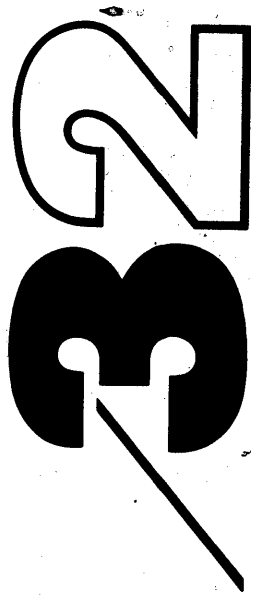
SYSTEM/32

IBM System/32
Utilities Program Product
Reference Manual
Source Entry Utility



IBM System/32
Source Entry Utility
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IBM System/32
Utilities Program Product
Reference Manual
Source Entry Utility

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This is a major revision of, and obsoletes, SC21-7605-0 and technical newsletters SN21-7864, SN21-7791, and SN21-7831. Technical newsletters have been incorporated as well as information concerning the Magnetic Character Reader, FORTRAN IV, Assembler, SEU diagnostic messages, and miscellaneous technical and editorial changes. Changes to the text and small changes to the illustrations are indicated by a vertical line to the left of each change; changed or added illustrations are denoted by the symbol ● at the left of the caption.

This edition applies to version 6, modification 0 of the IBM System/32 Utilities Program Product (Program 5725-UT1) and to all subsequent versions and modifications until otherwise indicated in new editions or technical newsletters.

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/32 Bibliography,* GC20-0032, for the editions that are applicable and current.

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

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Purpose of This Manual

The Source Entry Utility (SEU) is part of the System/32 Utilities Program Product, Program Number 5725-UT1. This manual is meant to be a learning tool for the new user of the Source Entry Utility and a reference manual for the experienced user. The new user will find it helpful to read the entire manual. This manual describes:

- The purpose and functions of SEU
- The format descriptions provided with SEU
- How to change supplied format descriptions and create new ones
- How to call SEU and how to end an SEU job
- How to operate SEU in each mode

Audience

The primary audience for the *SEU Reference Manual* is the account programmer. The secondary audience includes third party programmers and IBM field support personnel (SEs, PSRs, PSCEs, and instructors).

How This Manual is Organized

An introductory chapter describes SEU and its capabilities and describes the following as used by SEU:

- Source library members
- Statement numbering
- Printer and display screen

This chapter also gives you a brief description of the following, which are discussed in detail in succeeding chapters:

- Modes of operation
- Format descriptions
- Command and function keys

An appendix shows step-by-step examples of the mode of program operation.

Once you become familiar with SEU, this manual will be useful to you as a reference document. Use it to refresh your memory on infrequently used procedures or to help orient a new user.

A glossary is provided to help you understand unfamiliar terms.

System Requirements

The Source Entry Utility portion of the IBM System/32 Utilities Program Product runs on all models of System/32 and supports all available System/32 features.

Related Publications

The operator should have access to the following System/32 publications.

- *System/32 Introduction,* GC21-7582
- *System/32 Operator's Guide,* GC21-7591
- *System/32 Displayed Messages Guide,* GC21-7704

Titles and abstracts of related publications are listed in the *IBM System/32 Bibliography*, GC20-0032.

Contents

Chapter 1. Introduction

Introduction to SEU

The SEU (Source Entry Utility) program allows you to enter and maintain source and procedure library members (hereafter referred to as members) in the system library under format control. SEU allows you to enter and maintain:

- RPG II or auto report specifications
- Sort specifications
- Procedures containing OCL and utility control statements
- Assembler/macro processor source input
- FORTRAN IV statements
- Magnetic Character Reader control statements
- Source statements other than RPG II, auto report, sort, assembler, FORTRAN IV, or Magnetic Character Reader

When the SEU program is signed on, the library member to be processed is copied into a work area on the disk. Changes to the member affect only the copy in the work area. At end of job the member is copied from the work area back into the library at a different location. Therefore, the SEU program requires space in the library to update members.

The SEU program converses with you by displaying messages and prompts on the display screen. You enter responses to each prompt via the keyboard (responses to prompts provide control information to the SEU program). Responses are made as follows:

- Press one of the command or function keys to initiate a specific function, or
- Key a response (it will be displayed on the screen) and then press one of the command or function keys to indicate the end of the response.

A description of each key and an example of its function is included in Chapter 5, *Command and Function Keys.*

If your response is valid, either the requested function is performed or the next prompt is issued. If your response is invalid, SEU displays an error message on the screen and the message flashes. When you press ERROR RESET the prompt is reissued. Error messages are described in the *IBM System/32 Displayed Messages Guide,* GC21-7704.

While you are using SEU, you can search for statements in either of two ways:

- Consecutively, by rolling forward or backward through the member until you find the statement you are seeking.
- Randomly, by entering the statement number of the statement being sought.

A statement contains one or more fields. To aid you in entering statements, the format of the statements is controlled by format descriptions. A format description consists of field definition and continuation characters that define the format of each field in the statement being processed (a field is a unit of information). The use of format descriptions is described in Chapter 4, *Format Descriptions.*

SEU provides the option of limited syntax checking of RPG II and auto report specifications. SEU does not allow syntax checking when you are entering or updating statements under control of the sort format descriptions, free form format descriptions, or user defined format descriptions. Syntax checking is discussed in Chapter 7, *Syntax Checking of RPG II and Auto Report Specifications.*

Library Members

A library member is a group of statements having a member name that resides in the system library. Library members can contain:

- Source statements – RPG II specifications, auto report specifications, sort specifications, etc
- Procedures containing OCL and utility control statements
- Format descriptions

Library member names can be from one to eight characters long. Any valid characters can be used in a name, except commas, blanks, quotes (apostrophes), hyphens, and periods. The question mark, slash, and hyphen have special meanings in procedures (for information on procedure parameters refer to the *IBM System/32 System Control Programming Reference Manual*, GC21-7593) and in certain control statements, and should not be used in member names. The first character must be alphabetic (A-Z, $, # or @). These names are used to identify the source programs or procedures in the library. DIR, SYSTEM, and ALL are names reserved for system use and cannot be used for library members.

SEU Statement Numbering

Each statement in a member being processed by SEU has an associated statement number. When responding to prompts you use this number to indicate which statements are to be processed.

The form of the statement number is xxxx.xx. When an SEU run is initialized to maintain an existing member, all statements in that member are assigned statement numbers; these numbers are not part of the statement itself. The first statement is assigned statement number 1.00, the second 2.00, the third 3.00, and so on. SEU can handle up to 9999 statements per library member. Up to 99 statements can be inserted between any two existing statements (xxxx.01, xxxx.02, etc.). Each time the member is signed on, the statement numbers are reassigned 1.00, 2.00, 3.00, ...

Do not confuse the statement numbers assigned by SEU with the sequence numbers on the source statements in the member. They are *not* the same thing.

If you enter the decimal positions while keying in a statement number, you must also enter the decimal point. If you do not enter the decimal positions, SEU assumes zeros for these positions. Leading zeros are not required. Thus, the numbers in the following example are all equated to statement number 5:

5=5.0=5.00=0005.00

If you are entering a statement number higher than the highest existing statement number in the member, the statement number cannot be greater than the next highest whole number plus .99. For example, when the highest statement number is 0004.00, a higher statement number can be any number between 0004.01 and 0005.99; if the highest statement number is 0006.98, a higher number can be any number between 0006.99 and 0007.99.

The following is an example of how statement numbering works. Assume the following statements exist in a member, and that when an SEU run is initialized to maintain the statements they are assigned the following statement numbers:

```
0001.00  CHICAGO
0002.00  LISBON
0003.00  NEW YORK
0004.00  ROME
0005.00  SAN FRANCISCO
0006.00  TOKYO
```

The following statements are added:

```
0001.10  COPENHAGEN
0002.10  LONDON
0002.20  LOS ANGELES
0003.10  PARIS
0007.00  WASHINGTON
```

When the member is next called for maintenance, the statements are assigned statement numbers as follows:

```
0001.00  CHICAGO
0002.00  COPENHAGEN
0003.00  LISBON
0004.00  LONDON
0005.00  LOS ANGELES
0006.00  NEW YORK
0007.00  PARIS
0008.00  ROME
0009.00  SAN FRANCISCO
0010.00  TOKYO
0011.00  WASHINGTON
```

Printer and Display Screen

The printer and display screen are the output units supported by SEU. The display screen is the program's means of communicating with you. The printer, however, may also be used to print specific statements being processed or to list members.

Note: If your system has a serial matrix printer, the mode selector switch must be in the continuous forms position.

Printer

Printing is turned on and off by pressing the ALTER PRINT command key. (The print option is initially off. When the print option is on, a P appears in position 38 of the status line [line 1] of the display screen.) Statements are printed at the time that they are written to the work area. The print option works in conjunction with SEU's RPG II syntax checking option to determine what statements are printed:

- Print option on; syntax checking option off. All statements that are entered, updated, included, or deleted are printed. Statements that are deleted are printed followed by - - - .

- Print option on; syntax checking option on. All statements that are entered, updated, included, or deleted are printed. Statements that are deleted are printed followed by - - - . Statements entered or updated that have syntax errors are printed if the ACCEPT WITH ERROR command key is pressed after the error is displayed. Then:

  – * * * is printed after the statement.
  – An * is printed under the first position of the entry which is in error.
  – The SEU identifier and a Message Identification Code (MIC) is printed following the * so that you can find the message after the sign-off.

- Print option off; syntax checking option on. Statements with syntax errors are printed if the ACCEPT WITH ERROR command key is pressed after the error is displayed. Printing is as described in the preceding statement (printing on; syntax checking on).

- Print option off; syntax checking option off. No printing occurs.

If either of the following options are taken at end of job, printing is done whether the print option is on or off:

END OF JOB WITH LISTING
END OF JOB WITH LISTING AND SERIALIZATION

Display Screen

The display screen has six lines of 40 characters each. The format of the display is shown in Figure 1.

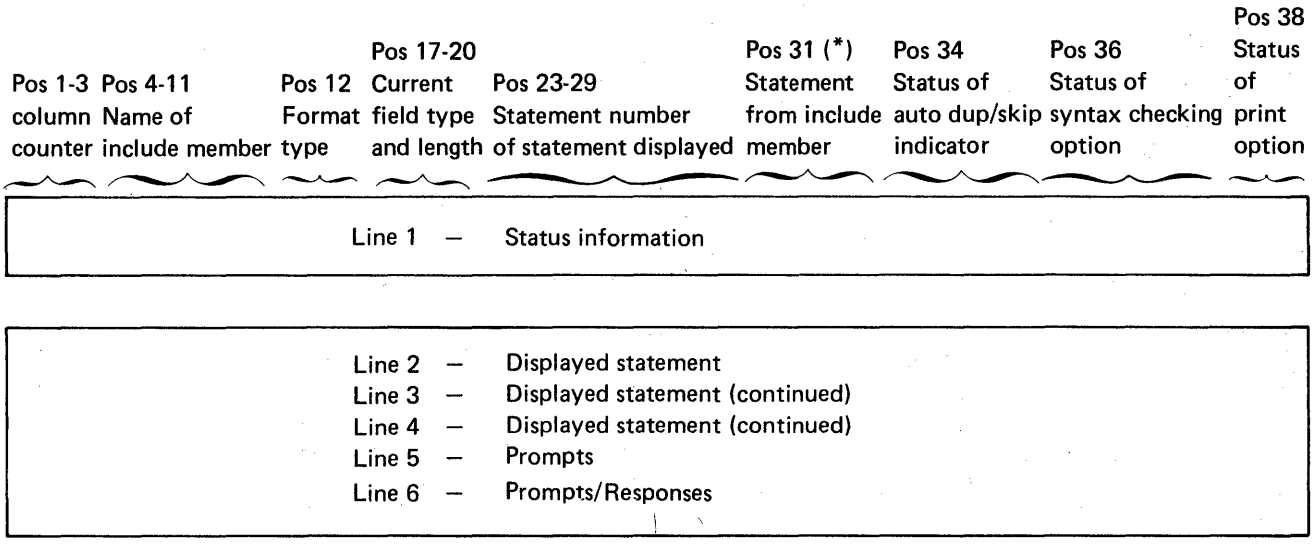


Figure 1. Display Format

Figure 2 is a sample display. Statement 11 is currently displayed. The prompt response is 0011.00.

Line 1 contains the status information.

Positions 1-3 contain the column counter when a statement is being entered or updated. The value in this field represents the cursor position (the position of the next character that can be entered). If a function other than entering or updating a statement is being performed, the column counter contains blanks.

Positions 4-11 contain the name of the library member being included when in include mode.

Position 12 contains the format description type (discussed later in this chapter) of the statement being entered or updated.

Positions 17-20 contain the format (field type and length) of the field being processed as a statement is being entered or updated.

Positions 23-29 contain the statement number of the statement displayed on the screen.

Position 31 contains an asterisk (*) when the statement displayed is from the include member. If not in include mode, the position is blank.

Position 34 contains the status of the auto dup/skip indicator. If position 34 is blank, the indicator is off. If position 34 is A, the indicator is on.

Position 36 contains the status of the syntax checking option. If position 36 is blank, the option is off. If position 36 is S, the option is on.

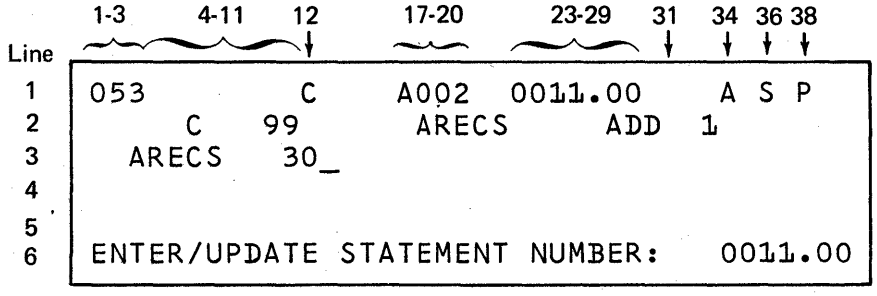
Position 38 contains the status of the print option. If position 38 is blank, the option is off. If position 38 is P, the option is on.

Lines 2, 3, and 4 show the statement as it is processed.

Lines 5 and 6 are used to display prompts. The first prompt is displayed on line 6 and moved to line 5 when the second prompt is displayed. All responses to prompts are displayed on line 6.

Modes of Operation

SEU has four modes of operation for creating new members and maintaining existing ones. A mode is entered by pressing the appropriate command key.



Pos 1-3 – Cursor is in position 53.
Pos 4-11 – Blank–not in include mode.
Pos 12 – Format description type is C for calculation specification in RPG II.
Pos 17-20 – Field type is A (alphameric) and length is 2 for field being processed.
Pos 23-29 – Statement number of the statement being processed is 0011.00.
Pos 31 – Not *–not in include mode.
Pos 34 – A–Auto dup/skip option is on.
Pos 36 – S–Syntax checking option is on.
Pos 38 – P–Print option is on.

Figure 2. Sample Display

Enter/Update Mode

Enter/update mode is used for entering new statements and modifying existing ones. Statements are entered under format description control or free form format description. Fields can be duplicated in enter/update mode. Source statements entered or modified can be printed, and syntax checking can be performed on RPG II and auto report specifications.

Include Mode

Include mode allows statements from a member in the library to be included in the member being processed. (They also remain in the original member.) The statements can be printed as they are included.

Move Mode

Move mode allows statements to be moved to a new location in a member and be deleted from their original location in that member. Statements that are moved cannot be printed.

Delete Mode

Delete mode allows statements to be physically deleted from a member. The statements can be printed as they are deleted.

Format Descriptions

Field Definition

Fields in a statement can be defined by field definitions. These field definitions tell the program:

- What type of data the field will contain
- The length of the field
- What action (if any) the program should take on the field

The field definition characters have the following meaning:

Field Definition Character	Field Definition
N	Signed numeric field (maximum field length—15)
A	Alphameric field
D	Numeric auto dup field (maximum field length—15)
U	Alphameric auto dup field
B	Unconditional bypass field
K	Auto skip field
J	Unsigned numeric field (maximum field length—15)
X	Constant field
blank	Indicates the end of all field definitions in a format description.

The group of field definitions used to define all fields in a statement is called a format description.

SEU-Provided Format Descriptions

RPG II and Auto Report: SEU provides the following format descriptions for RPG II and auto report specifications.

Format Description Type	Specification
H	RPG II control specification
U	Option specification for auto report
F	File description specification
I	Input specification (record identification)
J	Input specification for columns 43 through 96 (field description)
C	Calculation specification
O	Output specification (file identification and control)
P	Output specification for columns 23 through 96 (field description)
K	Copy specification used by RPG II auto report
E	File extension specification
L	Line counter specification
T	Telecommunication specification

These format descriptions are stored in library member #SEURPGF (this member must be in the library when an RPG II or auto report member is processed by SEU). The format description type of the format descriptions in #SEURPGF is determined by their presence in a predefined sequence. This sequence must not be modified or SEU will be unable to determine the correct format description.

Sort: SEU provides the following format descriptions for sort specifications.

Format Description Type	Specification
1	Header specification
2	Record type constant specification
3	Record type field specification
4	Field specification
5	Comment

These format descriptions are stored in library member #SEUSORT and are treated the same as user-provided format descriptions. The type of the format description in #SEUSORT is determined by their presence in the order in which they are defined.

Note: See Example B *Sign-On Procedure* in Chapter 2 for the SEU sign-on command to use.

Assembler, FORTRAN, and Magnetic Character Reader: SEU provides the following for format descriptions for assembler, FORTRAN, and Magnetic Character Reader specifications.

Format Description Type	Specification
1	Assembler specification
2	FORTRAN specification
3	Magnetic Character Reader system specification
4	Magnetic Character Reader stacker specification

These format descriptions are stored in library member #SEUXTRA and are treated the same as user-provided format descriptions. The type of format description in #SEUXTRA is determined by the order in which they are defined.

Free Form Format Description: The free form format description is format description type 0 (zero) and is provided by the SEU program. When free form is selected, the statement is treated as having one alphameric field the length of that statement.

User-Provided Format Descriptions

User-provided format descriptions are identified by format description types 1 through 9. These format descriptions must be stored in user-defined library members. Like #SEUSORT, the format description types of the format descriptions defined in the user library members are also determined by the order in which they appear (that is, the first format description has format description type 1, the second format description has format description type 2, and so on).

Note: See *Sign-On Procedure* in Chapter 2 for the SEU sign-on command to use.

Command and Function Keys

The SEU program uses the function keys when creating and maintaining source statements. However, since these function keys do not cover all of the functions required by SEU, SEU has a set of command keys to be used for the additional functions. These command keys are data keys with special functions which are defined on a template that is inserted directly above the keys. To initiate a command key function, press the CMD function key to indicate to the SEU program that the next keystroke will be one of the defined command keys. Then press the data key (lowercase or uppercase shift as required) on the top row of the keyboard that corresponds to the function on the template above it.

Figure 3 shows the template in relation to the keyboard and briefly describes the function of each command key. A complete description of these keys and the function keys unique to SEU, as well as examples of the use of some of the keys, is in *Command and Function Keys* in Chapter 5.

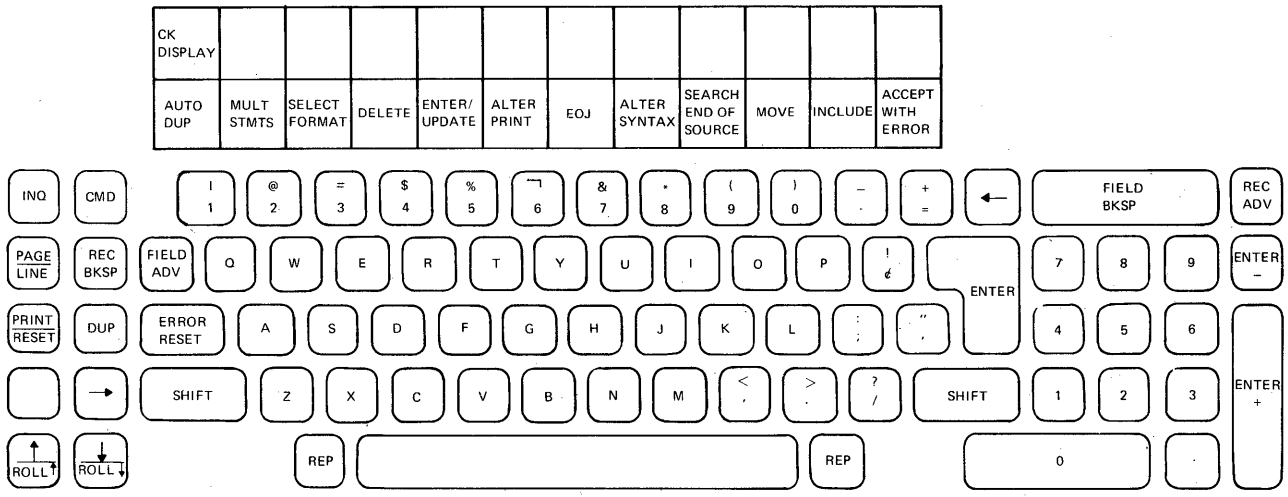


Figure 3. Keyboard with SEU Template

COMMAND KEYS

| 1	AUTO DUP — Reverses the current status of the auto dup/skip indicator.
@ 2	MULT STMTS — Initiates multiple statement processing in the current mode of operation.
# 3	SELECT FORMAT — Allows a new format description to be selected when entering or updating statements.
$ 4	DELETE — Initiates the delete mode of operation.
% 5	ENTER/UPDATE — Initiates the enter/update mode of operation.
¬ 6	ALTER PRINT — Reverses the current status of the print option indicator.
& 7	EOJ (end of job) — Displays the end-of-job options.
* 8	ALTER SYNTAX — Reverses the current status of the syntax checking option indicator.
(9	SEARCH END OF SOURCE — Displays the last statement in the member.
) 0	MOVE — Initiates the move mode of operation.
— -	INCLUDE — Initiates the include mode of operation.
+ =	ACCEPT WITH ERROR — Accepts an RPG II or auto report statement containing an error.
| 1 (upper case)	CK DISPLAY — Displays a one-word description of the SEU command keys.

Chapter 2. Sign-On Procedure

To sign on, key the following:

SEU member name,member type,format description member name,statement length

The parameters in this command are defined as follows:

Member Name: Name of the member being created or maintained. This parameter is required and, if it is not given, the prompt ENTER MEMBER NAME YOU WISH TO WORK WITH is displayed. Member names are used to identify source or procedure members in the library (see *Library Members* in Chapter 1 for naming conventions).

