print arrangements A-3
history area size (HSTRY) prompt
5704-SC1 2-10
5704-SC2 2-35
HN print arrangement A-3
HSTRY (system history area size) prompt
5704-SC1 2-10
5704-SC2 2-35

I/O macros COPY statements G-4
I/O storage protection
prompt (IOPRT)
5704-SC1 2-17
5704-SC2 2-46
supervisor size requirements
5704-SC1 B-2
5704-SC2 C-2
I/O support prompts
5704-SC1 2-13
5704-SC2 2-39
IMAGE OCL statement description A-1
initial program load (see IPL)
initialization
disk (see disk initialization)
scratch disk cartridge 2-5
tape (see tape initialization)
input device (see system input device)
input/output (see I/O)
input spooling support considerations 1-4
INQRY (rollout/rollin support) prompt 2-17
inquiry (see rollout/rollin)
installation verification
3340 system 2-55
5444 system 2-25
INSUFFICIENT DISK SPACE FOR
ROLLOUT/CHECKPOINT message 2-17, 2-46
internal buffers
disk data management main storage
requirements C-6
main data area disk access methods C-6
3340/3344 disk access method
relationships C-11
interval timer support
prompt (TIMER)
5704-SC1 2-16
5704-SC2 2-43
supervisor size requirements
5704-SC1 B-2
5704-SC2 C-2
INVALID RESPONSE message 2-9, 2-34
IOPRT (I/O protection support) prompt
5704-SC1 2-17
5704-SC2 2-46
IPL (initial program load)
procedure 2-2
record considerations 1-6

LC print arrangement A-3
LCA (see local communications adapter)
libraries
clearing from F1 2-23
clearing from F1/R1 2-52
deleting 2-28, 2-58
library allocations
5704-SC1 B-25
5704-SC2 C-23
library entry retrieval
COPY/DELETE parameters C-18
library requirements, system/program pack C-18
library maintenance
COPY/DELETE parameters
5704-SC1 B-19
5704-SC2 C-18
library requirements, system/program pack
5704-SC1 B-19
5704-SC2 C-18
library requirements
distribution data module C-15
distribution disk cartridge B-16
system/program pack, 5704-SC1
program products B-23
SCP programs B-17
system/program pack, 5704-SC2
program products C-21
SCP programs C-15
library size prompts
5704-SC1 2-10
5704-SC2 2-35
line printer (see 1403)
LINEB (BSCA line support) prompt
5704-SC1 2-16
5704-SC2 2-44
LINEC (BSCC line support) prompt 2-44
LINEM (3284 lines/page) prompt
5704-SC1 2-12
5704-SC2 2-38
LINEP (1403 lines/page) prompt
5704-SC1 2-11
5704-SC2 2-37
lines/page
1403
5704-SC1 2-11
5704-SC2 2-37
3284
5704-SC1 2-12
5704-SC2 2-38
linkage editor
COPY/DELETE parameters
5704-SC1 B-19
5704-SC2 C-18
library requirements, system/program pack
5704-SC1 B-19
5704-SC2 C-18
list cards program (see Card Utilities)
local communications adapter support
(LINEB) prompt
5704-SC1 2-16
5704-SC2 2-44
log device (PnLOG) prompts
5704-SC1 2-13
5704-SC2 2-39