If SEU finds the specified member in the library, it puts the member in the work area for maintenance. If the member is not found, SEU assumes that a new member is being created.

Member Type: Type of member to be created or maintained.

Type	Contents of Library Member
A	Auto report specifications
F	Format descriptions
P	Procedures (OCL and utility control statements)
R	RPG II specifications
S	Source (sort specifications, etc.)

This parameter is required and, if it is not given, the prompt ENTER MEMBER TYPE is displayed.

Format Description Member Name: Name of the library member that contains user-provided format descriptions (types 1 through 9). This parameter is not required. This parameter should be specified for format descriptions other than the SEU-provided free form format description and format descriptions contained in library member #SEURPGF. RPG II and auto report format descriptions are made available automatically when member type R or A is specified. User format descriptions, in addition to RPG II and auto report format descriptions, can be made available by specifying the user member name in this parameter. This parameter should be specified to obtain the format descriptions contained in #SEUSORT and #SEUXTRA. If this parameter is specified, SEU checks for the specified format description member. If this member is not found, SEU issues an error message and terminates the job.

Statement Length: Length of the statements to be processed. This is not a required parameter and defaults to a value based on the member type parameter.

Member Type	Valid Length	Default Value
S	40-120[1,3]	96
P	40-120	120
A	80-96[2,3]	96
R	80-96[2,3]	96
F	120	120

[1] In order to use a statement length other than 96 for sort, assembler, FORTRAN or Magnetic Character Reader specifications, the format descriptions in #SEUSORT, or #SEUXTRA must be changed to the new length (see Chapter 4, *Format Descriptions).*

[2] In order to use a statement length less than 96, the format descriptions in #SEURPGF must be changed to the new length (see Chapter 4, *Format Descriptions*).

[3] If the default value of 96 is used and the length of the statements in the member being signed on is 80, SEU automatically changes the statement length to 96 (the default value). For all other statement lengths (40-79, 81-95, 97-120), SEU issues a halt.

EXAMPLES OF SEU COMMAND

Example A: You are creating a new member named RPGRUN, and (1) the member type is R (RPG II); (2) you are not using user format descriptions; (3) you are using the default value (96) of the statement length. Therefore, only the following is required:

```
SEU RPGRUN,R
```

Example B: You want to maintain a member called SORTA. The member type is S, the name of user format description is #SEUSORT, and statement length is the default value (96). Key the following:

```
SEU SORTA,S,#SEUSORT
```

Example C: You need to enter a new statement into a procedure member. The member name is PROGA, member type is P, user format descriptions are in member PROCFMT, and statement length is 40. Key the following:

```
SEU PROGA,P,PROCFMT,40
```

Example D: You want to create a new member called FORT01 to hold FORTRAN statements. The member type is S, the name of user format description is #SEUXTRA, and statement length is 96. Key the following:

```
SEU FORT01,S,#SEUXTRA,96
```

Example E: You want to create a new member called RPGPGM, which will contain RPG II specifications and 1255 Magnetic Character Reader specifications. The member type is R (which automatically provides format descriptions from #SEURPGF), the name of user format description is #SEUXTRA (which provides format descriptions for entering magnetic character reader specifications), and statement length is the default value (96). Key the following:

```
SEU RPGPGM, R, #SEUXTRA
```

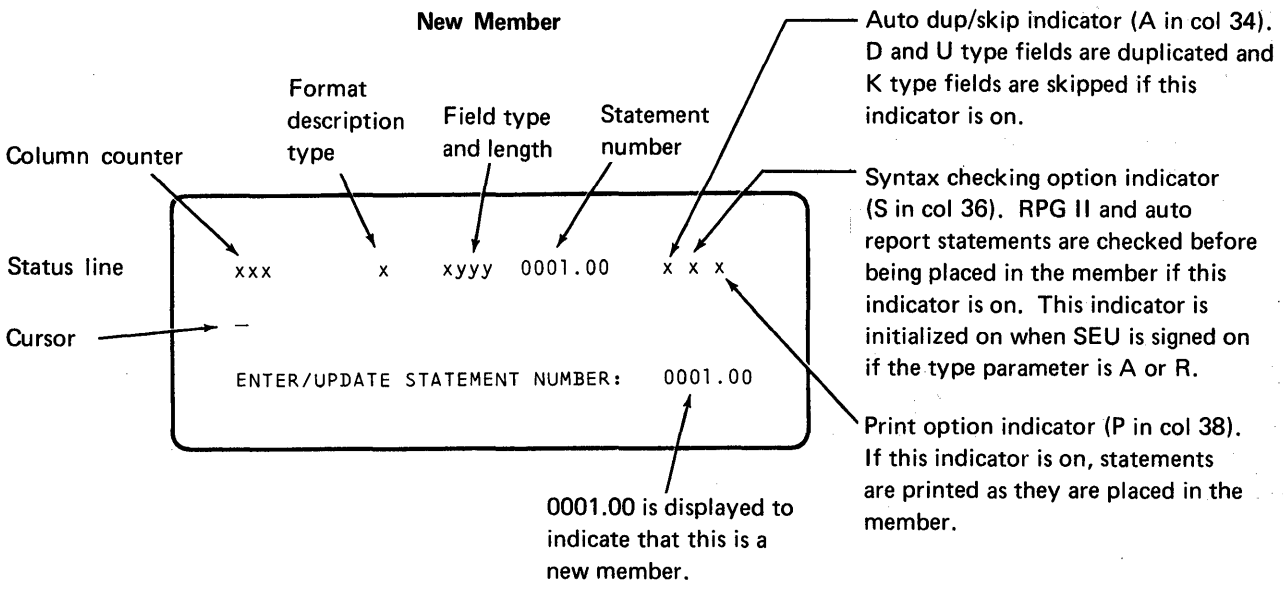
Example F: You want to create a new procedure member called PROCA, which will contain OCL statements to execute your program. The member type is P, and no user format description member is specified. The default statement length is 120. Key the following:

```
SEU PROCA, P
```

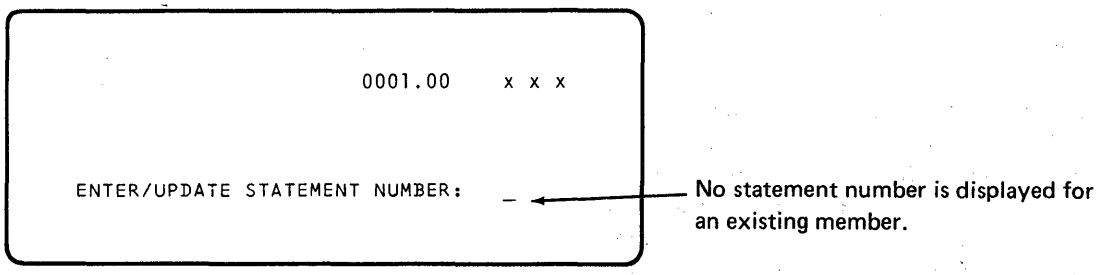
DISPLAY SCREEN AT SIGN ON

Key the SEU command and press ENTER. SEU initiates enter/update mode and displays the following:

New Member



Existing Member



To continue processing the sign-on member, see Chapter 3, *Modes of Operation.*

Chapter 3. Modes Of Operation

The Source Entry Utility Program (SEU) uses four modes of operation to perform the functions of creating and maintaining members:

- Enter/update
- Include
- Move
- Delete

To change modes, press the command key that identifies the mode you want. When you are changing modes, the displayed statement is blanked to indicate the start of a new mode.

ENTER/UPDATE MODE

Enter/update mode is used to create a new member, add new statements to an existing member, or modify existing statements in a member. To initiate the enter/update mode while operating in another mode, press the ENTER/UPDATE command key.

To Enter Statements: Key a new statement number. This number can be the first statement in a new member (0001.00 is entered automatically if no statements exist in the member), a number between two numbers in the member (for example, 2.5 between 2 and 3), or a number higher than the last existing statement in the member (see *Statement Numbering* in Chapter 1).

To Update Statements: Key an existing statement number.

After Keying The Statement Number:

- To enter or update single statements, press the ENTER key.
- To enter or update multiple (consecutive) statements, press the MULT STMTS command key.

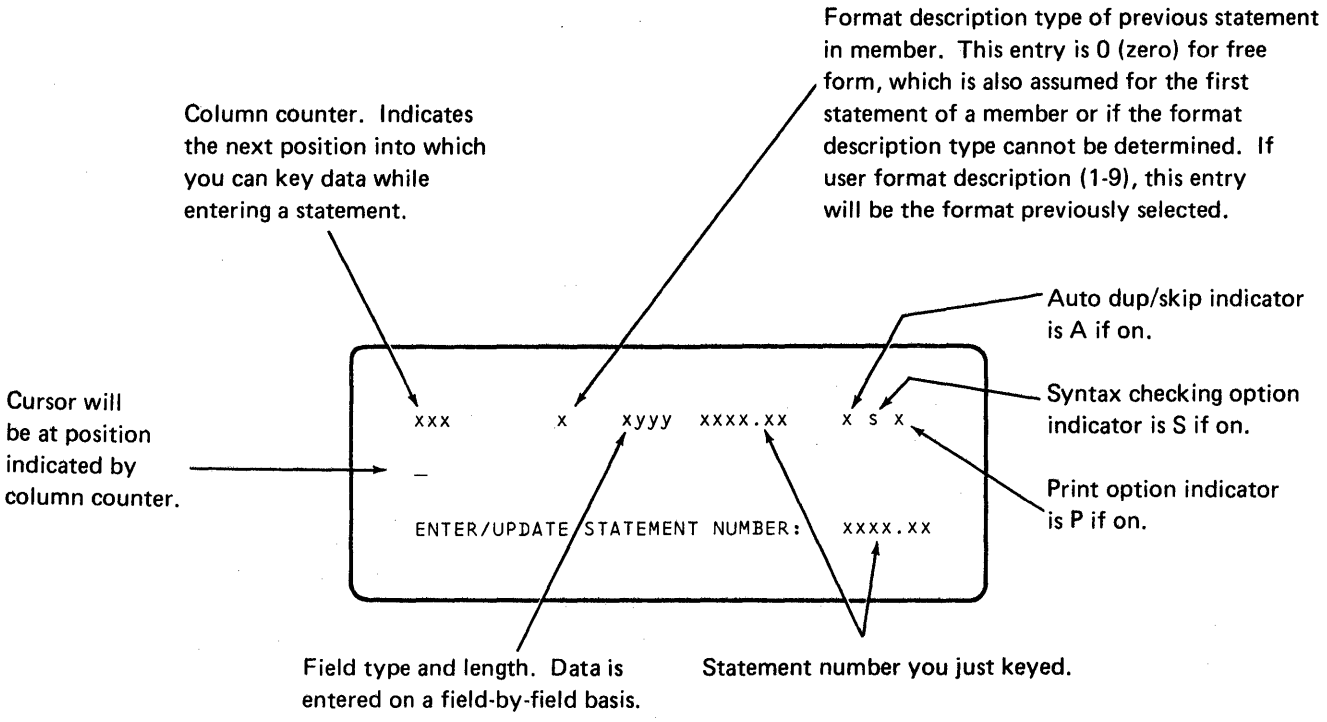
Note: If there are no statements in the member (0001.00 displayed as ENTER/UPDATE STATEMENT NUMBER when enter/update mode is initialized), SEU automatically selects multiple statements.

If multiple statements are being entered, SEU will automatically increment the statement number. Incrementation is by 0.01 except when the statement number given is higher than the highest existing statement number and the decimal positions are zeros. Then, the incrementation is by 1.00.

Based on the statement number entered (new or existing), SEU initiates the enter or update function.

Enter

After keying a statement number and selecting single or multiple statements, the following display appears on the screen:



If the format description type of the statement you want to enter is different from the format description type in the status line (line 1), you must do the following to change formats:

1. Press the SELECT FORMAT command key.
2. Key the new format type.
3. Press ENTER.

Prior to and during the time you are entering statements you may need to use the command and function keys to perform many functions. Figure 4 (following *Update*) shows the command keys and when they can be used. Figure 5 shows the function keys and when they can be used. A detailed illustration of the enter function for both single and multiple statements is given in Appendix C.

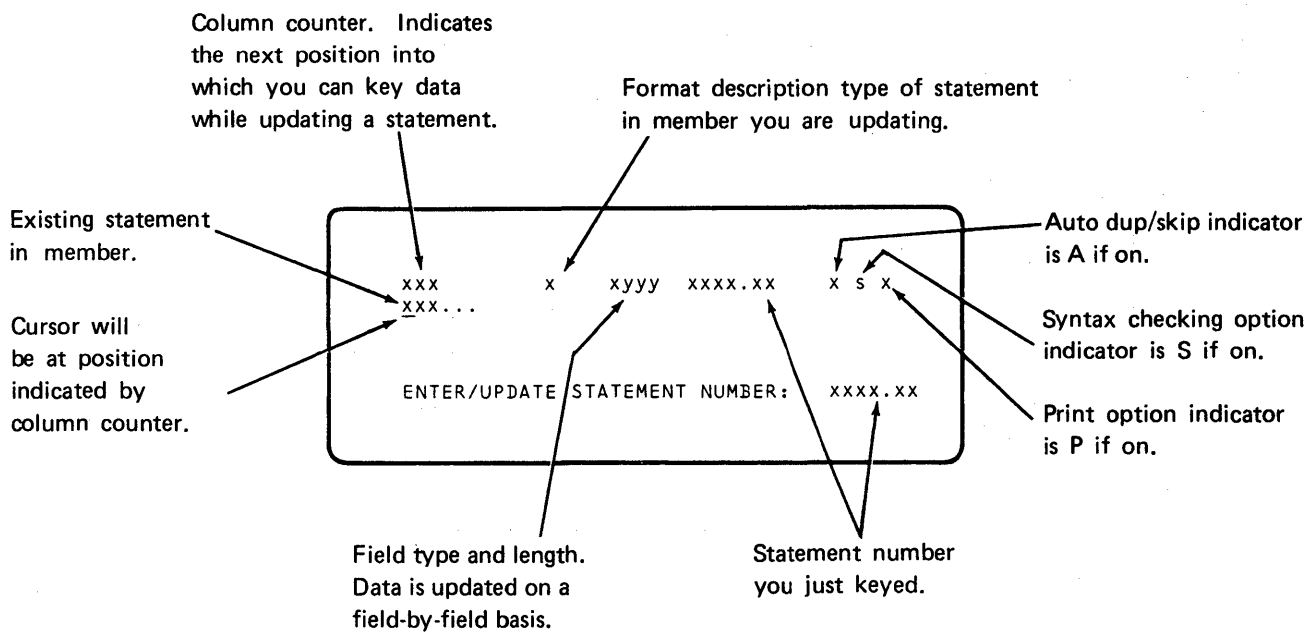
If the format description type is not changing, or if you have entered a new format description type, you are ready to enter a statement. Key the statement, field by field, pressing FIELD ADV, ENTER, or ENTER+ after each field, until all fields have been entered.

As you advance, field by field, through the statement, the column counter and the field type and length are used to guide you. The column counter indicates the starting position of the field. The field type and length indicates the type of field (numeric, alphameric, etc) and the number of positions in that field. Thus, when you advance to the start of a field, SEU is ready to accept data in that field.

When REC ADV is pressed because the last field in the statement has been entered or because you have keyed the last field that will contain data, the statement is placed in the member. SEU then prompts for another statement number if you entered a single statement. If you are entering multiple statements, the statement number of the next statement is automatically displayed, and you can enter that statement, field by field. When you have finished entering statements, you can continue processing or go to end of job.

Update

After keying an existing statement number and selecting single or multiple statements, the following display appears on the screen:



If you want to change the format description type of the displayed statement, you must do the following:

1. Press the SELECT FORMAT command key.
2. Key the new format type.
3. Press ENTER.

Prior to and during the time you are updating statements you may need to use the command and function keys to perform many functions. Figure 4 shows the command keys and when they can be used. Figure 5 shows the function keys and when they can be used. A detailed illustation of the update function for both single and multiple statements is given in Appendix C.

To begin updating, use the FIELD ADV key to move the cursor to the first field to be updated. Key the changes and then press FIELD ADV, ENTER, or ENTER+ to move to the next field. Continue in this manner until all updates to the statement have been made. Then press REC ADV to place the statement back in the member. (When the statement contains only one field, FIELD ADV performs the same function as REC ADV.) The SEU program then displays the next statement in the member and prompts for another statement number if you updated a single statement, or allows you to update the displayed statement if you are updating multiple statements.

SEU displays a message to indicate end of member after you have updated the last statement in the member while updating multiple statements. Press ERROR RESET to continue. The first statement in the member is displayed. When you have finished updating statements, you can continue processing or go to end of job.

Command Keys	When prompted with: ENTER/UPDATE STATEMENT NUMBER	When statement is being entered or updated:
AUTO DUP	Reverses status of indicator.	
MULT STMTS	Indicates to SEU that multiple consecutive statements are to be entered or updated.	(Not allowed)
SELECT FORMAT	(Not allowed)	Allows the format description type to be changed.
DELETE	Changes mode to delete mode.	Changes mode to delete mode. Stops processing of displayed statement.
ENTER/ UPDATE	Repeats prompt ENTER/UPDATE STATEMENT NUMBER.	Repeats prompt ENTER/UPDATE STATEMENT NUMBER. Stops processing of displayed statement.
ALTER PRINT	Reverses status of indicator.	
EOJ	Displays end-of-job options.	
ALTER SYNTAX	Reverses status of indicator.	
SEARCH END OF SOURCE	Displays last statement in member.	Stops processing of displayed statement and displays last statement in member. Multiple statement function is terminated.
MOVE	Changes mode to move mode.	Changes mode to move mode. Stops processing of displayed statement.
INCLUDE	Changes mode to include mode.	Changes mode to include mode. Stops process of displayed statement.
ACCEPT WITH ERROR	(Not allowed)	Allowed only if syntax checking option is on and error occurred after an RPG II or auto report statement was entered. Statement with error is placed in member.
CK DISPLAY	Displays keyboard keys used as command keys and a one-word description of each key. (Press and hold the SHIFT key each time you press the CK DISPLAY command key.)	

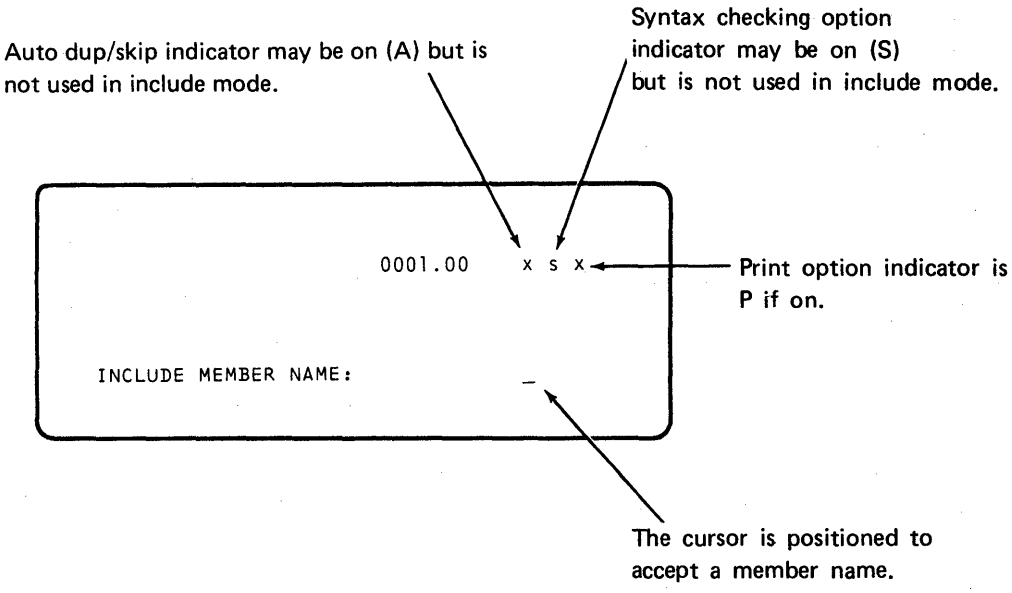
Figure 4. Command Key Usage in Enter/Update Mode.

Function Keys	When prompted with: ENTER/UPDATE STATEMENT NUMBER	When statement is being entered or updated:
DUP	(Not allowed)	Upper case enters characters in cursor position from same position in previous statement. Lower case enters field starting in cursor position from same position in previous statement.
FIELD ADV	Indicates that you have finished entering the response.	Field is accepted as displayed. If statement is all one field, or if this is last field in statement, same as REC ADV.
ENTER or ENTER +	Indicates that you have finished entering the response.	All characters preceding cursor in field being processed are accepted. Remaining positions in field are set to blanks.
ENTER - (minus)	(Not allowed)	Allowed only for signed numeric fields. All characters preceding cursor in field being processed are accepted. Remaining positions in field are set to blanks (makes numeric field negative.)
FIELD BKSP	Cursor is set to first position of response.	Backspaces one field.
REC BKSP	(Not allowed)	Backspaces to start of currently displayed statement. Cursor is positioned at first position of first field to be processed.
REC ADV	(Not allowed)	Causes the displayed statement to be placed in the member.
↑ ROLL↑	Displays next statement. (If last statement, displays first statement.)	Stops processing of displayed statement and displays next statement. Multiple statement function is terminated.
↓ ROLL↓	Displays preceding statement. (If first statement, displays last statement.)	Stops processing of displayed statement and displays preceding statement. Multiple statement function is terminated.

Figure 5. Function Key Usage in Enter/Update Mode

INCLUDE MODE

Include mode is used to take statements from one member and insert them into another member. This mode is initiated by pressing the INCLUDE command key. SEU then displays the following on the screen:

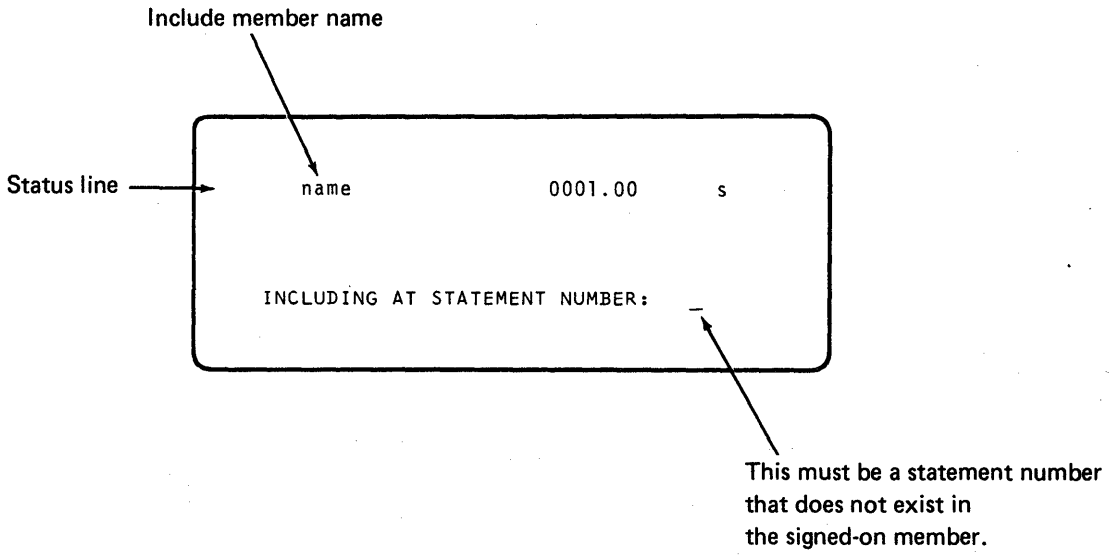


Key the name of the member containing the statements to be included in the signed-on member. If the member containing the statements to be included is a procedure member, key the name in this form:

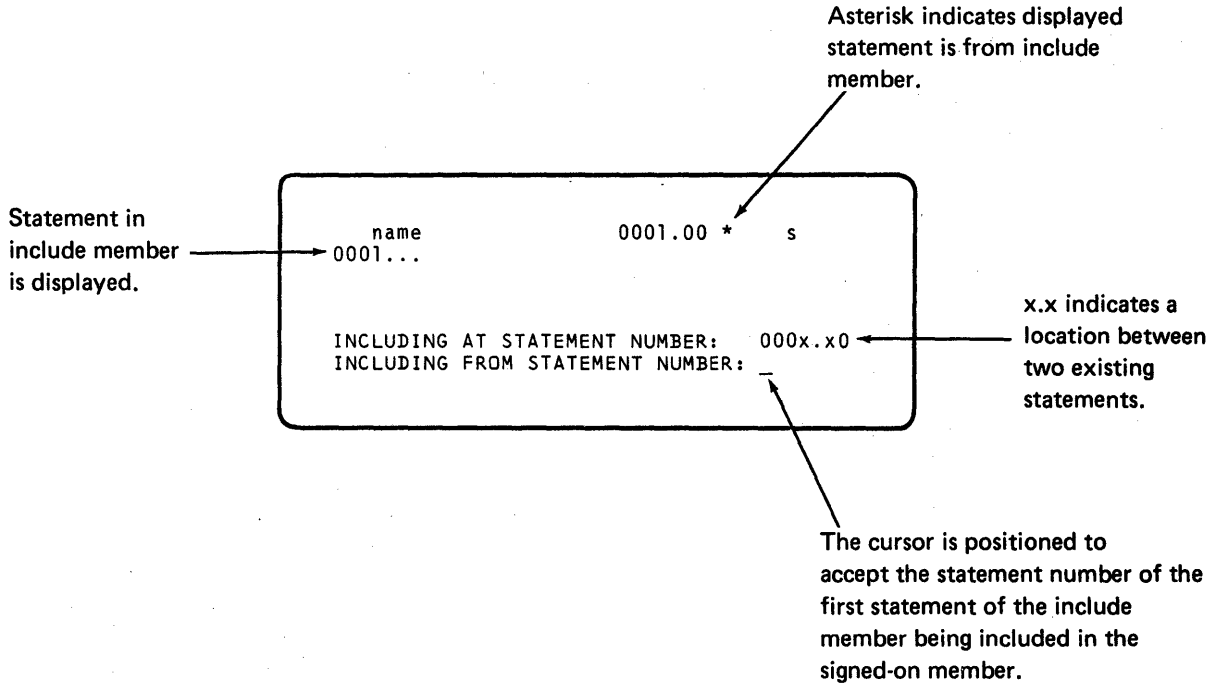
name,P

The P indicates that the statements are coming from a procedure library member.

Press the ENTER key. The include member name is moved to the status line (line 1) and you are prompted for the location at which statements will be included in the sign-on member. The statement number you now enter cannot currently exist in the signed-on member. That is, it must be a number between two existing statement numbers (for example, 6.5 between 6 and 7) or a number higher than the highest statement number currently existing in the signed on member (see *Statement Numbering* in Chapter 1).



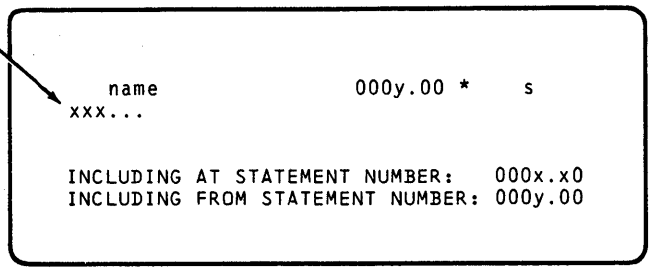
Key the statement number (x.x). Press the ENTER key. (If multiple statements are being included you can so indicate at this time. After keying the statement number, press the MULT STMTS command key instead of the ENTER key.) The following display appears on the screen (the asterisk in column 31 of the status line indicates that the displayed statement is from the include member).



Key the number of the first (or only) statement being included (must be a statement number containing only integer positions; decimal positions must be 00). Now do steps 1 or 2.

1. If you are including single statements, press the ENTER key. The display screen appears as follows:

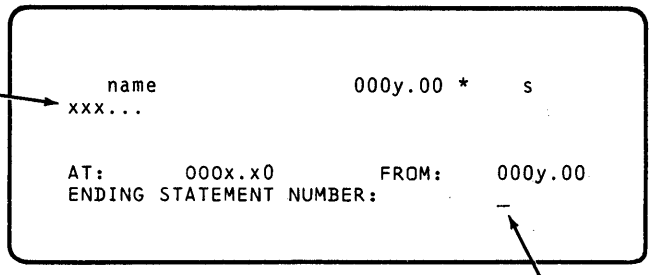
Statement in include member to be included is displayed.



Press the REC ADV key. Statement y is placed in the signed-on member at the point identified by the statement number x.x. The display screen shows the next statement in the signed-on member and you are prompted for more includes.

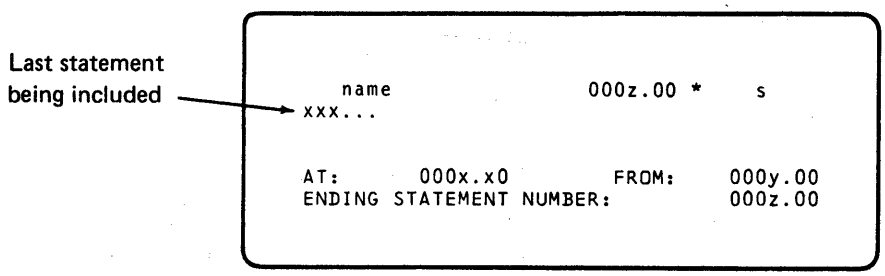
2. If including multiple statements, press the MULT STMTS command key (or press ENTER to enter the statement number if multiple statements already selected). The display screen appears as follows:

First statement being included



The cursor is positioned to accept the statement number of the last statement of the include member being included in the signed-on member.

Key in a statement number (must be a statement number containing only integer positions), or press the ROLL↑ key. Continue to press ROLL↑ until the last statement to be included is displayed. Press the ENTER key. The statement number displayed in the status line is accepted as the ending statement number. The display screen appears as follows:



Press the REC ADV key. Statements y through z are included in the signed-on member at the point identified by statement number x.x. The statement numbers assigned by SEU are incremented by 0.01 (x.x0, x.x1, etc.) or, if the response to the INCLUDING STATEMENT NUMBER prompt was a whole number higher than the highest statement number in the member, statement numbers are incremented by 1.00. The display screen now shows the statement following the includes in the signed-on member and you are prompted for more includes.

Figure 6 lists the command keys and shows when they can be used in include mode. Figure 7 lists the function keys and shows when they can be used in include mode. Examples of including single and multiple statements are in Appendix C.

Command Keys	When prompted with: INCLUDE MEMBER NAME	When prompted with: INCLUDING AT STATEMENT NUMBER	When prompted with: INCLUDING FROM STATEMENT NUMBER	When prompted with: ENDING STATEMENT NUMBER	When statements are ready to be included:
AUTO DUP	(Not allowed)				
MULT STMTS	(Not allowed)	Indicates to SEU that multiple consecutive statements are to be included.		(Not allowed)	
SELECT FORMAT	(Not allowed)				
DELETE	Changes mode to delete mode.	Changes mode to delete mode. No statements are included.			
ENTER/ UPDATE	Changes mode to enter/update mode.	Changes mode to enter/update mode. No statements are included.			
ALTER PRINT	Reverses status of indicator.				
EOJ	Displays end-of-job options.				
ALTER SYNTAX	(Not allowed)				
SEARCH END OF SOURCE	Displays last statement in signed on member.		Displays last statement in included member.		No statements are included. Displays last statement and repeats last prompt.
MOVE	Changes mode to move mode.	Changes mode to move mode. No statements are included.			
INCLUDE	Repeats prompt: INCLUDE MEMBER NAME.		Repeats prompt: INCLUDING AT STATEMENT NUMBER. No statements are included.		
ACCEPT WITH ERROR	(Not allowed)				
CK DISPLAY	Displays keyboard keys used as command keys and a one-word description of each key. (Press and hold the SHIFT key each time you press the CK DISPLAY command key.)				

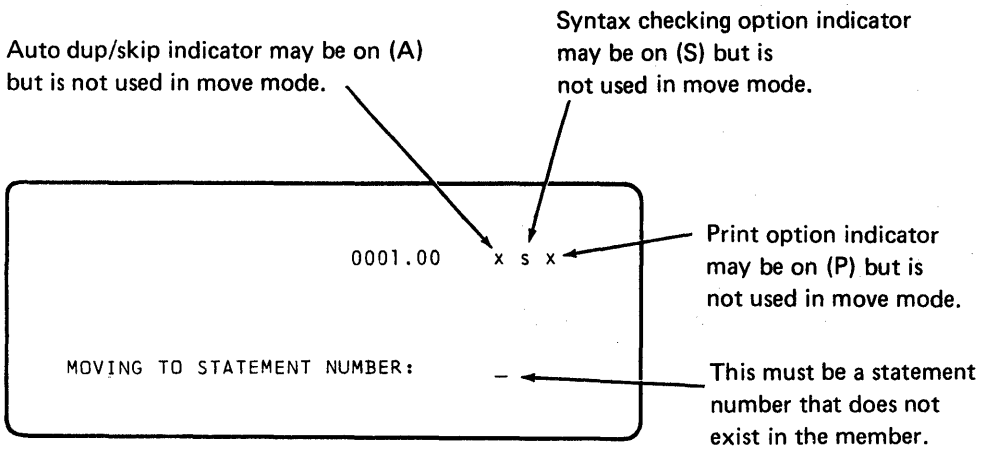
Figure 6. Command Key Usage in Include Mode

Function Keys	When prompted with: INCLUDE MEMBER NAME	When prompted with: INCLUDING AT STATEMENT NUMBER	When prompted with: INCLUDING FROM STATEMENT NUMBER	When prompted with: ENDING STATEMENT NUMBER	When statements are ready to be included:
DUP	(Not allowed)				
FIELD ADV	Indicates that you have finished entering the response.				(Not allowed)
ENTER or ENTER +	Indicates that you have finished entering the response.				(Not allowed)
ENTER - (minus)	(Not allowed)				
FIELD BKSP	Cursor is set to first position of response.				(Not allowed)
REC BKSP	(Not allowed)				
REC ADV					Causes the statements to be included in the signed-on member.
↑ ROLL↑	Displays next statement. (If at last statement, displays first statement.)				Stops processing of displayed statement and displays next statement. Response to last prompt is blanked and can be reentered.
↓ ROLL↓	Displays next statement. (If at first statement, displays last statement.)		(Not allowed)		

Figure 7. Function Key Usage in Include Mode.

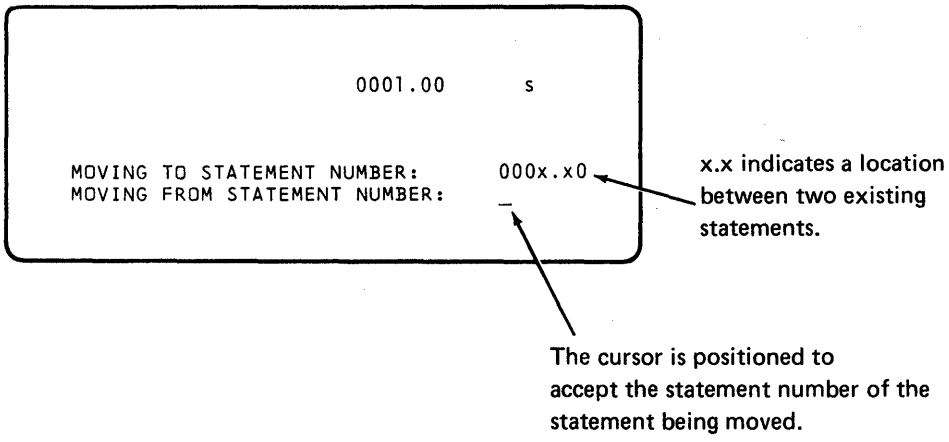
MOVE MODE

Move mode is used to move one or more statements from one location in a member to another location in the same member. When a statement is moved, the original statement number is deleted. This mode is initiated by pressing the MOVE command key. SEU then displays the following on the screen:



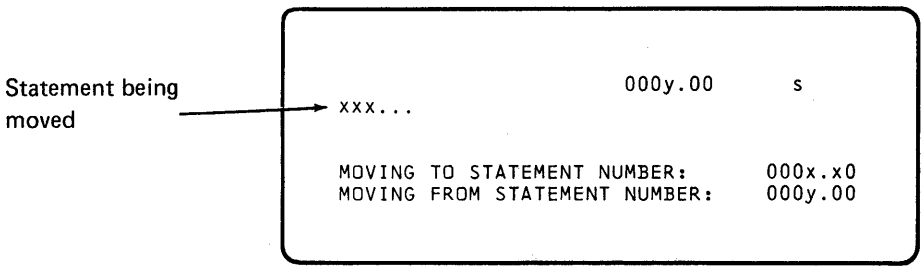
The statement number you now enter cannot currently exist in the member. That is, it must be a number between two existing statement numbers (for example, 6.5 between 6 and 7) or a number higher than the highest statement number currently existing in the member (see *Statement Numbering* in Chapter 1).

Key the statement number (x.x). Press the ENTER key. (If multiple statements are being moved you can so indicate at this time. Press the MULT STMTS command key instead of the ENTER key.) The following display appears on the screen:



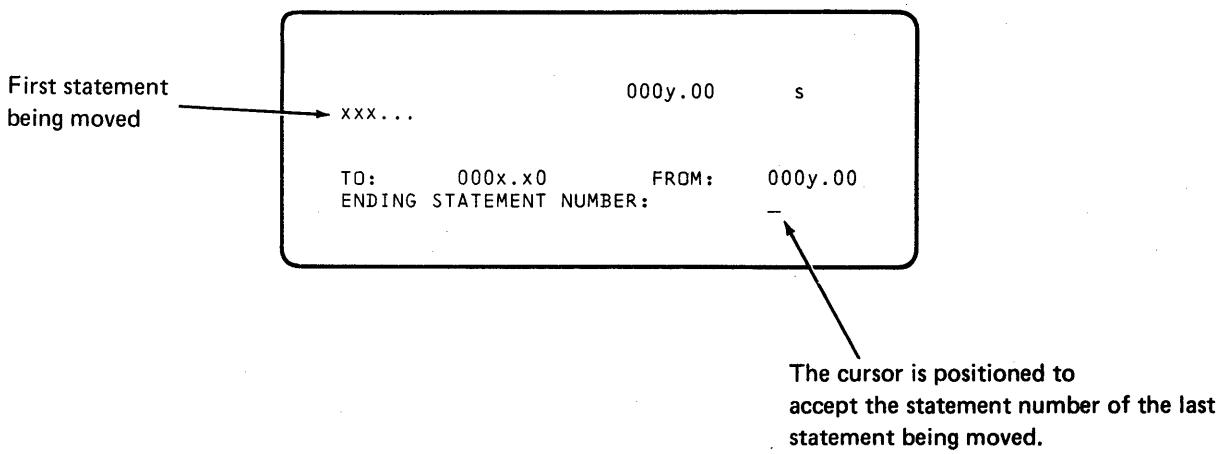
Key the statement number of the first (or only) statement being moved. Now do steps 1 or 2.

1. If you are moving a single statement, press the ENTER key. The display screen appears as follows:

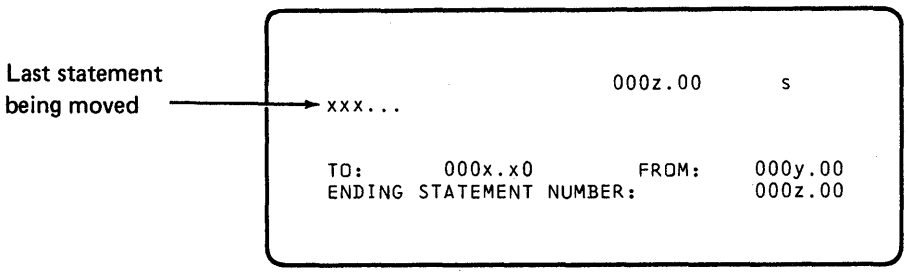


Press the REC ADV key. Statement y is moved from its current location and placed at the point in the member identified by the statement number x.x. Statement number y is now deleted and will be treated as a nonexisting statement number. The screen displays the statement following y and you are prompted for more moves.

2. If you are moving multiple statements, press the MULT STMTS command key (or press ENTER to enter the statement number if multiple statements already selected). The display screen appears as follows:



Key the statement number of the last statement being moved, or press the ROLL↑ key. Continue to press ROLL↑ until the last statement to be moved is displayed. Press the ENTER key. The display screen appears as follows:



Press the REC ADV key. Statements y through z are moved to the point identified by statement number x.x. The statement numbers assigned by SEU are incremented by 0.01 (x.x0, x.x1, etc) or, if the response to MOVING TO STATEMENT NUMBER prompt was a whole number higher than the highest statement number in the member, statement numbers are incremented by 1.00. The display screen now shows the statement following the original location of the last moved statement, and you are prompted for more moves.

Figure 8 lists the command keys and shows when they can be used in move mode. Figure 9 lists the function keys and shows when they can be used in move mode. Examples of moving single and multiple statements are in Appendix C.

Command Keys	When prompted with: MOVING TO STATEMENT NUMBER	When prompted with: MOVING FROM STATEMENT NUMBER	When prompted with: ENDING STATEMENT NUMBER	When statements are ready to be moved:
AUTO DUP	(Not allowed)			
MULT STMTS	Indicates to SEU that multiple consecutive statements are to be moved.		(Not allowed)	
SELECT FORMAT	(Not allowed)			
DELETE	Changes mode to delete mode.	Changes mode to delete mode. No statements are moved.		
ENTER/ UPDATE	Changes mode to enter/update mode.	Changes mode to enter/update mode. No statements are moved.		
ALTER PRINT	Reverses status of indicator.			
EOJ	Displays end-of-job options.			
ALTER SYNTAX	(Not allowed)			
SEARCH END OF SOURCE	Displays last statement in member.			No statements are moved. Displays last statement in member and repeats last prompt.
MOVE	Repeats prompt: MOVING TO STATEMENT NUMBER	Repeats prompt: MOVING TO STATEMENT NUMBER No statements are moved.		
INCLUDE	Changes mode to include mode.	Changes mode to include mode. No statements are moved.		
ACCEPT WITH ERROR	(Not allowed)			
CK DISPLAY	Displays keyboard keys used as command keys and a one-word description of each key. (Press and hold the SHIFT key each time you press the CK DISPLAY command key.)			

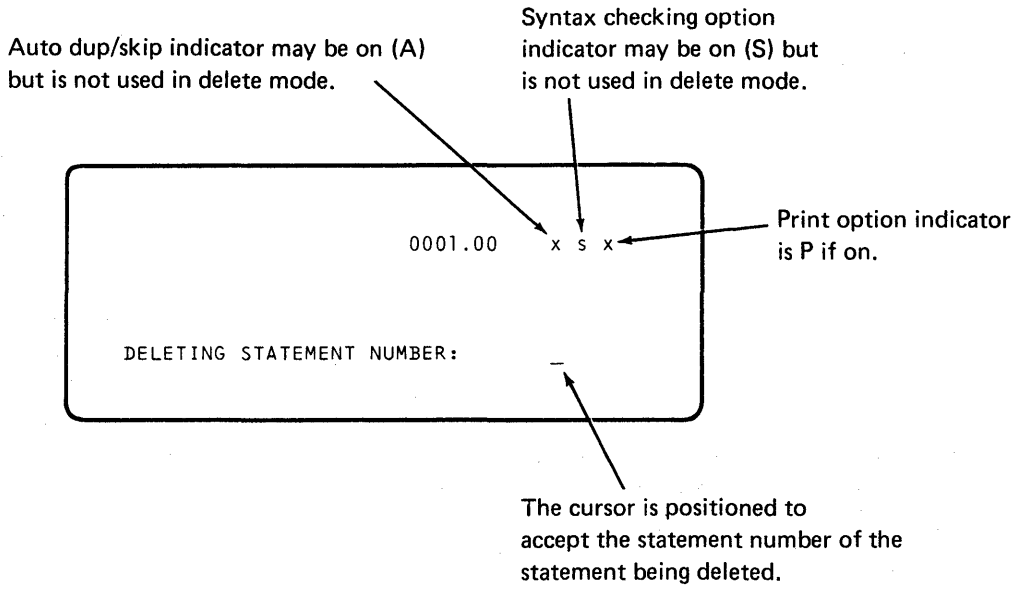
Figure 8. Command Key Usage in Move Mode

Function Keys	When prompted with: MOVING TO STATEMENT NUMBER	When prompted with: MOVING FROM STATEMENT NUMBER	When prompted with: ENDING STATEMENT NUMBER	When statements are ready to be moved:
DUP	(Not allowed)			
FIELD ADV	Indicates that you have finished entering the responses			(Not allowed)
ENTER or ENTER +	Indicates that you have finished entering the responses			(Not allowed)
ENTER - (minus)	(Not allowed)			
FIELD BKSP	Cursor is set to first position of response			(Not allowed)
REC BKSP	(Not allowed)			
REC ADV	(Not allowed)			Causes the statements to be moved and the original statement numbers to be deleted.
↑ ROLL↑	Displays next statement. (If at last statement, displays first statement.)			Stops processing of displayed statement and displays next statement. Response to last prompt is blanked and can be reentered.
↓ ROLL↓	Displays preceding statement. (If at first statement, displays last statement.)			Stops processing of displayed statement and displays preceding statement. Response to last prompt is blanked and can be reentered.