macro processor
COPY/DELETE parameters
5704-SC1 B-18
5704-SC2 C-17
COPY statements G-4
generation
5704-SC1 2-21
5704-SC2 2-50
library requirements, system/program pack
5704-SC1 B-18
5704-SC2 C-17
magnetic character reader (see 1255, 1419)
main data area
data management library requirements
system/program pack C-20
disk access method relationships
5704-SC1 B-11
5704-SC2 C-11, C-12
disk access methods
external buffers C-7
internal buffers C-6
5704-SC1 B-7
main storage estimates
5704-SC1 B-1
5704-SC2 C-1
main storage requirements, data management
device independent
5704-SC1 B-12
5704-SC2 C-13
disk
simulation area C-8
3340 (external buffers) C-7
3340 (internal buffers) C-6
3340 (5704-SC1) B-7
3344 (external buffers) C-7
3344 (internal buffers) C-6
5444 B-5
5445 B-6
tape (3410/3411)
5704-SC1 B-8
5704-SC2 C-9
unit record
5704-SC1 B-12
5704-SC2 C-13
1403 printer
5704-SC1 B-12
5704-SC2 C-13
1442 card read punch
5704-SC1 B-12
5704-SC2 C-13
2501 card reader
5704-SC1 B-12
5704-SC2 C-13
2560 MFCM
5704-SC1 B-12
5704-SC2 C-13
3277 display station
5704-SC1 B-12
5704-SC2 C-13
main storage requirements, data management (continued)
3284 printer
5704-SC1 B-12
5704-SC2 C-13
3741 data station
5704-SC1 B-12
5704-SC2 C-13
5424 MFCU
5704-SC1 B-12
5704-SC2 C-13
5704-SC1 B-4
5704-SC2 C-5
main storage size (STORE) prompt
5704-SC1 2-10
5704-SC2 2-36
mass storage (see disk storage)
matrix printer (see 3284 printer)
MATRX (3284 printer support) prompt
5704-SC1 2-11
5704-SC2 2-38
MCR (see 1255, 1419)
MEM parameter, IMAGE statement A-1
memory (see main storage)
memory resident overlay support
library requirements, system/program pack
5704-SC1 B-17
5704-SC2 C-16
prompt (MEMRO)
5704-SC1 2-18
5704-SC2 2-46
supervisor size requirements
5704-SC1 B-2
5704-SC2 C-2
MEMRO (memory resident overlays support)
prompt
5704-SC1 2-18
5704-SC2 2-46
message meanings 2-9, 2-34
MFCM
(see also 2560 multi-function card
machine)
data management library requirements,
system/program pack
5704-SC1 B-20
5704-SC2 C-19
I/O support (CARDD) prompt
5704-SC1 2-13
5704-SC2 2-39
library requirements, system/program pack
5704-SC1 B-17
5704-SC2 C-16
spooled punch support (SPPCH) prompt
5704-SC1 2-19
5704-SC2 2-48
spooled reader support (SPRDR) prompt
5704-SC1 2-19
5704-SC2 2-48
supervisor size requirements
(5704-SC2) C-2

MFCM (continued)
system input device support (SYINn) prompt
5704-SC1 2-14
5704-SC2 2-40
system punch device support (SYPCn) prompt
5704-SC1 2-14
5704-SC2 2-40
MFCU
(see also 5424 multi-function card unit)
data management library requirements, system/program pack
5704-SC1 B-20
5704-SC2 C-19
I/O support (CARDD) prompt
5704-SC1 2-13
5704-SC2 2-39
library requirements, system/program pack
5704-SC1 B-17
5704-SC2 C-16
spooled punch support (SPPCH) prompt
5704-SC1 2-19
5704-SC2 2-48
spooled reader support (SPRDR) prompt
5704-SC1 2-19
5704-SC2 2-48
supervisor size requirements
(5704-SC2) C-2
system input device support (SYINn) prompt
5704-SC1 2-14
5704-SC2 2-40
system punch device support (SYPCn) prompt
5704-SC1 2-14
5704-SC2 2-40
MICR (see 1255, 1419)
minimal resident system build 2-25, 2-56
MLMP (multiline/multipoint) support
considerations 1-6
COPY statements G-4
data management library requirements, system/program pack
5704-SC1 B-20
5704-SC2 C-19
library requirements, system/program pack
5704-SC1 B-18
5704-SC2 C-17
MLMP OR MLTA IS REQUIRED FOR CCP message 2-18, 2-46
MLMPS (multiline/multipoint support) prompt
5704-SC1 2-16
5704-SC2 2-44
MLTA (multiple line terminal adapter) support
considerations 1-6
library requirements
distribution data module C-15
distribution disk cartridge B-16
system/program pack (5704-SC1) B-20
prompt (MLTAS)
5704-SC1 2-16
5704-SC2 2-45
MLTA support (continued)
supervisor size requirements
5704-SC1 B-2
5704-SC2 C-2
MLTAS (MLTA support) prompt
5704-SC1 2-16
5704-SC2 2-45
MRJE (MULTI-LEAVING remote job entry) support
library requirements
distribution data module C-15
distribution disk cartridge B-16
prompt (MRJES)
5704-SC1 2-17
5704-SC2 2-45
MRJES (MRJE support) prompt
5704-SC1 2-17
5704-SC2 2-45
MRO (see memory resident overlay)
MULTI-LEAVING remote job entry (see MRJE)
multiline/multipoint (see MLMP)
multiple line terminal adapter (see MLTA)
multivolume tape support, FORTRAN B-24, C-22