Figure 9. Function Key Usage in Move Mode.

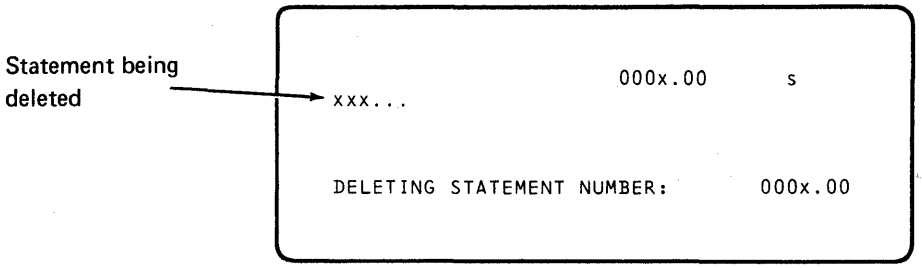
DELETE MODE

Delete mode is used to delete one or more statements from a member. This mode is initiated by pressing the DELETE command key. SEU then displays the following on the screen:



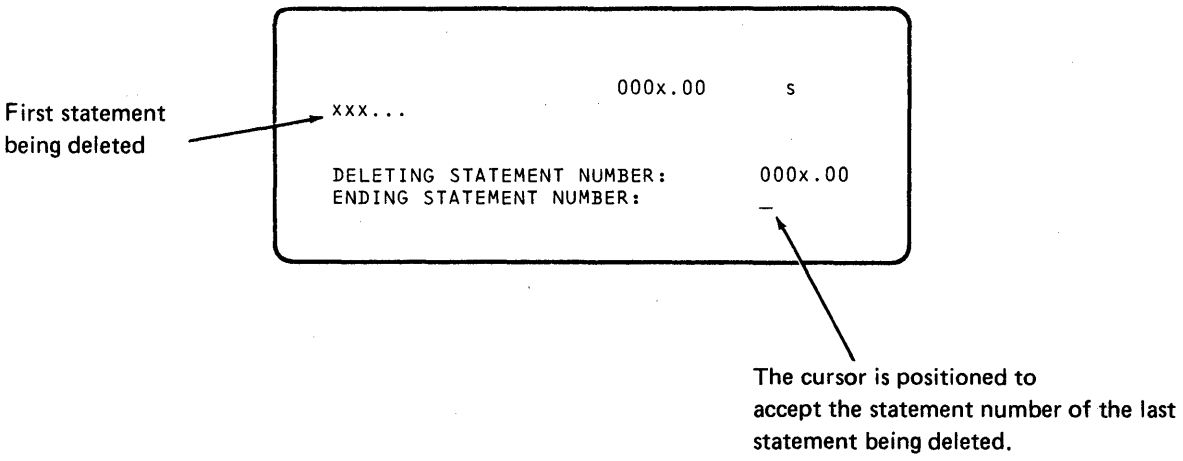
Key the statement number of the first (or only) statement being deleted. Now do steps 1 or 2.

1. If deleting a single statement, press the ENTER key. The display screen appears as follows:

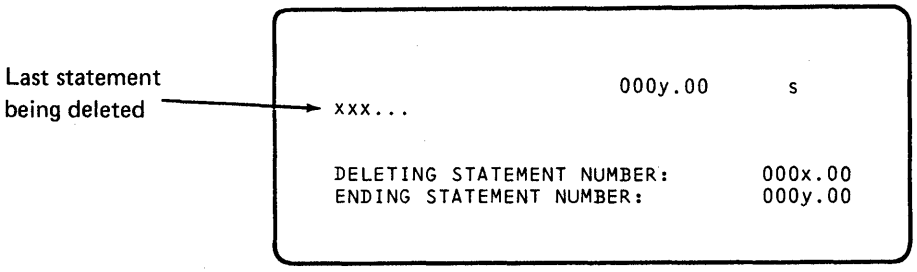


Press the REC ADV key. Statement x is deleted, the next statement in the member is displayed, and you are prompted for more deletes.

2. If deleting multiple statements, press the MULT STMTS command key. The display screen appears as follows:



Key the statement number of the last statement being deleted, or press the ROLL↑ key. Continue to press ROLL↑ until the last statement to be deleted is displayed. Press the ENTER key. The display screen appears as follows:



Press the REC ADV key. Statements x through y are deleted from the member. The screen now displays the statement following y and you are prompted for more deletes.

Note: If all statements are deleted from a member, SEU will initiate the enter/update mode.

Figure 10 lists the command keys and shows when they can be used in delete mode. Figure 11 lists the function keys and shows when they can be used in delete mode. Examples of deleting single and multiple statements are in Appendix C.

Command Keys	When prompted with: DELETING STATEMENT NUMBER	When prompted with: ENDING STATEMENT NUMBER	When statements are ready to be deleted:
AUTO DUP	(Not allowed)		
MULT STMTS	Indicates to SEU that multiple consecutive statements are to be deleted.	(Not allowed)	
SELECT FORMAT	(Not allowed)		
DELETE	Repeats prompt: DELETING STATEMENT NUMBER	Repeats prompt: DELETING STATEMENT NUMBER. No statements are deleted.	
ENTER/ UPDATE	Changes mode to enter/update mode	Changes mode to enter/update mode. No statements are deleted.	
ALTER PRINT	Reverses status of indicator.		
EOJ	Displays end-of-job options.		
ALTER SYNTAX	(Not allowed)		
SEARCH END OF SOURCE	Displays last statement in member.		No statements are deleted. Displays last statement in member and repeats last prompt.
MOVE	Changes mode to move mode.	Changes mode to move mode. No statements are deleted.	
INCLUDE	Changes mode to include mode.	Changes mode to include mode. No statements are deleted.	
ACCEPT WITH ERROR	(Not allowed)		
CK DISPLAY	Displays keyboard keys used as command keys and a one-word description of each key. (Press and hold the SHIFT key each time you press the CK DISPLAY command key.)		

Figure 10. Command Key Usage in Delete Mode

Function Keys	When prompted with: DELETING STATEMENT NUMBER	When prompted with: ENDING STATEMENT NUMBER	When statements are to be deleted:
DUP	(Not allowed)		
FIELD ADV	Indicates that you have finished entering the responses.		(Not allowed)
ENTER or ENTER +	Indicates that you have finished entering the responses.		(Not allowed)
ENTER - (minus)	(Not allowed)		
FIELD BKSP	Cursor is set to first position of response.		(Not allowed)
REC BKSP	(Not allowed)		
REC ADV	(Not allowed)		Causes the selected statements to be deleted.
↑ ROLL↑	Displays next statement. (If at last statement, displays first statement.)		Stops processing of displayed statement and displays next statement. Response to last prompt is blanked and can be reentered.
↓ ROLL↓	Displays preceding statement. (If at first statement, displays last statement.)		Stops processing of displayed statement and displays preceding statement. Response to last prompt is blanked and can be reentered.

Figure 11. Function Key Usage in Delete Mode

Fields in a statement are defined by field definitions. These field definitions tell the program the following things:

- Type of data to be entered in the field
- Length of the field
- Any action the program should take on the field

The group of field definitions used to define all fields in a statement is called a format description. This format description can, once it is entered in a library member, be used to assist you in entering the statements.

Enter/update mode is the only mode that makes use of format descriptions to process statements. (Delete, move, and include modes do not operate on the content of a statement, but rather process the entire statement.)

FIELD DEFINITIONS

Field definitions contain the following two things:

- A character to define the type of field starting in that respective position in the statement.
- The field continuation character—period (.), indicating a continuation of the field defined by the last field definition character.

Figure 12 lists the field definition characters that are valid for format descriptions and explains each character.

The following example illustrates the use of field definitions. Suppose you want to enter the following statements:

```
12345  FILENAME  DEVICE=DISK
65432  MASTER    DEVICE=PRINTER
```

The field definitions are as follows:

```
                                  Position 98
                                       ↓
N....K.A..........X......A.........B....ʃʃ DEVICE=
```

The field definitions are 40 positions long, which is the minimum length for a format description.

- The first field is numeric, 5 positions long, and starts in position 1.
- The next two positions are blank and should be skipped (auto dup/skip indicator must be on).
- The next field is alphameric, 11 positions long.
- DEVICE = will always be the same in each statement; the field is a 7-position constant character field.
- The next field is alphameric and a maximum of 10 positions long.
- The last 5 positions are blank and bypassed.

The format description containing these field definitions can be used to enter all statements of the type shown in the example.

Some format descriptions are provided with the SEU program; others are defined by you.

Field Definition or Continuation Character	Explanation
N	Numeric field (maximum field length—15 characters). Digits 0 through 9 are the only valid characters that can be entered in this field. The sign position is the last position of the field. If the number is negative, the last position is displayed as an alphabetic character as follows: **Negative Number** — **Alphabetic Representation** 0 — & (ampersand) 1 — J 2 — K 3 — L 4 — M 5 — N 6 — O 7 — P 8 — Q 9 — R The digits are right-adjusted in the field and zeros are filled in to the left.
A	Alphameric field. Any character on the keyboard is valid.
D	Numeric Auto Dup field (maximum field length—15 characters). If the auto dup/skip indicator is on, the value from the field in the previous statement is placed in this field (see Chapter 6, *Duplication of Fields*). If the auto dup/skip indicator is off, this field is treated as an N (numeric) type field.
U	Alphameric Auto Dup field. If the auto dup/skip indicator is on, the contents of the field in the previous statement is placed in this field (see Chapter 6, *Duplication of Fields*). If the auto dup/skip indicator is off, this field is treated as an A (alphameric) type field.
B	Unconditional Bypass field. SEU bypasses this field in the statement and the contents remain unchanged.
K	Auto Skip field. If the auto dup/skip indicator is on, this field is bypassed and the contents remain unchanged. If the auto dup/skip indicator is off, this field is treated as an A (alphameric) type field.
J	Unsigned Numeric field (maximum field length—15 characters). Digits 0 through 9 and blank are the only valid characters which may be entered. The digits are right-adjusted in the field and blanks are filled in to the left. Leading zeros will be in the field only if they are keyed.
X	Constant Character field. Characters in positions 98 through 112 in the format description are placed in this field in their same relative positions. This field is treated as an unconditional bypass field when the statement is being processed. (See *Constant Characters* in this chapter.)
(period)	Indicates the continuation of the field defined by the last field definition character.
blank	The first blank indicates that all fields have been defined for the statement.

Note: When the ACCEPT WITH ERROR command key can be used, all fields can be processed (see *Chapter 7. Syntax Checking of RPG II and Auto Report Statements).*

Figure 12. Field Definition or Continuation Character

SEU-PROVIDED FORMAT DESCRIPTIONS

RPG II and Auto Report

The following format descriptions are supplied with SEU for use in entering RPG II and auto report specifications:

Format Description Type	Specification
H	RPG II control specification
U	Option format used by RPG II auto report
F	File description specification
I	Input specification (record identification)
J	Input specification for columns 43 through 96 (field description)
C	Calculation specification
O	Output specification (file identification and control)
P	Output specifications for columns 23 through 96 (field description)
K	Copy specification used by RPG II auto report
E	File extension specification
L	Line counter specification
T	Telecommunication specification

These format descriptions are stored in the library member named #SEURPGF, which must be in the library when an RPG II or auto report member is being processed (member type = R or A). The format description type of the specifications in #SEURPGF are determined by their presence in a predefined sequence (all 12 must be present at all times). If #SEURPGF is updated, this sequence must not be modified, or SEU will be unable to determine the correct format description type. SEU-provided format descriptions are shown in Figure 13. The relationship of the format descriptions to the RPG and auto report specification sheets is shown in Figure 14.

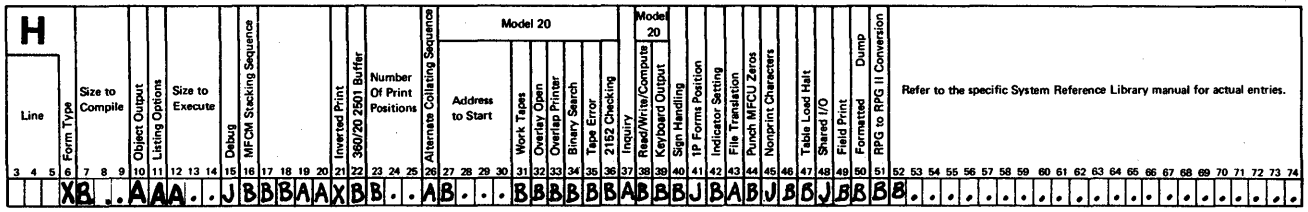
When a new statement is being entered using the H format description type, the first six characters of the member name parameter are moved into positions 75 through 80 of the statement being entered. This is done so that the object program produced by the RPG II compiler is named the same as the source member. Since positions 75 through 80 are defined as an auto skip field in the control specification format description provided in #SEURPGF, positions 75 through 80 may be modified when the statement is being entered or updated.

Column 75

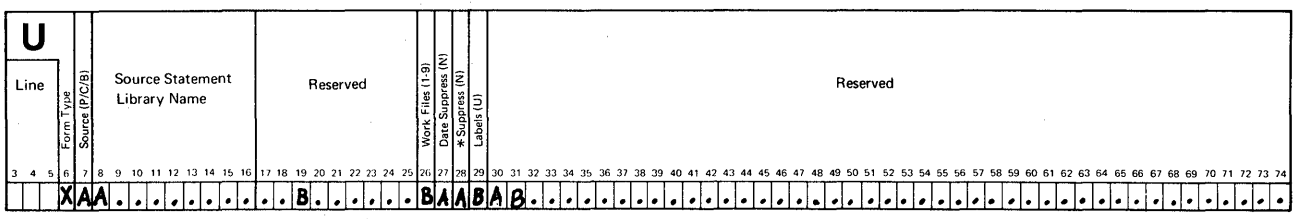
```
* #SEURPGF CONTAINS THE RPG II AND AUTO REPORT FORMAT DESCRIPTIONS.  DO NOT CHANGE THE ORDER OF THE FORMAT DESCRIPTIONS
* IN THIS MEMBER.
* CONTROL SPECIFICATION - FORMAT DESCRIPTION = H
K....XB..AAA..JBBBAAXBB..AB...BBBBBBABBBJBABJBBJBBBB.....................K.....B.............. H
* AUTO REPORT OPTION SPECIFICATION - FORMAT DESCRIPTION = U
K....XAA.........B......BAABAB.....................................................K.....K.............. U
* FILE DESCRIPTION SPECIFICATION - FORMAT DESCRIPTION = F
K....XA.......AAAAAJ...J...AJ.AAA.J...AA.......B.....KK.....J......ABJ.BA.B.K.....K.............. F
* INPUT SPECIFICATION - FORMAT DESCRIPTION = I
K....XA.......A...A.J...A..J...A..J...A..BAJ...J...AA.....A.A.A.A.A.A.B...K.....K.............. I
* INPUT FIELD SPECIFICATION - FORMAT DESCRIPTION = J
K....XB.....................................BKJ...J...AA.....A.A.A.A.A.A.B...K.....K.............. I
* CALCULATION SPECIFICATION - FORMAT DESCRIPTION = C
K....XA.A..A..A..A.........A....A.........A.....J..JAA.A.A.K.............K.....K.............. C
* OUTPUT SPECIFICATION - FORMAT DESCRIPTION = O
K....XA.......AAAAA.A.A..A..A.....AAJ...AA.....................B...K.....K.............. O
* OUTPUT FIELD SPECIFICATION - FORMAT DESCRIPTION = P
K....XB.............K..K..K...A.....AAJ...AA.....................B...K.....K.............. O
* COPY SPECIFICATION - FORMAT DESCRIPTION = K
K....AX........A.......B.....................K.....................K.....K.............. /COPY FL.
* EXTENSION SPECIFICATION - FORMAT DESCRIPTION = E
K....XB...K.......K.......A.....J..J...J..AJAA.....J..AJAK.............K.....K.............. E
* LINE COUNTER SPECIFICATION - FORMAT DESCRIPTION = L
K....XA.......J..X.J..X.B.....................................................K.....K.............. LFLOL
* TELECOMMUNICATION SPECIFICATION - FORMAT DESCRIPTION = T
K....XA.......AAAAAAA..........AA......AA......B...AA.J..A.AA.A.B.........K.....K.............. T
* END OF #SEURPGF
```

Figure 13. #SEURPGF

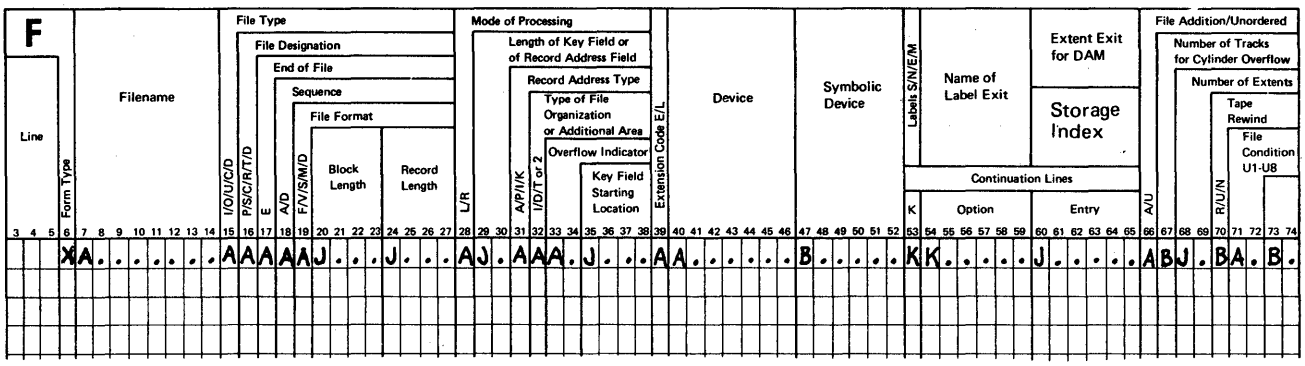
Control Card Specifications



Option Specifications



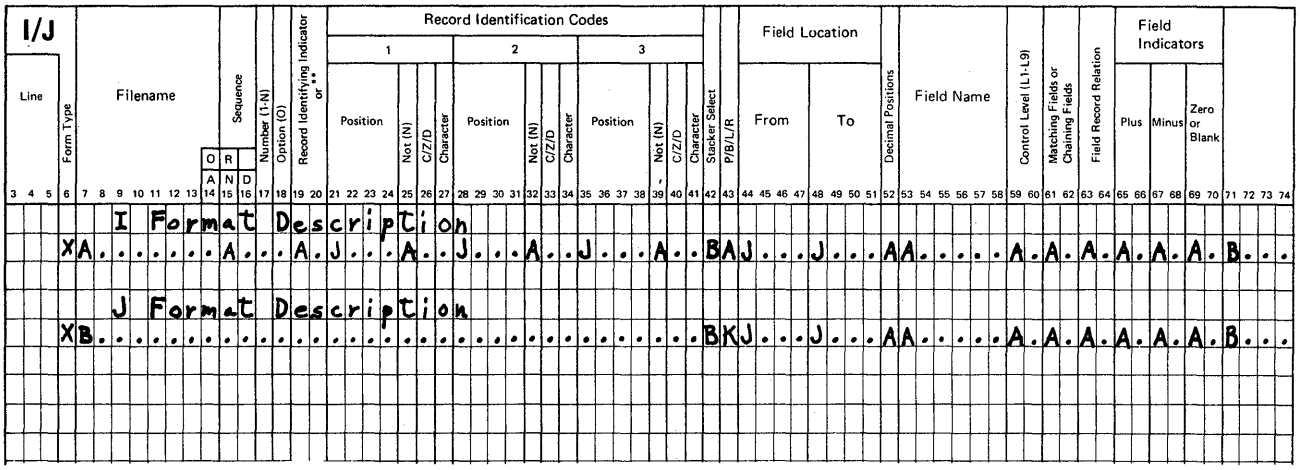
File Description Specification



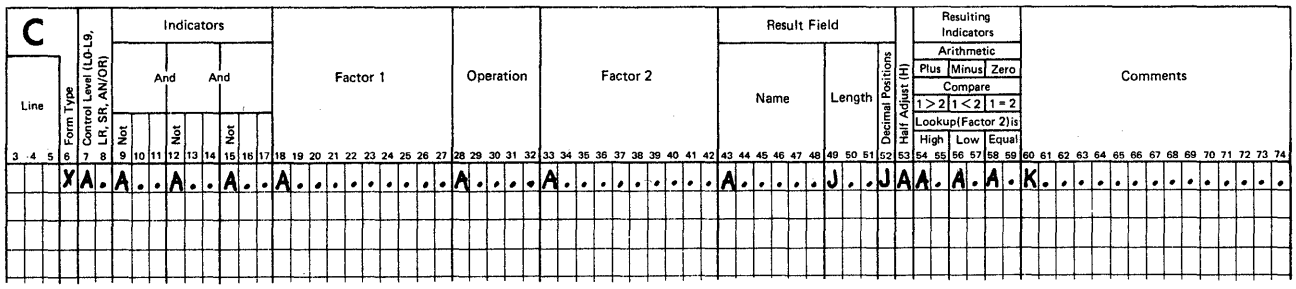
Note: Columns 1-5 are auto/skip fields. Columns 75-120 are shown on #SEURPGF (Figure 13).

Figure 14 (Part 1 of 4). Relationship of RPG and Auto Report Specifications to #SEURPGF

INPUT SPECIFICATIONS



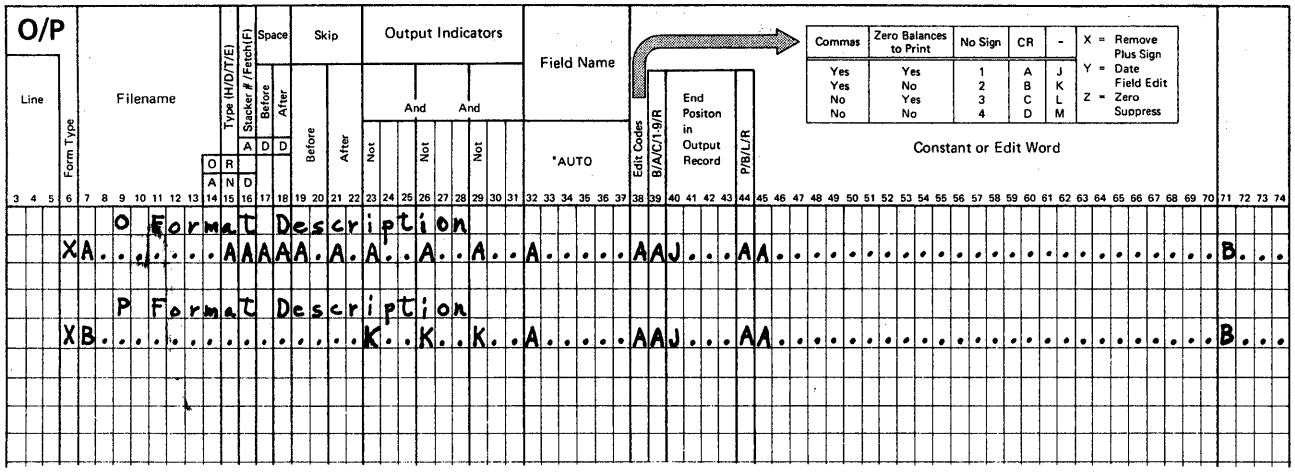
CALCULATION SPECIFICATIONS



Note: Columns 1-5 are auto/skip fields. Columns 75-120 are shown in #SEURPGF (Figure 13).

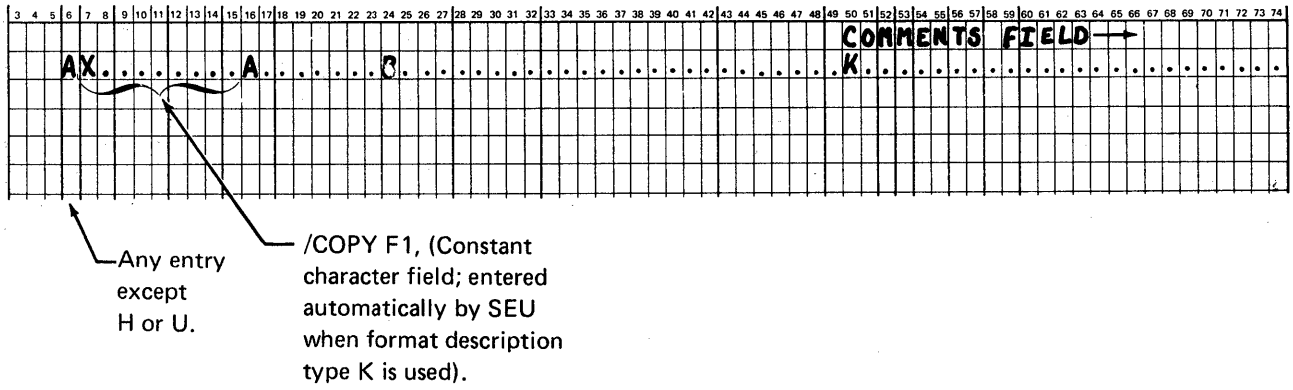
Figure 14 (Part 2 of 4). Relationship of RPG and Auto Report Specifications to #SEURPGF

OUTPUT SPECIFICATIONS



/COPY

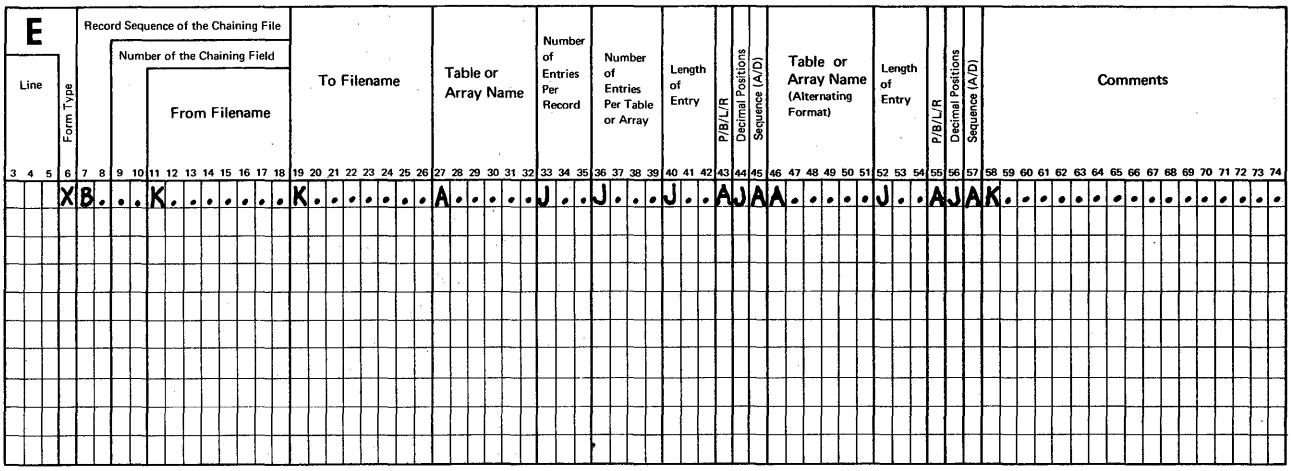
Any Specification



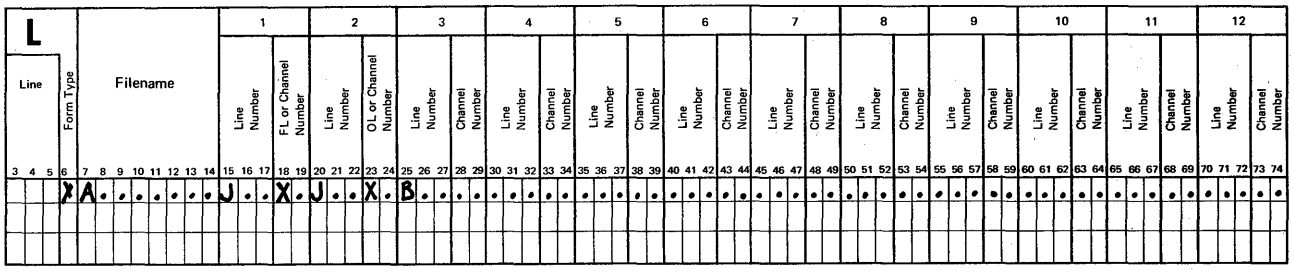
Note: Columns 1-5 are auto/skip fields. Columns 75-120 are shown in #SEURPGF (Figure 13).

Figure 14 (Part 3 of 4). Relationship of RPG and Auto Report Specifications to #SEURPGF

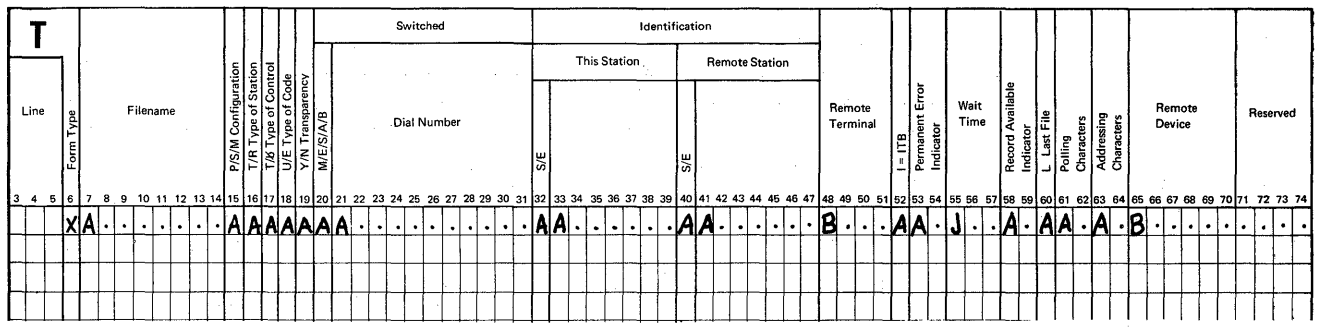
Extension Specifications



Line Counter Specifications



TELECOMMUNICATIONS SPECIFICATIONS



Note: Columns 1-5 are auto/skip fields. Columns 75-120 are shown in #SEURPGF (Figure 13).

Figure 14 (Part 4 of 4). Relationship of RPG and Auto Report Specifications to #SEURPGF

Sort

The following format descriptions are supplied with SEU for use in entering Sort specifications.

Format Description Type	Specification Type
1	Header specification
2	Record type constant specification
3	Record type field specification
4	Field specification
5	Comment

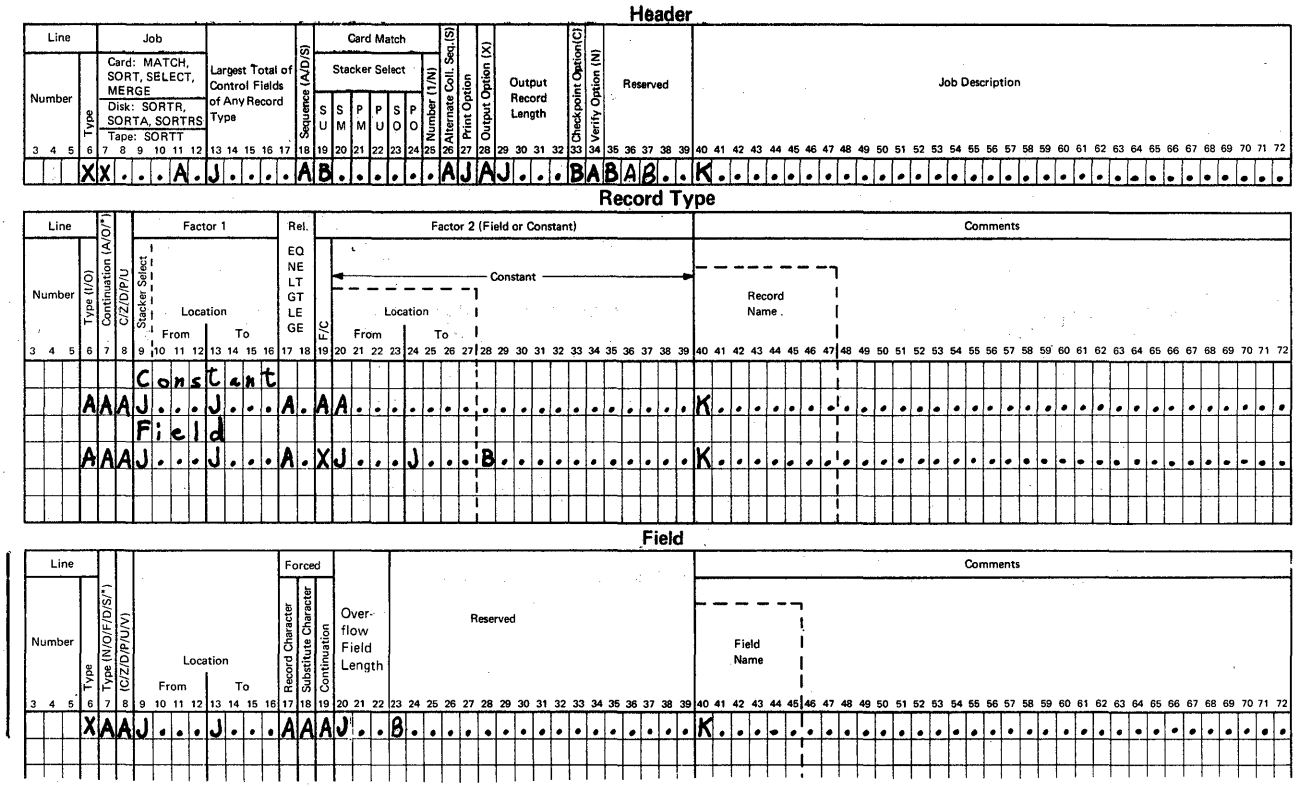
These format descriptions are stored in the library member named #SEUSORT. The format description type of the format descriptions in #SEUSORT is determined by their presence in the order in which they are defined. However, since Sort format descriptions are treated the same as user-provided format descriptions, the sequence can be changed and additional format descriptions can be added to #SEUSORT. As in other user-defined library members that contain format descriptions, the maximum number of format descriptions is 9. SEU-provided format descriptions are shown in Figure 15. The relationship of the format descriptions to the Sort specifications is shown in Figure 16.

Note: See Example B *Sign-On Procedure* in Chapter 2 for the SEU sign-on command to use.

Column 73

```
* $SEUSORT CONTAINS FORMAT DESCRIPTIONS FOR INPUTTING SORT SPECIFICATIONS.  THE ORDER OF THE FORMAT DESCRIPTIONS GIVEN
* HERE IS THE SAME AS GIVEN IN THE SEU REFERENCE MANUAL.
* HEADER SPECIFICATION - FORMAT DESCRIPTION = 1
K...XX...A.J....AB......AJAJ...BABAB..K.....................................B.K.....B.............. HSORT
* RECORD TYPE CONSTANT SPECIFICATION - FORMAT DESCRIPTION = 2
K....AAAJ...J...A.AA.................K.....................................................................
* RECORD TYPE FIELD SPECIFICATION - FORMAT DESCRIPTION = 3
K....AAAJ...J...A.XJ...J...B..........K..................................................................... F
* FIELD SPECIFICATION - FORMAT DESCRIPTION = 4
K....XAAJ...J...AAAB..................K..................................................................... F
* COMMENT - FORMAT DESCRIPTION = 5
K....AXA..................................................................................................... *
* END OF $SEUSORT
```

Figure 15. #SEUSORT



Note: Columns 1-5 are auto/skip fields. Columns 73-120 are shown in #SEUSORT (Figure 15).

Figure 16. Relationship of Sort Specifications to #SEUSORT (Figure 15)

Assembler, FORTRAN, and 1255 Magnetic Character Reader

The following format descriptions are supplied with SEU for use in entering assembler, FORTRAN, and 1255 Magnetic Character Reader specifications.

Format Description Type	Specification Type
1	Assembler specification
2	FORTRAN specification
3	1255 Magnetic Character Reader system specification
4	1255 Magnetic Character Reader stacker specification

These format descriptions are stored in the library member named #SEUXTRA. The type of the format descriptions in #SEUXTRA is determined by the order in which they are defined. However, since assembler, FORTRAN and 1255 Magnetic Character Reader format descriptions are treated the same as user-provided format descriptions, the sequence can be changed and additional format descriptions can be added to #SEUXTRA. As in other user-defined library members that contain format descriptions, the maximum number of format descriptions is 9. SEU-provided format descriptions are shown in Figure 17. The relationship of the format descriptions to the assembler, FORTRAN, and 1255 Magnetic Character Reader specifications is shown in Figure 18.

```
* #SEUXTRA CONTAINS THE ASSEMBLER, FORTRAN AND 1255 FORMAT DESCRIPTIONS.  THE ORDER OF THE FORMAT DESCRIPTIONS GIVEN
* HERE IS THE SAME AS GIVEN IN THE SEU REFERENCE MANUAL.
* ASSEMBLER SPECIFICATION - FORMAT DESCRIPTION = 1
A.......BA....BA.....................................A.............................BA........
* FORTRAN SPECIFICATION - FORMAT DESCRIPTION = 2
A....AA.....................................................................A.......A..............
* 1255 SYSTEM SPECIFICATION - FORMAT DESCRIPTION = 3
K.J..AB.........A..A..A..A..A..B.....JA.........A.........K..AB.......................
* 1255 STACKER SPECIFICATION - FORMAT DESCRIPTION = 4
K.A.A....B.A.................A................A................A................B..............
* END OF #SEUXTRA
```

Figure 17. #SEUXTRA

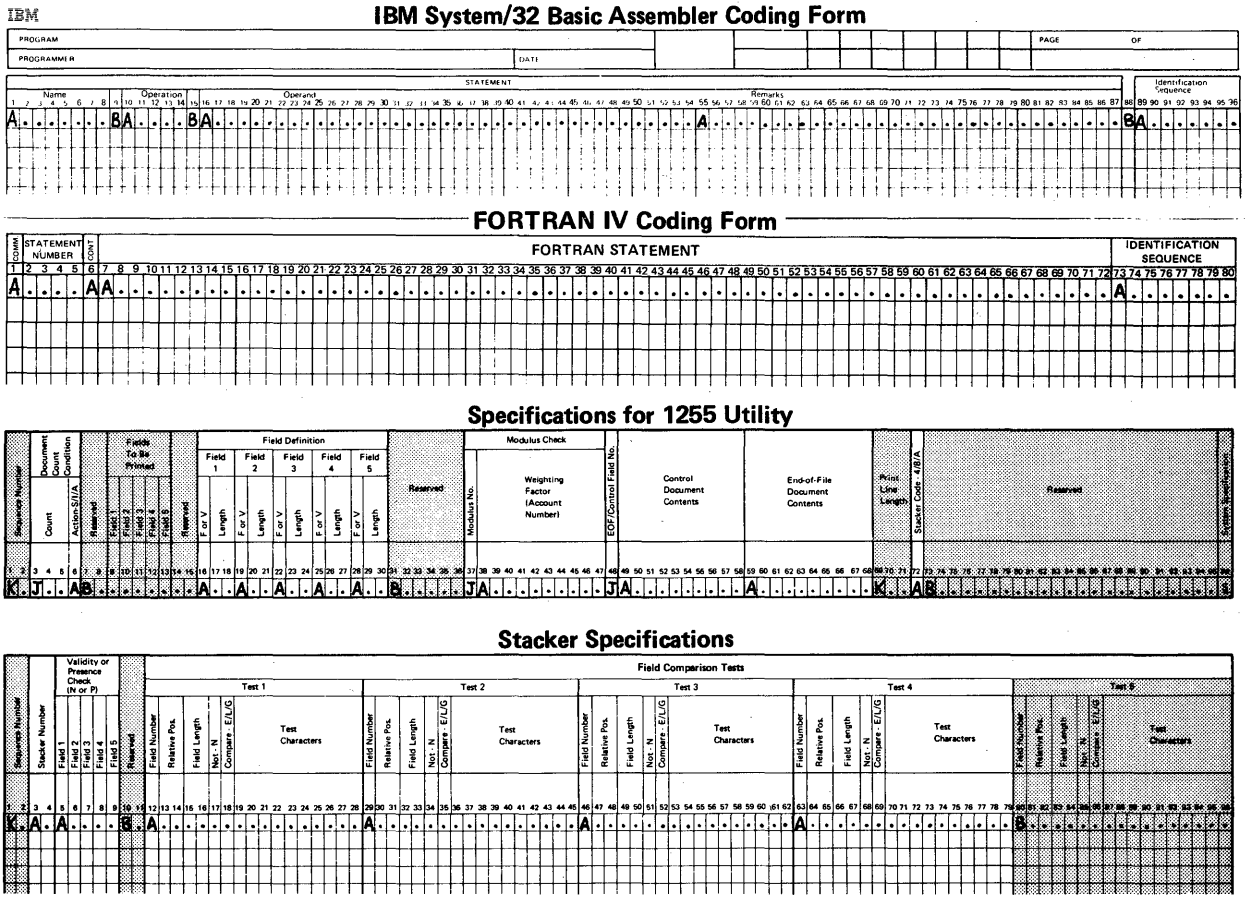


Figure 18. Relationship of Assembler, FORTRAN IV and 1255 Magnetic Character Reader Specifications to #SEUXTRA (Figure 17)

Free Form Format Description

Free form format (format description type 0) is provided internally by SEU and, therefore, does not exist in a source library member containing format descriptions. When this format description is selected while entering or updating a statement, the statement is treated as having one alphameric field; the length of the field is equal to the length of the statements being processed.

USER-PROVIDED FORMAT DESCRIPTIONS

With SEU you have the capability of creating and storing your own format descriptions (identified by format description types 1 through 9). These format descriptions must be stored in user-defined library members. You can have as many library members as you need for user format descriptions, but only one member containing user formats can be used during a run. However, two format description members can be made available when entering RPG II or auto report specifications by signing on with member type R or A and supplying the user library member name. This allows access of the format descriptions in both #SEURPGF and in the user library member. Each member can contain a maximum of nine format descriptions. SEU determines the format description types of the format descriptions in the user library members (as for #SEUSORT) by the order in which they appear, thus, the first format description has format description type 1, the second has format description type 2, and so on.

Note: See *Sign-On Procedure* in Chapter 2 for SEU sign-on command to use.

CONSTANT CHARACTERS

Constant characters are placed only in new statements being entered in a member using the enter/update mode. These characters are displayed in their respective positions in the statement before any other fields can be entered.

If the format description does not exceed 96 characters, an X can be used as a field definition character to signify that a constant is to be entered in that field. The constant must have been defined in positions 98 through 112 in the format description. The character defined in position 98 is placed in the first constant position specified. The nth constant position is filled with the character defined in position 98 + (n - 1). Up to 15 constant characters can be specified.

If format selection is performed while a statement is being entered, all constant characters from the selected format descriptions are displayed. Otherwise, when a statement is being entered or updated, SEU bypasses fields defined as constant fields. Constant characters are not placed in a statement when the statement is being updated. Characters in constant fields can be modified by selecting the free form format description and updating the statement.

ENTERING/MAINTAINING FORMAT DESCRIPTIONS

Format descriptions can be modified by performing maintenance on the library member containing the format descriptions. Free form format description is the only valid format when entering or updating format descriptions. If you modify the format descriptions in #SEURPGF, the order in which the format descriptions appear must not be altered. #SEURPGF must contain 12 format descriptions.

Format descriptions define statements which have a minimum length of 40 characters and a maximum length of 120 characters; therefore, the first blank must be past position 40.

Comments can be entered in a member containing format descriptions. A comment is identified by an asterisk in position 1 of the format description. Comments should be ignored when counting the number of format descriptions in a member.

Do not create a format description that contains only B, U, D, K, and X field types.

SEU FORMAT DESCRIPTION SYNTAX CHECKING

When format descriptions are being entered, SEU syntax checks them for errors before writing them in the member. If an error is found, a message is displayed on the screen. See the *IBM System/32 Displayed Messages Guide*, GC21-7704, to determine the reason for the message and the action to be taken.