NOEJECT log device option support
5704-SC1 2-13
5704-SC2 2-39

object library (OLIBR) prompt
5704-SC1 2-10
5704-SC2 2-35
object library directory (DIRSZ) prompt
5704-SC1 2-10
5704-SC2 2-35
object library requirements (see library requirements)
OCL statements for DTR restoration E-1
OLIBR (object library) prompt
5704-SC1 2-10
5704-SC2 2-35
OMR (see 3881 optical mark reader)
optical mark reader (see 3881 optical mark reader)
overlay linkage editor (see also linkage editor)
overlays (see memory resident overlays)
overview, system generation
5704-SC1 1-2
5704-SC2 1-3

pack protection considerations 1-7
pack, program (see program pack)

page lines
1403
5704-SC1 2-11
5704-SC2 2-37
3284
5704-SC1 2-12
5704-SC2 2-38
partition
area assignment (see simulation area assignment)
log device (PnLOG) prompts
5704-SC1 2-13
5704-SC2 2-39
printer (SYPRn) prompts
5704-SC1 2-12
5704-SC2 2-38
punch device (SYPCn) prompts
5704-SC1 2-14
5704-SC2 2-40
reader (SYINn) prompts
5704-SC1 2-14
5704-SC2 2-40
size prompt
5704-SC1 2-21
5704-SC2 2-50
spooling support (PARTN) prompt
5704-SC1 2-18
5704-SC2 2-47
PARTN (spooled partition support) prompt
5704-SC1 2-18
5704-SC2 2-47
PID001 area name E-1
PN print arrangement A-6
PnLOG (partition log device) prompts
5704-SC1 2-13
5704-SC2 2-39
preinstallation planning checklist
5704-SC1 1-8
5704-SC2 1-10
print chain image change A-1
print device (see system print device) 2-38
print spooling support considerations 1-4
printer (see also 1403, 3284)
printer chain change
5704-SC1 2-7
5704-SC2 2-32
printer support prompts
5704-SC1 2-11
5704-SC2 2-37
PRNTR (1403 printer support) prompt
5704-SC2 2-37
procedures, deleting 2-26, 2-57
processing unit size (STORE) prompt
5704-SC1 2-10
5704-SC2 2-36
program backup, distribution 2-20, 2-51
program pack
build
3340 system 2-58
5444 system 2-28
program pack (continued)
considerations 1-7
copying to 2-30, 2-60
library requirements, program products
5704-SC1 B-23
5704-SC2 C-21
library requirements, SCP programs
5704-SC1 B-17
5704-SC2 C-15
program products
prompt (CATLG) 2-36
protection
program products
COPY/DELETE parameters
5704-SC1 B-23
5704-SC2 C-21
COPY statements G-1
copying
3340 system 2-60
5444 system 2-29
device support F-3
generation
3340 system 2-52
5444 system 2-23
library requirements, system/program pack
5704-SC1 B-23
5704-SC2 C-21
program temporary fix (see PTF)
programmable work station (see 3741)
programs
copying 2-29, 2-59
deleting 2-26, 2-57
prompt
format 2-9, 2-33
option 2-8, 2-33
summary D-1
protection, I/O (see I/O protection)
protection, pack 1-7
PTF programs support
(see also CE support)
COPY/DELETE parameters C-17
COPY statements G-5
generation 2-51
library requirements, system/program pack C-17
punch device (see system punch device)
punch spooling support considerations 1-4
punch, spooled (see spool punch)
P1LOG (see PnLOG)
P2LOG (see PnLOG)
P3LOG (see PnLOG)