Syntax checking occurs at the following times:

- When format descriptions are being entered or updated
- At end of job when entering or updating format descriptions
- At initialization of a run that uses format descriptions

The following syntax checks are made to determine if the format description is acceptable to SEU:

- The first field must begin in position 1 of the format description.
- All characters in the format description that precede the first blank character must be either a valid field definition character or a period (continuation character).
- Numeric field length cannot exceed 15 positions.
- If the constant field definition character (X) is present in a format description, position 97 of the format must be blank.
- No more than 15 constant positions can be defined in a format description.

The following syntax checks are made at initialization of a job if it uses format descriptions, and at end of job when entering or updating format descriptions:

- All format descriptions within a library member must define statements of the same length.
- No more than 9 format descriptions are allowed in a user format description member (including #SEUSORT).
- #SEURPGF must contain exactly 12 format descriptions.

If any of the above conditions are not met, an error message is displayed. The format description must then be corrected before you can continue processing.

FORMAT DESCRIPTION SELECTION

User-Initiated Format Description Selection

When an SEU run is initialized, free form format description is assumed for entering and updating statements. User-initiated format selection is allowed only when a statement is being entered or updated. To select a new format description, press:

1. SELECT FORMAT command key
2. A valid format data key
3. ENTER, ENTER+, or FIELD ADV

When the format description has been selected, the new format description type is displayed in position 12 of the status line of the display screen. If format selection is initiated while a statement is being updated, the original statement is redisplayed. No constant characters from the new format description are inserted into the original statement when the statement is being updated. If the format description is selected while a new statement is being entered, the statement area on the display screen is blanked and any constant characters from the new format are inserted and displayed. Whenever a format description is selected, the cursor and column counter are reset to allow the statement to be processed from the first field for which processing is allowed.

Automatic Format Description Selection

When processing in the enter/update mode, SEU automatically performs format description selection if the following conditions exist at the time a statement is selected to be entered or updated:

1. The current run is processing RPG II or auto report statements (member type parameter R or A), and
2. The last format description type selected was an RPG II or auto report format description.

If format descriptions are automatically selected, the automatic format description selection is performed when the statement number is entered. The type of format selected is based on unique entries being in the previous statement when a new statement is being entered, or being present in the original statement when a statement is being updated. SEU uses the following criteria to determine which format description is to be selected:

1. If a new statement is being entered, SEU determines the format description of the statement preceding the statement being entered and selects that format description. If SEU cannot determine that the preceding statement was an RPG II or auto report specification, or if the statement being entered is the first statement in the member, the free form format description is selected.
2. If a statement is being updated, SEU determines the format description of the statement (if RPG II or auto report) and selects that format description. The free form format description is selected if a statement is being updated and SEU cannot determine that the statement is an RPG II or auto report specification.

If a new statement is being entered and you key an asterisk (*) in position 7 (comment statement), SEU will automatically change to the free form format description to allow you to enter the comment starting in position 8. Note that position 7 of a statement is checked for an asterisk only the first time that position is processed. That is, if you enter a character other than an asterisk in position 7 and then return to position 7 to enter an asterisk, SEU will not select the free form format description. An asterisk in position 7 of the previous statement causes SEU to assume the format based on the entry in position 6.

If a statement is being updated and an asterisk is found in position 7, SEU assumes free form format description. In this case, the contents of the statement area on the display screen do not change and the cursor is positioned to allow you to update the comment starting in position 1.

When processing statements in enter/update mode, if you select either a user (including #SEUSORT) or free form format description, that format description controls all statements entered or updated until you select an RPG II or auto report format description.

Figure 19 shows the RPG II and auto report format description types and the condition that determines selection of each format description type.

Format Description Type	RPG II and Auto Report Entries that Determine each Format Description Type
H	H in position 6
U	U in position 6
F	F in position 6
I	I in position 6 and nonblank character in position 15
J	I in position 6 and blank in position 15
C	C in position 6
O	O in position 6 and nonblank character in position 15
P	O in position 6 and blank in position 15
K	/COPY in positions 7 through 11
E	E in position 6
L	L in position 6
T	T in position 6
0	Format description type 0 is selected when either of the following conditions occur: • None of the above entries are present. • During update, an asterisk is found in position 7. The asterisk indicates a comment statement in RPG II or auto report; the entry in position 6 is ignored.

Note: If positions 7-11 of the statement contain /COPY, the K format will be selected regardless of the entry in position 6.

Figure 19. Format Description Types

COMMAND KEYS

To initiate a command key function, press the CMD function key to indicate to the SEU program that the next keystroke will be one of the defined command keys. Then press the data key on the top row of the keyboard (lower or upper case shift as required) that corresponds to the function on the template above the key.

| 1

AUTO DUP – Changes the status of the auto dup/skip indicator (if on, there is an A in position 34 of status line). If the indicator is on when the key is pressed, the indicator is turned off; if off, it is turned on. Fields defined as auto skip fields are bypassed if this indicator is on when a statement is being entered or updated. The auto dup/skip indicator is initially off and is turned on or off each time AUTO DUP is pressed. The use of the auto dup/skip in relation to auto dup fields is described in Chapter 6, *Duplication of Fields.*

@   2

MULT STMTS – Indicates that consecutive multiple statements are to be processed using the current mode of operation. When this key is pressed, field advance occurs. This key is allowed only when entering a response to one of the prompts described in Chapter 3, *Modes of Operation.*

3

SELECT FORMAT – Allows a new format description to be selected for entering or updating statements. SELECT FORMAT can be used only when a statement is being entered or updated.

Example

```
044         J    J004  0006.50    A S
     I
   _
ENTER/UPDATE STATEMENT NUMBER:   0006.50
```

You have entered 6.5 as the response to the prompt ENTER/UPDATE STATEMENT NUMBER. Statement 6.5 did not exist and, therefore, is a new statement to be entered. The J format description type was automatically selected because the previous statement has an I in column 6 and column 15 is blank. The J format description describes an input (I) specification and you want to use the format description for calculation specifications (C). Press the SELECT FORMAT command key.

```
          _          0006.50    A S
     I
ENTER/UPDATE STATEMENT NUMBER:   0006.50
```

The J format description type disappears and the cursor is positioned in column 12 where the J was. Key a C.

(Continued On Next Page)

```
          C           0006.50     A S
     I

ENTER/UPDATE STATEMENT NUMBER:    0006.50
```

The cursor no longer shows; press ENTER.

```
007       C     A002  0006.50     A S
     C_

ENTER/UPDATE STATEMENT NUMBER:    0006.50
```

The calulation (C) format description is brought in and the cursor is positioned in the first position available for keying.

$ 4	DELETE – Initiates the delete mode to delete statements from a member. DELETE is allowed only if statements currently exist in the member.
% 5	ENTER/UPDATE – Initiates the enter/update mode to create new statements and maintain existing statements. Enter or update is determined by statement number entered, new or existing. Enter/update mode is automatically initiated at sign-on.
¬ 6	ALTER PRINT – Changes the status of the print option indicator (if on, there is a P in position 38 of status line). If the indicator is on when the key is pressed, the indicator is turned off; if off, it is turned on. The print option is used to determine when statements being entered, updated, included, or deleted are to be printed.
& 7	EOJ – Specifies the end of creation of, or maintenance on, a library member. When you press this key you are prompted to select an end-of-job option (see Chapter 8, *End of Job*).
* 8	ALTER SYNTAX – Changes the status of the syntax checking option for RPG II and auto report statements (if on, there is an S in position 36 of status line). Use of this key is allowed only when processing in the enter/update mode and the member member type specified was R or A. The syntax checking option is initially on and is turned on or off each time ALTER SYNTAX is pressed. *Note:* If member type specified was F (format description), the syntax checking option is initialized on and cannot be turned off. If member type specified was S (source statements) or P (procedures), the syntax checking option is initialized off and cannot be turned on.

(9	SEARCH END OF SOURCE – Causes the last statement in the member to be displayed. When operating in enter/update mode, two cases are possible:

Case 1: The prompt ENTER/UPDATE STATEMENT NUMBER is displayed. Pressing SEARCH END OF SOURCE causes the following two items to be displayed:

- The last statement in the member
- The last prompt (ENTER/UPDATE STATEMENT NUMBER)

Case 2: A statement is being entered or updated. Pressing SEARCH END OF SOURCE causes the following to occur:

- Processing of statements (including multiple statement processing) is terminated.
- The last statement in the member is displayed.
- The prompt ENTER/UPDATE STATEMENT NUMBER is issued.

When processing in delete, move, or include mode, pressing SEARCH END OF SOURCE causes the following two items to occur:

- The last statement in the member is displayed.
- The response to the last prompt is blanked if a response was made. (You may then respond to the prompt that is issued.)

Example 1

You are operating in the enter/update mode and are ready to enter a response to ENTER/UPDATE STATEMENT NUMBER. (This could be any prompt.)

```
                               0002.00       S
0002 FMASTER   IP  F       120                   D
ISK

ENTER/UPDATE STATEMENT NUMBER:   _
```

Press the SEARCH END OF SOURCE command key.

```
                               0017.00       S
0017 O                                 TAMT2 M
132

ENTER/UPDATE STATEMENT NUMBER:   _
```

The last statement in the member is displayed and that statement number is placed in the status line. (Statement 17 is last statement.)

Example 2

You are updating statement 2.

```
007        F    A008  0002.00      S
0002 FMASTER  IP  F     120           D
ISK

ENTER/UPDATE STATEMENT NUMBER:   0002.00
```

Press the SEARCH END OF SOURCE command key.

```
                        0017.00      S
0017 O                              TAMT2 M
132

ENTER/UPDATE STATEMENT NUMBER:   _
```

Update mode is terminated and the response to the last prompt is blanked. The last statement in the member and its statement number are displayed. The cursor is positioned for a response to ENTER/UPDATE STATEMENT NUMBER.

) 0	MOVE – Initiates the move mode to move statements within a member. MOVE is allowed only if statements currently exist in the member.
– -	INCLUDE – Initiates the include mode to include statements from a member in the library into the member being processed.
+ =	ACCEPT WITH ERROR – Allows the operator to place a statement that contains a syntax error in the library member. Use of this key is allowed only when a syntax error has occurred on a statement being entered or updated using RPG II or auto report format description. For additional information, see Chapter 7, *Syntax Checking of RPG II and Auto Report Statements.*

Example

Statement 8 is to be updated. The syntax checking option indicator is on.

```
001         C    K005  0008.00      S
0008 C   01      COUNT     ADD  1
  COUNT   50

ENTER/UPDATE STATEMENT NUMBER:   0008.00
```

(Continued On Next Page)

Press FIELD ADV until you reach column 49. In this example, columns 49 through 51 specify the field length of the result field; which is defined in the RPG II calculation (C) format description as a J field, length of 3.

```
049          C      J003  0008.00        S
0008 C    01        COUNT       ADD  1
  COUNT _ 50

ENTER/UPDATE STATEMENT NUMBER:    0008.00
```

The field length is to be changed as indicated on the listing from the last RPG II compilation. In this case, the listing is difficult to read and you key a length of 16 rather than 6.

```
052          C      J001  0008.00        S
0008 C    01        COUNT       ADD  1
  COUNT  160

ENTER/UPDATE STATEMENT NUMBER:    0008.00
```

Since a maximum length of 15 is allowed, the program will detect this as an error when REC ADV is pressed.

```
PRESS ERROR RESET KEY TO CONTINUE
SEU 1507
FIELD LENGTH (POS 49-51) IS INVALID.
(SEE MESSAGE GUIDE FOR A FURTHER
DESCRIPTION OF THIS ERROR.)
```

The screen flashes and an error message is displayed along with the Message Identification Code (MIC).

Press ERROR RESET.

```
049          C      J003  0008.00        S
0008 C    01        COUNT       ADD  1
  COUNT _160

ENTER/UPDATE STATEMENT NUMBER:    0008.00
```

The cursor is positioned in column 49. Assuming you do not know what is wrong or how to correct the error, you press the ACCEPT WITH ERROR command key. The record advance function is performed.

```
0008.00 0008 C   01      COUNT     ADD  1           COUNT  160        ***
                                                       * SEU 1507
```

The statement is printed followed by *** at the end of the print line. An * is printed under the first position in error and this is followed by the SEU identifier and the MIC. Processing continues as if REC ADV had been pressed and the statement had not contained a syntax error.

```
                             0009.00        S
0009 CSR              TOTAL       BEGSR


ENTER/UPDATE STATEMENT NUMBER:    _
```

| 1
SHIFT

CK (Command Key) DISPLAY – Causes processing to be temporarily interrupted and a one-word description of each SEU command key to be displayed on the screen. (Press and hold SHIFT key to select CK DISPLAY.) When the CK DISPLAY command key is pressed again (again press and hold SHIFT key first), processing resumes from the point of interrupt.

FUNCTION KEYS

The function keys that have unique functions for SEU are defined below. The remaining function keys are described in the *System/32 Operator's Guide,* GC21-7591. When you press a function key, the system initiates that function.

DUP

DUP – The positions in the field are filled with the characters from the corresponding positions in the previous statements. The DUP key is allowed only while entering or updating a statement.

When DUP is used in lower case (no SHIFT), field duplication occurs starting where the cursor is positioned. Field advance is performed after the characters are duplicated.

When DUP is used in upper case (SHIFT), character duplication occurs where the cursor is positioned. Field advance is not performed after the character is duplicated.

The use of DUP is discussed in Chapter 6, *Duplication of Fields.*

Example

Statement 2 is shown as it exists in the member.

```
0002 FMASTER  IP  F      120              DISK
```

Statement 2.5 is being entered; format description type F (file description).

```
001         F    K005  0002.50       S
_    F

ENTER/UPDATE STATEMENT NUMBER:   0002.50
```

The file name (columns 7 through 14), file type (column 15), and file format (column 19) entries have been made. Block length is passed over using FIELD ADV.

```
024         F    J004  0002.50       S
     FDISKOUT O   F     _

ENTER/UPDATE STATEMENT NUMBER:   0002.50
```

Press DUP (lower case) for field duplication to duplicate the record length (120) from statement 2.

```
028         F    A001  0002.50       S
     FDISKOUT O   F      120_

ENTER/UPDATE STATEMENT NUMBER:   0002.50
```

Press FIELD ADV until you reach column 40.

```
040         F    A007  0002.50       S
     FDISKOUT O   F      120              _

ENTER/UPDATE STATEMENT NUMBER:   0002.50
```

Use DUP (lower case) to duplicate the device (DISK) from statement 2.

```
053         F    K001  0002.50       S
     FDISKOUT O   F      120              D
ISK          _

ENTER/UPDATE STATEMENT NUMBER:   0002.50
```

REC BKSP

REC BKSP – Allows the statement currently displayed to be reprocessed. If this key is pressed while a statement is being updated, the original statement as it exists in the member is displayed. If this key is pressed while a statement is being entered, the statement appears as it was before any characters were keyed. Any constant characters inserted in the statement from the current format description remain in the statement. REC BKSP is allowed only when a statement is being entered or updated.

Example

Statement 2 is shown as it currently exists.

```
0002 FMASTER   IP   F      120                DISK
```

Statement 2 is being updated. The record length has just been changed from 120 to 132.

```
028         F     A001   0002.00       S
0002 FMASTER   IP   F      132_            D
ISK

ENTER/UPDATE STATEMENT NUMBER:    0002.00
```

Press REC BKSP and the statement is displayed as it existed before any changes were made.

```
001         F     K005   0002.00       S
0002 FMASTER   IP   F      120             D
ISK

ENTER/UPDATE STATEMENT NUMBER:    0002.00
```

FIELD BKSP

FIELD BKSP – Allows a field to be reentered.

- If this key is pressed while the cursor is under the first position of a field, before any characters have been entered or modified in that field, the cursor is positioned at the beginning of the previous field and the contents of both fields remain as displayed.
- If this key is pressed after the first character of a field has been entered, the cursor returns to the beginning of the field and the contents of the field remain as displayed.
- If the cursor is in the first position of a field after characters have been entered or modified, but before field advance is performed on that field, pressing the FIELD BKSP key causes the original contents of that field to be displayed. The cursor is positioned at the beginning of the previous field.

Example

Statement 3 is being updated; cursor is at column 7.

```
007         F     A008   0003.00       S
0003 FREPORT   O   F      132             P
RINTER

ENTER/UPDATE STATEMENT NUMBER:    0003.00
```

Replace REPORT with DISKOUT.

```
014         F     A008   0003.00       S
0003 FDISKOUT_O   F      132             P
RINTER

ENTER/UPDATE STATEMENT NUMBER:    0003.00
```

(Continued On Next Page)

While still in the same field, press FIELD BKSP and the cursor returns to column 7, the start of the field.

```
007         F     A008   0003.00       S
0003 FDISKOUT O    F      132             P
RINTER

ENTER/UPDATE STATEMENT NUMBER:    0003.00
```

Press FIELD BKSP again. Field name (columns 7 through 14) returns to the original data (REPORT) and the cursor backs up to the start of the next field that can be processed (column 1).

```
001         F     K005   0003.00       S
0003 FREPORT  O    F      132             P
RINTER

ENTER/UPDATE STATEMENT NUMBER:    0003.00
```

REC ADV

REC ADV – Causes the function specified by the current mode of operation to be performed on the selected statement or statements. When in delete, move, or include mode, after statements are selected to be processed, no action is performed on the statements in the member until REC ADV is pressed. When in enter/update mode, changes to statements are made in the member when REC ADV is pressed, or when ENTER, ENTER+, ENTER-, or FIELD ADV is pressed for the last field defined in the statement.

FIELD ADV

FIELD ADV – Used to indicate that you have finished entering a field or response to a prompt. If this key is pressed while entering or updating a statement, the field is accepted as displayed on the screen regardless of the cursor position. Fields that are to be right-adjusted are shifted. If this key is pressed for the last field defined in the statement, record advance is also performed.

Pressing the FIELD ADV key while keying a response to a prompt causes all characters displayed to be entered regardless of the cursor position.

If the response to a prompt for a statement number contains only blank characters, the statement number of the statement currently displayed on the status line is accepted as the response.

Example

Statement 3 is being updated. FIELD ADV was used to bring the cursor to column 40; start of device field. The field now contains ORINTER.

```
040        F    A007  0003.00      S
0003 FREPORT  O   F     120            O
RINTER

ENTER/UPDATE STATEMENT NUMBER:   0003.00
```

Key P into column 40.

```
041        F    A007  0003.00      S
0003 FREPORT  O   F     120            P
RINTER

ENTER/UPDATE STATEMENT NUMBER:   0003.00
```

Press FIELD ADV.

```
053        F    K001  0003.00      S
0003 FREPORT  O   F     120            P
RINTER
           _

ENTER/UPDATE STATEMENT NUMBER:   0003.00
```

All the characters are accepted, which results in PRINTER becoming the entry in device field.

Note: FIELD ADV accepts the entire field as it is displayed. ENTER accepts the response only up to the cursor and blanks from the cursor on.

ENTER

ENTER (ENTER+) — Indicates that you have completed entering a field or response to a prompt. Pressing the ENTER key blanks the field or response from the cursor to the end of the field. If the ENTER key is pressed while entering a field, all characters in the field that precede the cursor are accepted. For an alphameric field, all positions between the cursor and the end of the field are set to blanks. Fields that are to be right-adjusted are shifted. For a signed numeric field, the number is right-adjusted and leading zeros are added. If the ENTER key is pressed while the cursor is under the first position of a field, the field is blanked out. If the ENTER key is pressed for the last field in a statement, record advance is also performed.

Pressing the ENTER key while keying a response to a prompt causes all characters preceding the cursor position to be entered.

If the response to a prompt for a statement number contains only blank characters, the statement number of the statement currently displayed on the status line is accepted as the response.

Example 1: Numeric Field

Statement 3 is being updated. FIELD ADV was used to bring the cursor to column 24; start of record length field. The field now contains 132.

```
024         F     J004   0003.00       S
0003 FREPORT  O    F      _132             P
RINTER

ENTER/UPDATE STATEMENT NUMBER:    0003.00
```

Key 120 into columns 24 through 26.

```
027         F     J004   0003.00       S
0003 FREPORT  O    F      120_             P
RINTER

ENTER/UPDATE STATEMENT NUMBER:    0003.00
```

Press ENTER.

```
028         F     A001   0003.00       S
0003 FREPORT  O    F      120_             P
RINTER

ENTER/UPDATE STATEMENT NUMBER:    0003.00
```

Column 27 is blanked and the field is right adjusted. 120 is now the record length.

Example 2: Alphameric Field

Statement 3 is being updated. FIELD ADV was used to move the cursor to column 40; start of device field. The field now contains PRINTER.

```
040         F     A007   0003.00       S
0003 FREPORT  O    F      120              P
RINTER

ENTER/UPDATE STATEMENT NUMBER:    0003.00
```

Key DISK into columns 40 through 43.

```
044         F     A007   0003.00       S
0003 FREPORT  O    F      120              D
ISKIER

ENTER/UPDATE STATEMENT NUMBER:    0003.00
```

Press ENTER.

```
053         F     K001   0003.00       S
0003 FREPORT  O    F      120              D
ISK          _

ENTER/UPDATE STATEMENT NUMBER:    0003.00
```

Columns 44 through 46 are blanked and the device field contains DISK.

ENTER
-

ENTER- — When ENTER- is pressed, the keyed data is entered and the field is made negative. Use of the key is allowed only when entering or updating a signed numeric field (field definition character equals N or D; see *Field Definitions* in Chapter 4).

↑
ROLL↑

ROLL↑ — Causes the next consecutive statement following the statement number currently displayed on the status line to be displayed on the screen. When operating in enter/update mode, two cases are possible:

Case1: The prompt ENTER/UPDATE STATEMENT NUMBER is displayed. Pressing ROLL↑ causes the following two items to be displayed:

- The next consecutive statement in the member
- The last prompt (ENTER/UPDATE STATEMENT NUMBER)

Case 2: A statement is being entered or updated. Pressing ROLL↑ causes the following to occur:

- Processing of statement (including multiple statement processing) is terminated.
- The next consecutive statement in the member is displayed.
- The prompt ENTER/UPDATE STATEMENT NUMBER is issued.

When processing in delete, move, or include mode, pressing ROLL↑ causes the following two items to occur:

- The next statement in the member is displayed.
- The response to the last prompt is blanked if a response was made. (You may then respond to the prompt that is issued.)

Wraparound capability displays the first statement in the member if there is no existing statement number higher than the statement number displayed when the ROLL↑ key is pressed.