QCOPY (CCP $QCOPY rename) prompt 2-47

reader (see also system input device)
reader, spooled (see spooled reader)
READY (restart option) prompt
  5704-SC1 2-11
  5704-SC2 2-36
reassign alternate track
  COPY/DELETE parameters
    5704-SC1 B-18
    5704-SC2 C-17
  library requirements, system/program pack
    5704-SC1 B-18
    5704-SC2 C-17
recover index
  COPY/DELETE parameters
    5704-SC1 B-19
    5704-SC2 C-18
  library requirements, system/program pack
    5704-SC1 B-19
    5704-SC2 C-18
rename $QCOPY (QCOPY) prompt 2-47
repeat option 2-8, 2-33
reproduce cards program (see Card Utilities)
resident system
  backup 2-4
  build 2-25, 2-56
  copy 2-5
RESPONSE IS GREATER THAN MAXIMUM
 message 2-9, 2-34
RESPONSE IS LESS THAN MINIMUM
 message 2-9, 2-34
RESPONSE IS NON-NUMERIC message 2-9, 2-34
restart option (READY) prompt
  5704-SC1 2-11
  5704-SC2 2-36
restart support (see checkpoint/restart)
rollout/rollin support
  library requirements, system/program
   pack B-17
  prompt (INQRY) 2-17
RPG II auto report
  COPY/DELETE parameters
    5704-SC1 B-23
    5704-SC2 C-21
  COPY statements G-3
  generation
    3340 system 2-54
    5444 system 2-24
  library requirements, system/program pack
    5704-SC1 B-23
    5704-SC2 C-21
RPG II BSCA telecommunications
  COPY/DELETE parameters
    5704-SC1 B-23
  COPY statements G-3
    5704-SC2 C-21
  generation
    3340 system 2-54
    5444 system 2-24
RPG II BSCA telecommunications (continued)
  library requirements, system/program pack
    5704-SC1 B-23
    5704-SC2 C-21
RPG II compiler
  COPY/DELETE parameters
    5704-SC1 B-23
    5704-SC2 C-21
  COPY statements G-3
  device support F-3
  generation
    3340 system 2-54
    5444 system 2-24
  library requirements
    distribution data module C-15
    distribution disk cartridge B-16
    system/program pack, 5704-SC1 B-23
    system/program pack, 5704-SC2 C-21
RPG II 3270 DCF (display control feature)
  considerations 1-6
  COPY/DELETE parameters B-23
  COPY statements G-3
  distribution disk cartridge B-16
  generation
    3340 system 2-54
    5444 system 2-24
  library requirements
  system/program pack B-23
RPQ (see 1017, 1018)
RPQ SIOC support (SIOCS) prompt
  5704-SC1 2-16
  5704-SC2 2-45

scheduler work area allocations
  5704-SC1 B-26
  5704-SC2 C-24
SCP (system control program)
  generation
    5704-SC1 2-4
    5704-SC2 2-31
  library requirements
    distribution data module C-15
    distribution disk cartridge B-16
  support COPY statements G-4
    system/program pack, 5704-SC1 B-17
    system/program pack, 5704-SC2 C-16
  system generation overview
    5704-SC1 1-2
    5704-SC2 1-3
  5704-SC1 2-10
scratch cartridge initialization 2-5
second 1403 printer support
  considerations, spool 1-5
  prompt (PRNTR) 2-37
secondary storage (see disk storage)

serial I/O channel support (SIOCS) prompt
5704-SC1 2-16
5704-SC2 2-45
service programs (see system service programs)
seven-track tape support (TRK7D) prompt
5704-SC1 2-15
5704-SC2 2-43
SHA (see system history area)
short DTF area considerations 1-7
simulation area
data management library requirements, system/program pack C-19
disk access method relationships, 5704-SC2 C-11, C-12
disk access methods C-8
disk data management main storage requirements C-8
format E-1
simulation area assignment
considerations 1-7
prompt (ASNPn) 2-42
simulation area program
considerations 1-6
COPY/DELETE parameters
5704-SC1 B-19
5704-SC2 C-17
library requirements, system/program pack
5704-SC1 B-19
5704-SC2 C-17
SIOC support supervisor size requirements
5704-SC1 B-2
5704-SC2 C-2
SIOCS (serial I/O channel support) prompt
5704-SC1 2-16
5704-SC2 2-45
sixty-character (see 60-character)
SLIBR (source library size) prompt
5704-SC1 2-10
5704-SC2 2-35
sort (see Disk Sort, CCP/Disk Sort, Tape Sort)
sort cards program (see Card Utilities)
source library (SLIBR) prompt
5704-SC2 2-35
source library requirements (see library requirements)
SPCYL (spool file size) prompt
5704-SC1 2-20
5704-SC2 2-49
SPDSK (spool file disk) prompt
5704-SC1 2-20
5704-SC2 2-49
SPEXT (spool track group size) prompt
5704-SC1 2-20
5704-SC2 2-49
spool autostart
considerations 1-4
prompt (AUTST)
5704-SC1 2-20
5704-SC2 2-49
spool autowrite
considerations 1-4
5704-SC1 2-20
5704-SC2 2-49
prompt (AUTWT)
spool default considerations
card type 1-5
forms type 1-5
spool file ($SPOOL) considerations 1-4
spool file copy
COPY/DELETE parameters C-18
library requirements, system/program pack C-18
rename (QCOPY) prompt 2-47
spool file disk (SPDSK) prompt
5704-SC1 2-20
5704-SC2 2-49
spool file size (SPCYL) prompt
5704-SC1 2-20
5704-SC2 2-49
spool partition support (PARTN) prompt
5704-SC1 2-18
5704-SC2 2-47
spool punch
considerations 1-4
prompt (SPPCH)
5704-SC1 2-19
5704-SC2 2-48
spool reader
considerations 1-4
prompt (SPRDR)
5704-SC1 2-19
5704-SC2 2-48
spool support
considerations 1-4
library requirements, system/program pack
5704-SC1 B-17
5704-SC2 C-16
main storage requirements
5704-SC1 B-3
5704-SC2 C-4
prompts
5704-SC1 2-18
5704-SC2 2-47
second printer considerations 1-5
supervisor size requirements
5704-SC1 B-2
5704-SC2 C-2
time recording considerations 1-5
spool time recording support (SSPTR) prompt
5704-SC1 2-20
5704-SC2 2-49
spool track group size
considerations 1-4
prompt (SPEXT)
5704-SC1 2-20
5704-SC2 2-49
SPPCH (spooled punch) prompt
5704-SC1 2-19
5704-SC2 2-48

SPRDR (spooled reader) prompt
5704-SC1 2-19
5704-SC2 2-48
SSPTR (spool time recording support) prompt
5704-SC1 2-20
5704-SC2 2-49
start, automatic (see autostart)
storage estimates
5704-SC1 B-1
5704-SC2 C-1
storage size (STORE) prompt
5704-SC1 2-10
5704-SC2 2-35
SUBR15 (see library entry retrieval)
subset ANS COBOL (see COBOL)
supervisor size estimates
5704-SC1 B-1
5704-SC2 C-1
supervisor space, CCP (see CCPUT)
SYINn (system input device) prompts
5704-SC1 2-14
5704-SC2 2-40
SYPCn (system punch device) prompts
5704-SC1 2-14
5704-SC2 2-40
SYPRn (system print device) prompts
5704-SC1 2-12
5704-SC2 2-38
sysdump print
COPY/DELETE parameters C-17
library requirements, system/program pack C-17
sysin (see system input device)
system backup, resident 2-4
system build, minimal resident 2-25, 2-56
system configurations F-1
system copy
resident 2-5
tailored 2-23, 2-25, 2-53, 2-55
system generation
checklist
5704-SC1 1-8
5704-SC2 1-10
overview
5704-SC1 1-2
5704-SC2 1-3
prompt summary D-1
system history area
allocations
5704-SC1 B-26
5704-SC2 C-24
size (HSTRY) prompt
5704-SC1 2-10
5704-SC2 2-35
system history area display
COPY/DELETE parameters
5704-SC1 B-20
5704-SC2 C-18
library requirements, system/program pack
5704-SC1 B-20
5704-SC2 C-18
system input device
change procedure 2-3
5704-SC1 2-14
5704-SC2 2-40
prompts (SYINn)
system pack library requirements
program products
5704-SC1 B-23
5704-SC2 C-21
SCP programs
5704-SC1 B-17
5704-SC2 C-15
system print device (SYPRn) prompts
5704-SC1 2-12
5704-SC2 2-38
system punch device (SYPCn) prompts
5704-SC1 2-14
5704-SC2 2-40
system reader (see system input device)
system service programs, copying
3340 system 2-59
5444 system 2-29
SYSTEM-YES keyword considerations 1-6
System/3 configuration summary F-1

tailored system copy 2-23, 2-25, 2-53, 2-55
tape access methods
5704-SC1 B-8
5704-SC2 C-9
tape data management
library requirements, system/program pack
5704-SC1 B-20
5704-SC2 C-20
main storage requirements
5704-SC1 B-8
5704-SC2 C-9
tape device support prompts
5704-SC1 2-15
5704-SC2 2-43
tape error summary
COPY/DELETE parameters
5704-SC1 B-19
5704-SC2 C-18
library requirements, system/program pack
5704-SC1 B-19
5704-SC2 C-18
tape initialization
COPY/DELETE parameters
5704-SC1 B-19
5704-SC2 C-18
library requirements, system/program pack
5704-SC1 B-19
5704-SC2 C-18
Tape Sort
COPY/DELETE parameters
5704-SC1 B-23
5704-SC2 C-21
COPY statements G-4