Example 1: This example illustrates wraparound. You want to delete statement 1 from a member that contains 17 statements.

```
                                0016.00     A S
0016 O                                    COUNT Z
120

DELETING STATEMENT NUMBER:          _
```

You are ready to enter a response to DELETING STATEMENT NUMBER. Statement 16 is displayed; press ROLL↑.

```
                                0017.00     A S
0017 O                                    TAMT2 M
132

DELETING STATEMENT NUMBER:          _
```

Statement 17 is displayed; press ROLL↑.

(Continued On Next Page)

```
                          0001.00     A S
0001 H
                                       DSKPNT

DELETING STATEMENT NUMBER:            _
```

Since statement 17 is the last statement in the member, wraparound occurs; statement 1 is displayed (the first statement in the member).

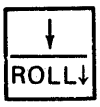
Example 2

```
                          0005.00       S
0005 I
      1 120 DATA

DELETING STATEMENT NUMBER:          0003.00
ENDING STATEMENT NUMBER:            0005.00
```

Statements 3 through 5 are ready to be deleted (cursor is not on the screen). Statement 5 is displayed; press ROLL↑.

```
                          0006.00       S
0006 I
     21  272AMT2

DELETING STATEMENT NUMBER:          0003.00
ENDING STATEMENT NUMBER:            _
```

Statement 6 is now displayed and the response to the last prompt ENDING STATEMENT NUMBER is blanked. The cursor is positioned for a response to ENDING STATEMENT NUMBER.



ROLL↓ – Causes the statement preceding the statement number currently displayed on the status line to be displayed. When operating in enter/update mode, two cases are possible:

Case 1: The prompt ENTER/UPDATE STATEMENT NUMBER is displayed. Pressing ROLL↓ causes the following two items to be displayed:

- The previous statement in the member
- The last prompt (ENTER/UPDATE STATEMENT NUMBER)

Case 2: A statement is being entered or updated. Pressing ROLL↓ causes the following to occur:

- Processing of the statement (including multiple statement processing) is terminated.
- The previous statement in the member is displayed.
- The prompt ENTER/UPDATE STATEMENT NUMBER is issued.

When processing in delete, move, or include mode, pressing ROLL↓ causes the following two items to occur:

- The previous statement in the member is displayed.
- The response to the last prompt is blanked if a response was made. (You may then respond to the prompt that is issued.)

Wraparound capability displays the last statement in the member if there is no statement number in the member lower than the displayed statement number when the ROLL↓ key is pressed.

Use of ROLL↓ is not allowed when processing in include mode, if statements from the included member are being displayed (* appears in position 31 of the status line).

Example 1: This example illustrates wraparound.

```
                          0002.00     A S
0002 FMASTER   IP  F      120              D
ISK

MOVING TO STATEMENT NUMBER:       _
```

You are ready to enter a response to MOVING TO STATEMENT NUMBER. Statement 2 is displayed; press ROLL↓.

```
                          0001.00     A S
0001 H
                                     DSKPNT

MOVING TO STATEMENT NUMBER:       _
```

Statement 1 is displayed; press ROLL↓.

```
                          0017.00     A S
0017 O                               TAMT2 M
132

MOVING TO STATEMENT NUMBER:       _
```

Statement 1 is the first statement in the member, so wraparound occurs and the last statement in the member is displayed (statement 17).

Example 2

```
                                0006.00       S
0006 I
     21  272AMT2

MOVING TO STATEMENT NUMBER:       0004.50
MOVING FROM STATEMENT NUMBER:     0006.00
```

Statement 6 is ready to be moved to statement number 4.50 (cursor is not on the screen). Press ROLL↓.

```
                                0005.00       S
0005 I
      1  120 DATA

MOVING TO STATEMENT NUMBER:       0004.50
MOVING FROM STATEMENT NUMBER:     _
```

Statement 5 is displayed and the response to the last prompt MOVING FORM STATEMENT NUMBER is blanked. The cursor is positioned for a response to MOVING FROM STATEMENT NUMBER.

Chapter 6. Duplication Of Fields

Fields can be duplicated from a previous statement when:

- Entering a new statement
- Updating an existing statement

Fields are duplicated through use of either:

- The AUTO DUP command key used with an auto dup field
- The DUP function key

The previous statement is the statement whose statement number consecutively precedes the one currently displayed. During update, the previous statement is the original statement.

Fields which are defined as auto dup fields (field definition character D or U) are automatically duplicated from the previous statement if the auto dup/skip indicator is on. This indicator is turned on or off by pressing the AUTO DUP command key. The current status of this indicator is displayed in position 34 of the status line (line 1) of the display screen (A if on, blank if off).

Auto dup fields are duplicated when the cursor is positioned under the first position of the field. If the auto dup/skip indicator is not on, fields defined as D and U fields are treated as numeric and alphameric fields.

The DUP function key can be used to duplicate the following types of fields from the previous statement:

Field Definition Character	Field Definition
N	Signed numeric fields
A	Alphameric fields
J	Unsigned numeric fields
D	Numeric auto dup fields (if auto dup/skip indicator is off)
U	Alphameric auto dup field (if auto dup/skip indicator is off)
K	Auto skip fields (If auto dup/skip indicator is off)

If the DUP key is pressed in lower case (no SHIFT) while the cursor is positioned in one of these fields, the remainder of the field starting with the cursor position is duplicated. Field advance is performed after the characters are duplicated.

If the DUP key is pressed in upper case (SHIFT) while the cursor is positioned in one of these fields, the character in the cursor position is duplicated. Field advance is not performed after the character is duplicated. ENTER, ENTER+, REC ADV, or FIELD ADV must be pressed for the field to be accepted.

Chapter 7. Syntax Checking Of RPG II And Auto Report Statements

SEU has the option of limited syntax checking of RPG II and auto report statements to help eliminate compile time errors. Many coding or keying errors that would result in a terminal RPG II compilation error are diagnosed, but syntax checking does not diagnose all errors that are diagnosed by the RPG II compiler. Errors that result from conflicting entries between two or more statements are not diagnosed. The syntax checking option is initially on and can be turned on or off by pressing the ALTER SYNTAX command key. The status of the syntax checking option indicator is displayed in position 36 of line 1 on the display screen (S if on, blank if off).

If the syntax checking option indicator is on and the format description type displayed on the screen is an RPG II or auto report format description, syntax checking is performed on the statement when the record advance function is requested. Only one error is diagnosed each time syntax checking is performed, even though there may be multiple errors in the statement.

If record advance is requested after an error condition has been corrected, syntax checking is again performed and the statement is not written to the library member unless the statement is syntactically correct.

If a syntax error occurs, the display flashes and an error message is displayed. When you press ERROR RESET, the error message disappears and the statement that is in error is redisplayed. The cursor is positioned under the first position of the entry that is in error, and keying is allowed. If the error is caused by conflicting entries in the statement, the cursor is positioned under one of the entries that caused the error. You can then correct the error. Any functions performed are, in effect, a continuation of the processing that was being performed on the statement before the error occurred. All fields are processed, including bypass fields.

If the ACCEPT WITH ERROR command key is pressed after a syntax error occurs, syntax checking is performed and the statement is written to the library member whether or not an error is present. The statement is printed followed by *** if a syntax error does exist. An * is also printed under the first position of the entry which is in error. The SEU identifier and Message Identification Code (MIC) is printed following the * to allow you to find the message after sign-off. If the error is corrected before the ACCEPT WITH ERROR command key is pressed, the message STATEMENT ACCEPTED—NO ERROR FOUND is displayed.

Syntax checking of a member containing auto report statements (member type = A) allows auto report entries on all statements using the F, I, J, O, and P format description types. When statements in an auto report member are being processed, the following entries are valid in addition to the RPG II entries when syntax checking is performed.

1. A blank entry or an ampersand is allowed for an entry other than filename on the file description specifications, and for an entry other than field name on a field description input specification. However, an ampersand is not allowed unless a blank entry is acceptable for that entry by the RPG II compiler.

2. Auto report functions are allowed on all output specifications.

   Note: An ampersand cannot be entered in the following entries using the format description provided in #SEURPGF because a numeric entry is required:

   - File Description Specifications
     - Block length (positions 20-23)
     - Record length (positions 24-27)
     - Length of key field (positions 29-30)
     - Key field start location (positions 35-38)
     - Storage index (positions 60-65)
     - Number of extents (positions 68-69)

   - Input Specifications
     - From (positions 44-47)
     - To (positions 48-51)

A blank entry in a statement in an auto report member is not necessarily a blank entry at RPG II compilation (it may be modified by a statement being copied). Therefore, the level of syntax checking performed on auto report members is limited in relation to the level of syntax checking performed on RPG II members.

Chapter 8. End Of Job

End-of-job processing is initiated by pressing the EOJ command key on the keyboard. The following prompt is then displayed on the screen (options 3 and 4 are not displayed if you are working with format descriptions).

```
0 RETURN TO PROCESSING -- NO EOJ
1 END OF JOB -- NO ADDITIONAL OPTIONS
2 END OF JOB WITH LISTING
3 END OF JOB WITH SERIALIZATION
4 END OF JOB WITH LIST AND SERIALIZATION
END OF JOB OPTION:                    _
```

The response to the prompt must be one of the displayed options (0-4). If the response given is invalid, END OF JOB OPTION: is repeated.

Note: If option 2 or 4 is selected, the member is replaced in the library *before* printing is started. The time required to replace the member varies depending on the size of the member. The message MEMBER NOW BEING REPLACED IN LIBRARY appears on the screen while the member is replaced and then printed.

These end-of-job options have the following meanings:

0 RETURN TO PROCESSING -- NO EOJ returns control to the function being performed before the EOJ command key was pressed.

1 END OF JOB -- NO ADDITIONAL OPTIONS causes the member being created or maintained to be taken from the work area and placed in the library.

2 END OF JOB WITH LISTING causes the member being created or maintained to be listed on the printer after it has been taken from the work area and placed in the library.

3 END OF JOB WITH SERIALIZATION causes the prompt SERIAL START POSITION: to be displayed. A valid response is any number that is less than or equal to the statement length minus three. The number that is entered indicates the starting position in each statement that will contain the serial number of that statement. Statements are serialized with 4-digit numbers starting with 0001. If no response is given prior to pressing ENTER, ENTER+, or FIELD ADV, the default is position 1.

An invalid response causes an error message SERIAL START POSITION IS INVALID to be displayed and the screen flashes. Pressing ERROR RESET causes the prompt SERIAL START POSITION: to be repeated.

If the member being created or updated has a record length greater than or equal to 80 characters and is not a procedure, the prompt PROGRAM NAME DUPLICATION IS DESIRED: will be displayed. A Y response indicates the program name is to be placed in each record. A response of N or blank indicates program name duplication is not desired. Program name duplication is explained in more detail in Appendix B.

If RPG II or auto report statements are being processed (member type = R or A) and compile time tables are to be included in the library member, the serial start position should be position 1. (Serialization and program name duplication are discontinued if **b is found in positions 1-3 and serialization is being done in positions 1-4; this prevents the overlaying of data.) Serialization in any other position continues until the end of the member is reached. Sort specifications should also be serialized in positions 1-4. When positions 1-4 are used for serialization, position 5 remains unchanged. Serialization and program name duplication are performed as the statements are being taken from the work area and placed in the library.

To prevent errors when serializing procedure members, make sure the serial numbers do not overlay existing OCL information or are not read as positional parameters. Serial numbers are considered comments and the rules for coding comments apply. For further information about coding comments on utility control and command statements, see the *IBM System/32 System Control Programming Reference Manual,* GC21-7593.

4 END OF JOB WITH LIST AND SERIALIZATION is a combination of options 2 and 3. The member being created or maintained is serialized and the program name duplicated while it is being taken from the work area and placed in the library. The member is then listed.

Note: If an SEU run is cancelled through a method other than end of job (such as IPL, formatted message option 3, etc), the statements in the work area are not copied into the library member. Therefore, any changes you have made to the member are ignored.

If option 2 is taken for a printer error, the member in the work area is copied into the library but is not serialized or listed and the program name is not duplicated.

If option 3 is taken for a printer error, the member in the work area is copied into the library. The member is serialized, the program name is duplicated (if requested), but the member is not listed.

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Appendix A. OCL Generated By SEU Command

When the SEU command is keyed, SEU generates the required OCL to sign on the member (see Chapter 2, *Sign On Procedure,* for method of initiating SEU). The SEU command is:

```
SEU member name,member type,format description
member name,statement length
```

The OCL generated is:

```
// MEMBER USER1-#SEUMSG1
// MEMBER PROGRAM1-#SEUMSG1
// LOAD #SEU
// RUN
// SEU NAME-member name,TYPE-member type,
   FORMAT-format description member name,
   LENGTH-statement length
// END
```

If, for example, the member to be processed is a procedure member named RPGPROC with a statement length of 40, the entry you would make for sign on is as follows:

```
SEU RPGPROC,P,,40
```

The OCL generated by SEU would be as follows:

```
// MEMBER USER1-#SEUMSG1
// MEMBER PROGRAM1-#SEUMSG1
// LOAD #SEU
// RUN
// SEU NAME-RPGPROC,TYPE-P,FORMAT-,
   LENGTH-40.
// END
```

If you do not use the system-provided OCL, you enter the following:

```
// MEMBER PROGRAM1-#SEUMSG1
// LOAD #SEU
// RUN
// SEU NAME-member name,TYPE-member type,
   FORMAT-format description member name,
   LENGTH-statement length
// END
```

Appendix B. Programming Hints And Considerations

Library Now Filled

The message LIBRARY NOW FILLED appears when SEU determines that the number of statements in the member (entered, included, and already in the member) is the maximum that can be placed back in the library. The program calls end of job (EOJ) and only options 1 through 4 (or 1 and 2 if member type is F) are allowed.

You can make space available in the library either by deleting unnecessary library members or by increasing the space allocated for the library. Delete members by using the REMOVE procedure. (The space the deleted members occupied can be used for new members only if no active members follow the deleted members.)

Increase the size of the library either by entering a // ALLOCATE utility control statement (library maintenance utility $MAINT) or by running the BACKUP procedure and then changing the space allocated for the library by running RELOAD. For additional information, see *IBM System/32 System Control Programming Reference Manual,* GC21-7593.

Work Area Now Filled

The message WORK AREA NOW FILLED appears when SEU determines that no more statements can be processed without exceeding the limits of the disk space allocated by SEU at sign-on. You will only be allowed to take end-of-job options 1 through 4 (or 1 and 2 if the member type is F). SEU organizes the work area for maximum efficiency at sign-on. However, as statements are moved, deleted, included, or entered, the work area may become full. You should do a catalog of F1 (CATALOG ALL, F1) to find the space available and obtain a list of files on the disk. If the number of consecutive blocks available is 540 or greater, sign on SEU again. The maximum disk space SEU allocates is 540 blocks, the minimum is 2 blocks (a block is 10 consecutive sectors on the disk).

If the number of consecutive blocks available is less than 540, determine the number of blocks you need to process the member by calculating the following:

$$\text{No. of blocks} = \frac{\text{No. of statements to be processed}}{18} + 1$$

The number of statements to be processed is the number of statements already in the member, plus all the statements that are to be entered, deleted, moved, or included (statements to be updated are counted as statements already in the member).

When you have determined the number of blocks needed, compare this number with the total number of available blocks printed with the message AVAILABLE SPACE ON PACK via the CATALOG procedure. If the total number of available blocks is equal to or greater than the amount you calculated, use the COMPRESS procedure to reorganize the disk. If the total number of available blocks is less than you need, use the SAVE procedure to save copies of the files you have to delete. You should delete enough files so that the total number of blocks available is equal to or greater than the number of blocks you need to process the member. Now use the DELETE procedure to delete the files and then use the COMPRESS procedure to reorganize the disk.

For additional information, see *IBM System/32 System Control Programming Reference Manual,* GC21-7593.

9999 Statements in Member

When 9999 statements are in a member, and the ACCEPT WITH ERROR command key is used with the print option on, the statement is printed but ignored. If statement 9999.00 is entered while entering multiple statements and incrementation is by 1.00, enter/update mode is terminated and the lowest statement number in the file is displayed. The situation is the same when statement 9999.99 occurs and incrementation is by .01.

Inserting More Than 99 Statements

The following example shows you how to insert more than 99 statements between two existing statements in a member. The following statement numbers already exist:

0213.00
0214.00
0215.00
0216.00

You want to insert (by entering, moving, or including) 150 statements after statement number 0214.00. Select move mode and move 0214.00 to 0213.01 by answering the prompts as follows:

```
MOVING TO STATEMENT NUMBER:     213.01   (ENTER)
MOVING FROM STATEMENT NUMBER:   214      (ENTER)
                                         (REC ADV)
```

The statement numbers now are:

0213.00
0213.01
0215.00
0216.00

A total of 198 statements can now be inserted after statement number 0213.01.

Program Name Duplication

Program name duplication copies the program name (any characters found in positions 75-80 of the first record) into positions 75-80 of every record in a source member. This function is primarily intended for copying the program name found in the control specifications of RPG programs and the header specifications of Sort programs. This function can be used for any other source member with a record length of 80 characters or more (it is not available for procedure members). Program name duplication is available only when serialization is requested at end of job. After you give a correct response to SERIAL START POSITION: the prompt PROGRAM NAME DUPLICATION IS DESIRED: will be displayed. Enter a Y for program name duplication. Enter an N or blank if you do not want the program name duplicated. Any other response will cause an error message to be displayed.

If your source member includes compile time tables, a serial start position of 1 should be used. (Serialization and program name duplication are discontinued if **b is found in positions 1-3 and serialization is being done in positions 1-4; this prevents the overlaying of data). If a serial start position is specified so that part or all of the serial number goes in positions 75-80 and program name duplication is requested, the number will be overlaid with the program name. This allows program name duplication to be performed on source members that do not have compile time tables without reserializing them if a serial start position of 75-77 is specified.

End-Of-Job Option

When you are entering or updating an RPG II or auto report member, you should take option 3 (serialization) at end of job. You may specify program name duplication but it is not necessary. Let the serial start position default to position 1. This serializes the statements in positions 1-4 and causes serialization and program duplication to stop if **b is found in positions 1-3 (this will prevent compile-time table data from being overlaid). There is no need to list the member since the RPG II compilation will give you a listing.

Sort specifications should also be serialized in positions 1-4.

When you are entering or updating a procedure member, option 3 or 4 at end of job will serialize the OCL statements in the positions you specified. To prevent OCL errors, make sure that serial numbers do not overlay existing OCL information or are read as positional parameters. Serial numbers are considered comments, and the rules for coding comments apply. For further information about coding comments on utility control and command statements, see the *IBM System/32 System Control Programming Reference Manual*, GC21-7593.

Program Size/Program Run Time Relationship

The amount of time it takes SEU to do certain operations is dependent on the number of statements in the member being processed. These operations are:

- Sign-on
- Sign-off
- Multiple statement deletes, moves, or includes
- Search end of source for the last statement in an included member
- Finding a statement in an included member (response to INCLUDING FROM STATEMENT NUMBER or ENDING STATEMENT NUMBER)

Appendix C. Modes Of Operation Examples

This appendix contains step-by-step examples of how to enter, update, include, move, and delete, single and multiple statements. A member called DSKPNT (containing an RPG II source program) is used throughout the appendix to illustrate the changes being made by the functions of the SEU program.

ENTER SINGLE STATEMENT

A member named DSKPNT contains the following RPG II source statements:

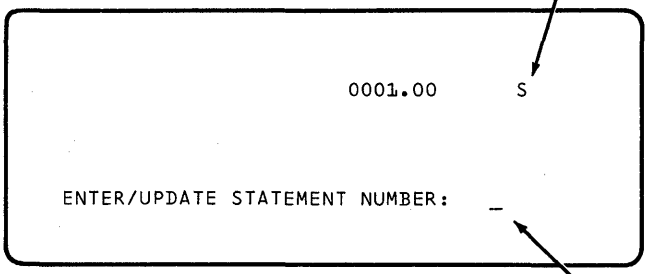
```
0001 H                                                          DSKPNT
0002 FMASTER  IP  F     120           DISK
0003 FREPORT  O   F     132           PRINTER
0004 IMASTER  AA  01
0005 I                                      1 120 DATA
0006 OREPORT  D  1     01
0007 O                        DATA     120
```

You want to enter the following calculation specification between statements 5 and 6:

```
     C   01       COUNT     ADD  1         COUNT   30
```

To add this statement, do the following:

1. Sign on the member DSKPNT by keying SEU DSKPNT,R (see Chapter 2, *Sign on Procedure*). Press the ENTER key. SEU is initialized in the enter/update mode and the following display appears on the screen:



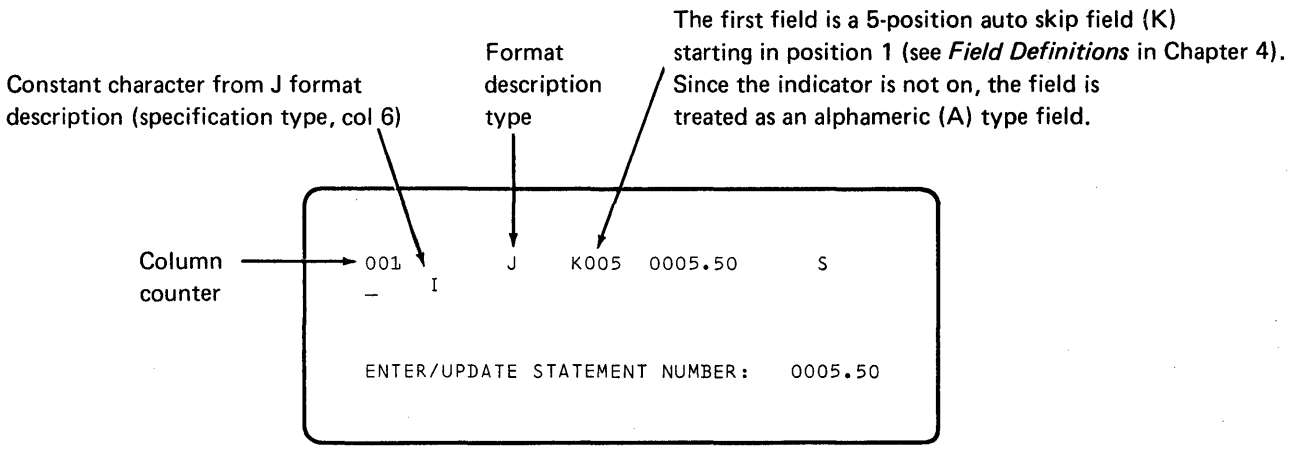
S in column 36 of display line 1 indicates the syntax checking option indicator is on (see Chapter 7, *Syntax Checking of RPG II and Auto Report Statements*).