Tape Sort (continued)
device support F-3
generation
3340 system 2-54
5444 system 2-24
library requirements
distribution data module C-15
distribution disk cartridge B-16
system/program pack, 5704-SC1 B-23
system/program pack, 5704-SC2 C-21
tape support (multivolume), FORTRAN B-24, C-22
TAPES (tape configuration) prompt
5704-SC1 2-15
5704-SC2 2-43
telecommunications (see RPG II)
thousand-file VTOC conversion (see VTOC conversion)
time recording
considerations 1-5
5704-SC1 2-20
5704-SC2 2-49
prompt (SSPTR)
TIMER (interval timer support) prompt
5704-SC1 2-16
5704-SC2 2-43
timer support (TIMER) prompt
5704-SC1 2-16
5704-SC2 2-43
trace routine
COPY/DELETE parameters
5704-SC1 B-18
5704-SC2 C-17
library requirements, system/program pack
5704-SC1 B-18
5704-SC2 C-17
track group size, spool (see spool track group size)
transaction logging
COPY/DELETE parameters C-18
library requirements, system/program pack C-18
TRK7D (7-track tape support) prompt
5704-SC1 2-15
5704-SC2 2-43

unit record data management
library requirements, system/program pack
5704-SC1 B-20
5704-SC2 C-19
main storage requirements
5704-SC1 B-12
5704-SC2 C-13
unit record restart option
prompt (READY)
5704-SC1 2-11
5704-SC2 2-36
supervisor size requirements
5704-SC1 B-2
5704-SC2 C-2
user task support (CCPUT) prompt
5704-SC1 2-18
5704-SC2 2-46
utility programs (see system service programs)

verification (see installation verification)

volume label display (see file and volume label display)
VTOC conversion
COPY/DELETE parameters
5704-SC1 B-19
5704-SC2 C-18
library requirements, system/program pack
5704-SC1 B-19
5704-SC2 C-18

work station, programmable (see 3741)
write, automatic (see autowrite)

7-track tape support (TRK7D) prompt
5704-SC1 2-15
5704-SC2 2-43
48-character print arrangements A-3
60-character print arrangement A-6

1000-file VTOC conversion (see VTOC conversion)
1017 paper tape reader configurations F-1
1018 paper tape punch configurations F-1
1255 magnetic character reader
configurations F-1
data management library requirements, system/program pack
5704-SC1 B-20
5704-SC2 C-19
SIOC support (SIOCS) prompt
5704-SC1 2-16
5704-SC2 2-45
1403 data management
library requirements, system/program pack
5704-SC1 B-20
5704-SC2 C-19
main storage requirements
5704-SC1 B-12
5704-SC2 C-13

1403 printer
configurations F-1
lines/page (LINEP) prompt
5704-SC1 2-11
5704-SC2 2-37
log device support (PnLOG) prompt
5704-SC1 2-13
5704-SC2 2-39
second printer support
prompt (PRNTR) 2-37
supervisor size requirements C-2
system print device support (SYPRn) prompt
5704-SC1 2-12
5704-SC2 2-38
1419 magnetic character reader
configurations F-1
data management library requirements, system/program pack
5704-SC1 B-20
5704-SC2 C-19
SIOC support (SIOCS) prompt
5704-SC1 2-16
5704-SC2 2-45
1442 card read punch
configurations F-1
I/O support (CARDD) prompt
5704-SC1 2-13
5704-SC2 2-39
library requirements, system/program pack
5704-SC1 B-17
5704-SC2 C-16
spooled punch support (SPPCH) prompt
5704-SC1 2-19
5704-SC2 2-48
spooled reader support (SPRDR) prompt
5704-SC1 2-19
5704-SC2 2-48
supervisor size requirements
(5704-SC2) C-2
system input device support (SYINn) prompt
5704-SC1 2-14
5704-SC2 2-40
system punch device support (SYPCn) prompt
5704-SC1 2-14
5704-SC2 2-40
1442 data management
library requirements, system/program pack
5704-SC1 B-20
5704-SC2 C-19
main storage requirements
5704-SC1 B-12
5704-SC2 C-13
2501 card reader
configurations F-1
I/O support (CARDD) prompt
5704-SC1 2-13
5704-SC2 2-39
library requirements, system/program pack
5704-SC1 B-17
5704-SC2 C-16
spooled reader support (SPRDR) prompt
5704-SC1 2-19
5704-SC2 2-48
supervisor size requirements
(5704-SC2) C-2
system input device support (SYINn) prompt
5704-SC1 2-14
5704-SC2 2-40
2501 data management
library requirements, system/program pack
5704-SC1 B-20
5704-SC2 C-19
main storage requirements
5704-SC1 B-12
5704-SC2 C-13
2560 multi-function card machine
(see also MFCM)
configurations F-1
data management main storage requirements
5704-SC1 B-12
5704-SC2 C-13
3270 display control feature (see RPG II 3270 DCF)
3277 data management
library requirements, system/program pack
5704-SC1 B-20
5704-SC2 C-19
main storage requirements
5704-SC1 B-12
5704-SC2 C-13
3277 display station
configurations F-1
log device support (PnLOG) prompt
5704-SC1 2-13
5704-SC2 2-39
3284 data management
library requirements, system/program pack
5704-SC1 B-20
5704-SC2 C-19
main storage requirements
5704-SC1 B-12
5704-SC2 C-13
3284 printer
configurations F-1
library requirements, system/program pack
5704-SC1 B-17
5704-SC2 C-16
lines/page (LINEM) prompt
5704-SC1 2-12
5704-SC2 2-38

3284 printer (continued)
log device support (PnLOG) prompt
5704-SC1 2-13
5704-SC2 2-39
printer support (MATRX) prompt
5704-SC1 2-11
5704-SC2 2-38
supervisor size requirements
5704-SC1 B-2
5704-SC2 C-2
system print device support (SYPRn) prompt
5704-SC1 2-12
5704-SC2 2-38
3340 direct access storage
(see also disk, main data area, simulation area)
configurations F-1
cylinder 0 considerations 1-6
disk access method relationships
external buffers C-12
internal buffers C-11
5704-SC1 B-11
disk access methods, 5704-SC1 B-7
disk configuration (DSK33) prompt
5704-SC1 B-15, 2-15
5704-SC2 C-14, 2-41
library requirements, system/program pack
5704-SC1 B-17
5704-SC2 C-16
simulation area
disk access methods C-8
disk data management main storage requirements C-8
storage estimates
supervisor size requirements (5704-SC1) B-2
3340 disk data management
library requirements, system/program pack
5704-SC1 B-21
5704-SC2 C-19
main storage requirements
external buffers C-7
internal buffers C-6
3340 system program products generation 2-52
3344 direct access storage
(see also disk)
configuration (D3344) prompt 2-41
configurations F-1
disk access method relationships
external buffers C-12
internal buffers C-11
disk access methods
external buffers C-7
internal buffers C-6
5704-SC1 B-7
library requirements, system/program pack C-16
simulation area
disk access methods C-8
disk data management main storage requirements C-8
storage estimates (5704-SC2) C-14
3344 disk data management
library requirements, system/program pack C-19
main storage requirements
external buffers C-7
internal buffers C-6
3410/3411 magnetic tape subsystem
(see also tape)
configuration (TAPES) prompt
5704-SC1 2-15
5704-SC2 2-43
configurations F-1
library requirements, system/program pack
5704-SC1 B-17
5704-SC2 C-16
supervisor size requirements
5704-SC1 B-2
5704-SC2 C-2
tape access methods
5704-SC1 B-8
5704-SC2 C-9
3410/3411 tape data management
library requirements, system/program pack
5704-SC1 B-20
5704-SC2 C-20
main storage requirements
5704-SC1 B-8
5704-SC2 C-9
3741 data management
library requirements, system/program pack
5704-SC1 B-20
5704-SC2 C-19
main storage requirements
5704-SC1 B-12
5704-SC2 C-13
3741 data station/programmable work station
configurations F-1
I/O support (DSK41) prompt
5704-SC1 2-13
5704-SC2 2-39
library requirements, system/program pack
5704-SC1 B-17
5704-SC2 C-16
spooled reader support (SPRDR) prompt
5704-SC1 2-19
5704-SC2 2-48
supervisor size requirements
5704-SC1 B-2
5704-SC2 C-2
system input device support (SYINn) prompt
5704-SC1 2-14
5704-SC2 2-40
system punch device support (SYPCn) prompt
5704-SC1 2-14
5704-SC2 2-40
3881 optical mark reader
configurations F-1
data management library requirements, system/program pack
5704-SC1 B-20
5704-SC2 C-19

3881 optical mark reader (continued)
SIOC support (SIOCS) prompt
5704-SC1 2-16
5704-SC2 2-45

5415 processing unit configurations F-1
5424 multi-function card unit
(see also MFCU)
configurations F-1
data management main storage requirements
5704-SC1 B-12
5704-SC2 C-13
5444 disk storage
(see also disk)
configuration (DSK44) prompt 5704-SC1 2-15
configurations F-1
disk access method relationships B-10
disk access methods B-5
disk data management
library requirements, system/program pack B-20
main storage requirements B-5
library requirements, system/program pack B-17
storage estimates B-14
5444 system, program products generation 2-23
5445 disk storage
(see also disk)
configuration (DSK45) prompt 2-15
configurations F-1
disk access method relationships B-11
disk access methods B-6
disk data management
library requirements, system/program pack B-21
main storage requirements B-6
library requirements, system/program pack B-17
5445 OR 3340 REQUIRED FOR SPOOL message 2-18
5704-AS1 (see Basic Assembler)
5704-AS2 (see Basic Assembler)
5704-CB1 (see COBOL compiler)
5704-CB2 (see COBOL compiler)
5704-FO1 (see FORTRAN compiler)
5704-RG1 (see RPG II compiler)
5704-RG2 (see RPG II compiler)
5704-SC1 (see SCP)
5704-SC2 (see SCP)
5704-SM1 (see Disk Sort)
5704-SM2 (see Tape Sort)
5704-SM7 (see CCP/Disk Sort)
5704-SM8 (see Tape Sort)
5704-SM9 (see Disk Sort)
5704-UT1 (see Card Utilities)
5704-UT3 (see Card Utilities)
5799-ATH (see CCP/Disk Sort)
5799-WFK (see MLTA)

Technical Newsletter

This Newsletter No.	GN21-5678
Date	28 September 1979
Base Publication No.	GC21-7616-4
File No.	S3-34
Previous Newsletters	GN21-5660

IBM System/3
Model 15
System Generation Reference Manual

This technical newsletter applies to version 4, modification 0 of IBM System/3 Model 15 System Control Program, Program Product 5704-SC2 and to all other models listed in the Edition Notice and provides replacement pages for the subject publication. These replacement pages remain in effect for subsequent versions and modifications unless specifically altered. Pages to be inserted and/or removed are:

1-11, 1-12
2-53, 2-54
2-54.1, 2-54.2 (added to accommodate new and moved text)
C-5 through C-8
C-13 through C-24

Changes to text and illustrations are indicated by a vertical line at the left of the change.

Summary of Amendments

- Additional capability for copying program products
- Miscellaneous technical changes

Note: Please file this cover letter at the back of the manual to provide a record of changes.

IBM Corporation, Publications, Department 245, Rochester, Minnesota 55901

Printed in U.S.A.

Technical Newsletter

This Newsletter No. GN21-5660
Date 29 December 1978

Base Publication No. GC21-7616-4
File No. S3-34

Previous Newsletters None

IBM System/3
Model 15
System Generation
Reference Manual

This technical newsletter applies to version 7, modification 0 of IBM System/3 Model 15 System Control Program (Program 5704-SC1) and provides replacement pages for the subject publication. These replacement pages remain in effect for subsequent versions and modifications unless specifically altered. Pages to be inserted and/or removed are:

v, vi
B-7, B-8
B-11 through B-20
B-23, B-24
C-1, C-2
C-7, C-8
C-23, C-24
D-3, D-4
G-3 through G-6
G-7 through G-10 (added to accommodate new and moved text)
X-3, X-4

Changes to text and illustrations are indicated by a vertical line at the left of the change.

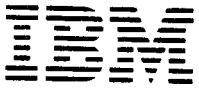
Summary of Amendments

- Miscellaneous technical changes
- Added $COPY/DUMP support

Note: Please file this cover letter at the back of the manual to provide a record of changes.

IBM Corporation, Publications, Department 245, Rochester, Minnesota 55901

Printed in U.S.A.



International Business Machines Corporation

General Systems Division
5775D Glenridge Drive N. E.
P.O. Box 2150
Atlanta, Georgia 30301
(U.S.A. only)

General Business Group/International
44 South Broadway
White Plains, New York 10601
U.S.A.
(International)

IBM System/3 Model 15 System Generation Reference (File No. S3-34) Printed in USA GC21-7616-4