The cursor is positioned to accept a statement number.

2. Enter a statement number. In this example 5.5 is used, since the statement being entered is between statements 5 and 6. The new statement number can be any number from 5.01 to 5.99 (see *Statement Numbering* in Chapter 1). After keying 5.5 the display screen appears as follows:

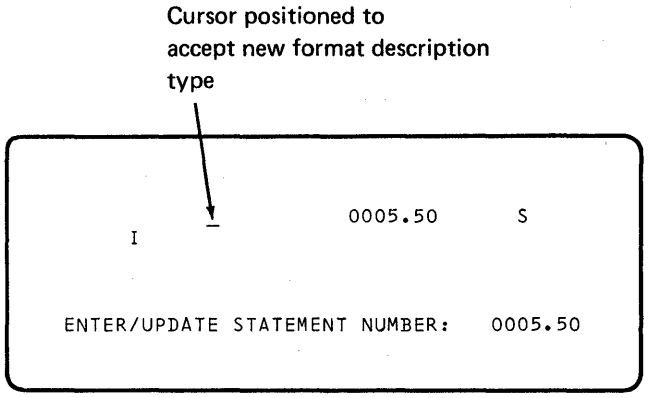
```
                                0001.00       S


ENTER/UPDATE STATEMENT NUMBER:    5.5_
```

3. When the ENTER key is pressed to indicate the end of the response, the display screen is reformatted to accept the new statement and appears as follows:

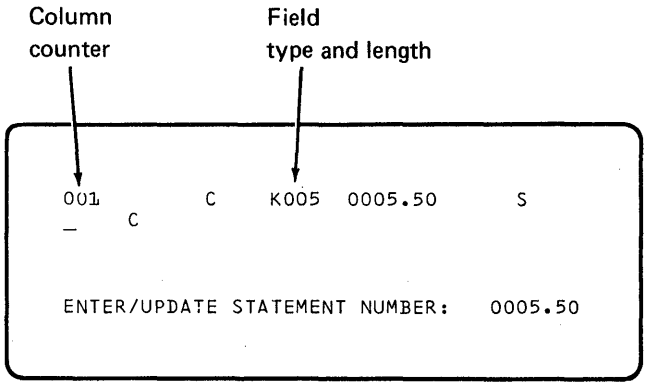


Note that format description type J is selected. Since a new statement is being entered and statement 5 in DSKPNT has a J format description type (input specification, entries in columns 43-70; see Chapter 4, *Format Descriptions*), SEU assumes that another input specification is to be added (statement 0005.50). The format type must therefore be changed to enter a calculation specification.

4. Press the SELECT FORMAT command key. The display screen appears as follows:



5. Key a C (calculation format description type) and press the ENTER key. The display screen appears as follows and the new statement can be entered:



Enter the calculation specification, pressing FIELD ADV, ENTER, or ENTER+ after each field is keyed. The column counter will show the position where the data will be entered and the field type and length will be shown for the field being keyed.

6. When all entries for the calculation specification have been made, the column counter is at 053, indicating the next field that could be entered. The display screen appears as follows:

```
053         C     A001  0005.50       S
     C    01        COUNT      ADD  1
  COUNT    30_

ENTER/UPDATE STATEMENT NUMBER:    0005.50
```

7. Press the REC ADV key. The statement is syntax checked and entered in the member DSKPNT. The next statement of the member is now displayed and you are prompted for a new statement number as follows:

```
                          0006.00       S
0006 OREPORT  D  1      01

ENTER/UPDATE STATEMENT NUMBER:    _
```

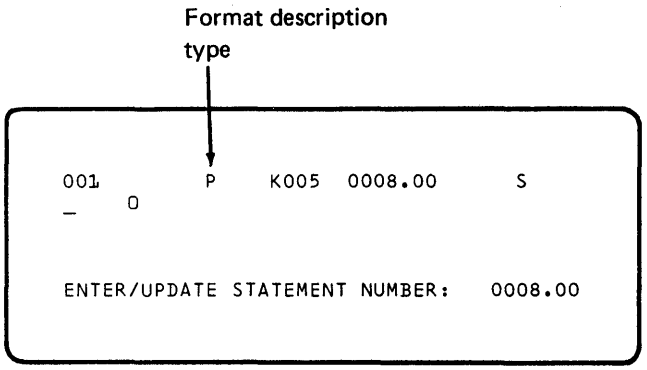
8. You can now continue processing or go to end of job. For the purposes of this example, assume that you will continue entering statements in DSKPNT.

ENTER MULTIPLE STATEMENTS

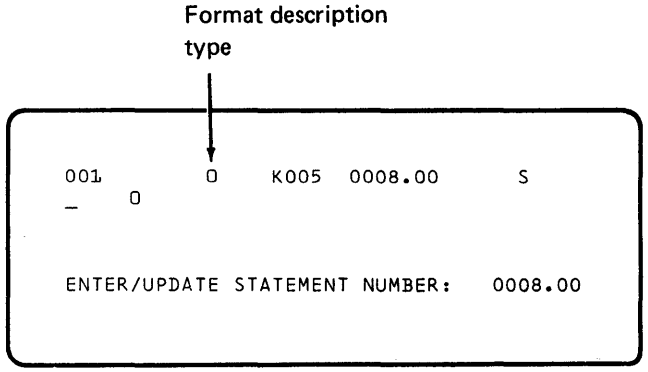
In the preceding example a calculation specification was added to the member DSKPNT. This example shows how to add three new output specification statements following the last statement (0007.00) in DSKPNT. The statements to be added are:

```
0         T   06   LR
0                                      30 'RECORDS IN FILE'
0                           COUNT Z    50
```

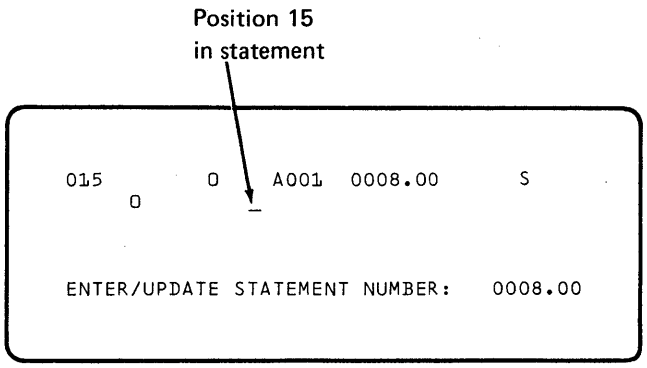
1. After entering the calculation specification (under *Enter Single Statement*) and pressing REC ADV, the display screen appears as shown in step 7 of the preceding example. Statement 0007.00 is the last statement in DSKPNT, so key in 8 and press the MULT STMTS command key. The following display appears on the screen:



2. The last output specification (0007.00) has a P format description type (entries in columns 23-70). Since the first new output specification being keyed starts in position 15, the format description type must be changed to O. Press the SELECT FORMAT command key. Key an O and press ENTER. The display screen appears as follows:



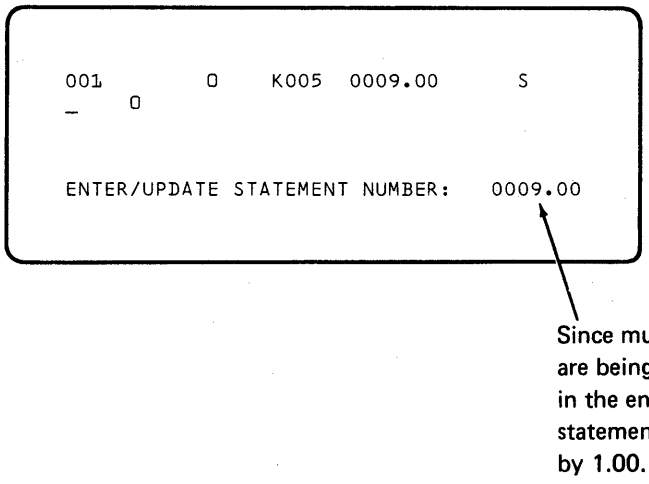
3. Press the FIELD ADV key until the column counter and cursor indicate column 15.



4. Key the first new output specification, pressing FIELD ADV, ENTER, or ENTER+ after each field. When the statement has been keyed the display screen will look as follows:

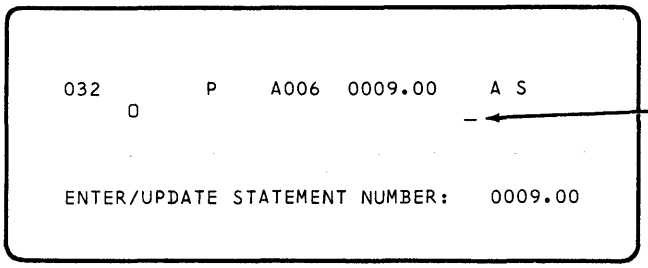
```
026        O    A003  0008.00      S
     O         T   06   LR_

ENTER/UPDATE STATEMENT NUMBER:   0008.00
```

5. Press REC ADV. The statement is syntax checked and entered in the member. The statement number is incremented since multiple statements are being entered and the next statement can be entered.

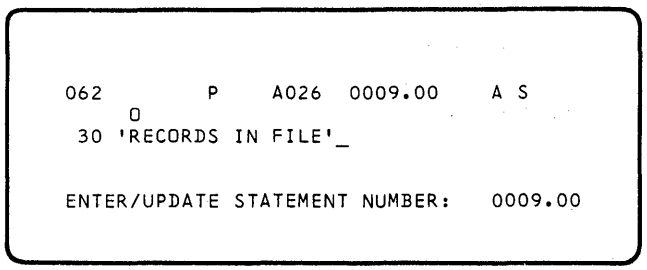


6. For this statement the auto/skip indicator will be turned on. Press the AUTO DUP command key. An A is now displayed in position 34 of the status line.

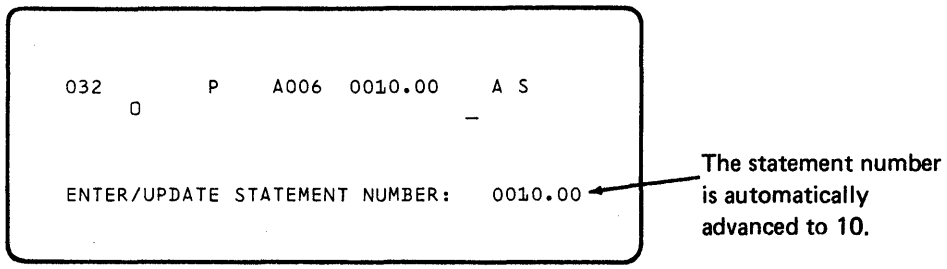
   The format description type displayed for statement 0009.00 is O (statement 0008.00 has an O format description type). Because specifications are not being entered in the first 31 columns of the next two statements, keying time can be saved by changing the format description type to P (output specification, columns 23-96). Press the SELECT FORMAT command key, key a P and press ENTER. The column counter is at 032 (the first 22 columns of the statement are being bypassed and columns 23-31 are auto skip fields). The display screen appears as follows:



7. Key the second statement pressing FIELD ADV, ENTER, or ENTER+ as required until the statement is complete.



8. Press REC ADV. The second statement is syntax checked and entered in the member. The statement number is incremented and you are ready to key the final statement.



9. Key the third statement, again pressing FIELD ADV, ENTER, or ENTER+ as required.

```
044         P    A001  0010.00    A S
     O                            COUNT Z
 50_

ENTER/UPDATE STATEMENT NUMBER:   0010.00
```

10. Press REC ADV. The third statement is syntax checked and entered in the member.

```
032         P    A006  0011.00    A S
     O                          _

ENTER/UPDATE STATEMENT NUMBER:   0011.00
```

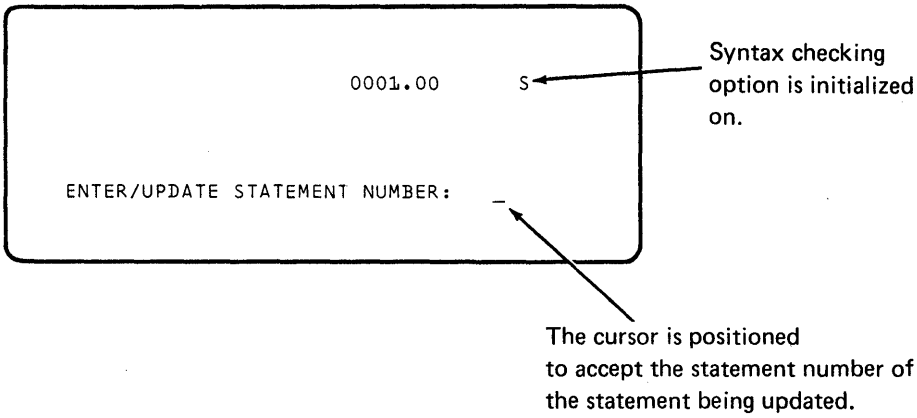
11. You can now continue processing or go to end of job. Assume that you go to end of job and select option 4 (list and serialization). The member DSKPNT will appear as follows. (Assume that you pressed ENTER in response to the SERIAL START POSITION prompt. Default is to position 1.)

```
DSKPNT

0001 H                                                          DSKPNT
0002 FMASTER  IP  F     120           DISK
0003 FREPORT  O   F     132           PRINTER
0004 IMASTER  AA  01
0005 I                                      1 120 DATA
0006 C   01       COUNT     ADD  1          COUNT   30
0007 OREPORT  D  1     01
0008 O                          DATA     120
0009 O        T   06   LR
0010 O                            30 'RECORDS IN FILE'
0011 O                          COUNT Z   50
```

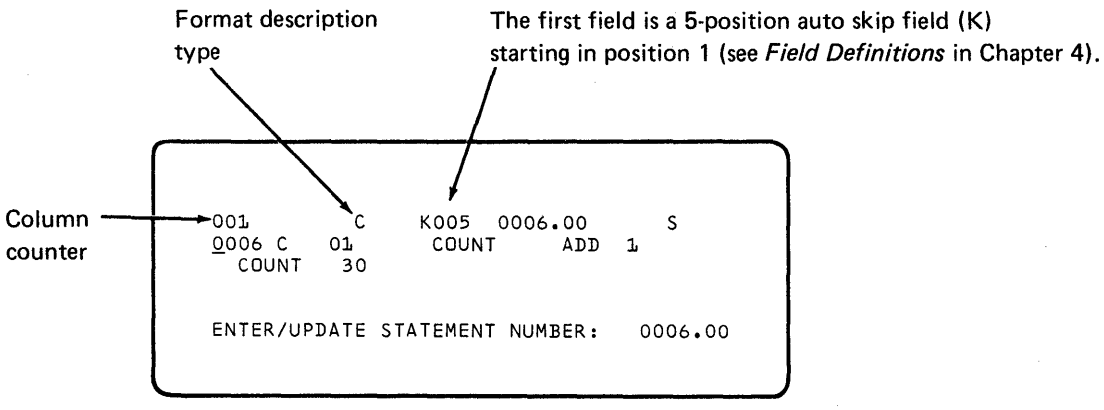
UPDATE SINGLE STATEMENT

The member named DSKPNT now contains the statements listed in the preceding paragraph. At this time you want to make changes (updates) to existing statements. For example, the result field length in statement 6 is 3. To change the value to 5 do the following:

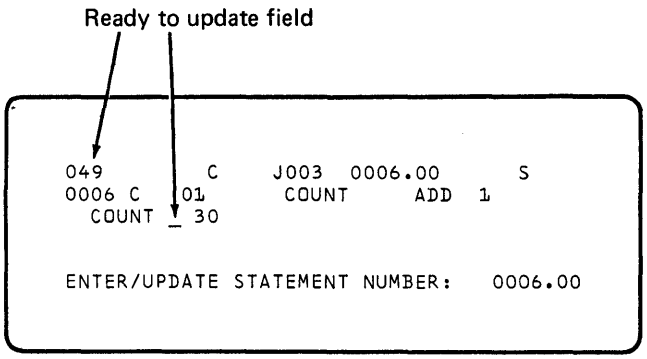
1. Sign on the member DSKPNT by keying SEU DSKPNT,R. Press the ENTER key. The display screen appears as follows:



2. Statement 6 is being updated, so key in 6 and press ENTER. Statement 6 is displayed and any field can be updated.



3. Press FIELD ADV until the column counter and cursor indicate position 049. In this example you want to change the result field length from 3 to 5. On a calculation specification this field starts in position 049.



4. Key the new value (5). The display screen appears as follows. Note that the 3 still remains in the specification since positions 50 and 51 have not been altered.

```
050         C     J003  0006.00       S
0006 C    01        COUNT      ADD  1
  COUNT 5_30

ENTER/UPDATE STATEMENT NUMBER:    0006.00
```

5. Press the ENTER key. The result field length is an unsigned numeric field (J003); therefore, the number entered is right adjusted. The display screen now appears as follows:

```
052         C     J001  0006.00       S
0006 C    01        COUNT      ADD  1
  COUNT    50

ENTER/UPDATE STATEMENT NUMBER:    0006.00
```

6. Press the REC ADV key. Statement 6 is syntax checked and placed back in the member. The next statement in the member is displayed and you are prompted for another statement number.

```
                          0007.00       S
0007 OREPORT  D  1        01

ENTER/UPDATE STATEMENT NUMBER:    _
```

7. You can now continue processing or go to end of job. For the purposes of this example, assume that you will continue updating statements in DSKPNT.

UPDATE MULTIPLE STATEMENTS

After updating the calculation specification in the preceding example you decide to update two output specifications. The display screen is shown in step 6 under *Update Single Statement*. You now want to change the End Position in Output Record entry in statements 0010.00 and 0011.00 to 110 and 120 respectively. Proceed as follows:

1. Key in 10 and press the MULT STMTS command key. The display screen now appears as follows:

```
001        P    K005  0010.00      S
0010 O
 30 'RECORDS IN FILE'

ENTER/UPDATE STATEMENT NUMBER:   0010.00
```

2. Press the FIELD ADV key until the column counter and cursor indicate position 40. This is the first column of the End Position in Output Record field. Key 110. The display screen now appears as follows:

Starting position of field

```
043        P    J004  0010.00      S
0010 O                              1
100 'RECORDS IN FILE'

ENTER/UPDATE STATEMENT NUMBER:   0010.00
```

3. Press the ENTER key. The value keyed is right-adjusted (J type field) and the next field is ready to be updated.

```
044        P    A001  0010.00      S
0010 O
110_'RECORDS IN FILE'

ENTER/UPDATE STATEMENT NUMBER:   0010.00
```

4. Since no other fields in statement 10 need updating, press REC ADV. Statement 10 is syntax checked, placed in the member DSKPNT, and statement 11 is displayed and can be updated.

```
001        P    K005  0011.00      S
0011 O                          COUNT Z
 50

ENTER/UPDATE STATEMENT NUMBER:   0011.00
```

5. The same field on this statement is being changed. Therefore, press FIELD ADV until you reach position 40.

Starting position of field

```
040        P    J004  0011.00      S
0011 O                          COUNT Z _
 50

ENTER/UPDATE STATEMENT NUMBER:   0011.00
```

6. Key the new value 120 and press ENTER. The entry is right-adjusted and the display screen appears as follows:

```
044         P     A001  0011.00       S
0011 O                              COUNT Z
120_

ENTER/UPDATE STATEMENT NUMBER:   0011.00
```

7. Since no further fields are to be updated press REC ADV. Statement 11 is syntax checked and placed in the member DSKPNT. Statement 11 is the last statement in DSKPNT; therefore, the display screen flashes and appears as follows:

```
PRESS ERROR RESET KEY TO CONTINUE
SEU 0508
END OF MEMBER REACHED ON UPDATE
```

8. Press ERROR RESET. The SEU program displays the first statement in DSKPNT. The display screen appears as follows when ERROR RESET is pressed:

```
                          0001.00       S
0001 H
                                       DSKPNT

ENTER/UPDATE STATEMENT NUMBER:   _
```

9. You can now continue processing or go to end of job. If you take option 4 at end of job, the statements are serialized and a listing of the member DSKPNT is given as follows:

```
DSKPNT

0001 H                                                                         DSKPNT
0002 FMASTER   IP   F      120           DISK
0003 FREPORT   O    F      132           PRINTER
0004 IMASTER   AA   01
0005 I                                          1 120 DATA
0006 C    01       COUNT      ADD  1        COUNT   50
0007 OREPORT   D   1      01
0008 O                            DATA      120
0009 O         T    06    LR
0010 O                                      110 'RECORDS IN FILE'
0011 O                            COUNT Z   120
```

INCLUDE SINGLE STATEMENT

The member DSKPNT contains the following RPG II source statements:

```
0001 H                                                                         DSKPNT
0002 FMASTER   IP   F      120           DISK
0003 FREPORT   O    F      132           PRINTER
0004 IMASTER   AA   01
0005 I                                          1 120 DATA
0006 C    01       COUNT      ADD  1        COUNT   50
0007 OREPORT   D   1      01
0008 O                            DATA      120
0009 O         T    06    LR
0010 O                                      110 'RECORDS IN FILE'
0011 O                            COUNT Z   120
```

You want to include statement 2 from a member named TOTAL between statements 5 and 6 of DSKPNT.

```
Include
in DSKPNT ---> 
               0001 I                                       14  202AMT1   )
               0002 I                                       21  272AMT2   |
               0003 C                        EXSR TOTAL                   |
               0004 CSR          TOTAL       BEGSR                        |
               0005 CSR          TAMT1       ADD  AMT1      TAMT1   92    }  TOTAL
               0006 CSR          TAMT2       ADD  AMT2      TAMT2   92    |
               0007 CSR                      ENDSR                        |
               0008 O                                    100 'TOTAL IS'   |
               0009 O                            TAMT1 M  120             |
               0010 O                            TAMT2 M  132             )
```

To include this statement do the following:

1. Sign on the member DSKPNT by keying SEU DSKPNT,R. Press the ENTER key. Press the INCLUDE command key. The display screen appears as follows:

```
                          0001.00      S


INCLUDE MEMBER NAME:              _
```

2. Key the name of the member containing the statement being included.

```
                          0001.00      S


INCLUDE MEMBER NAME:              TOTAL_
```

3. Press the ENTER key. The include member name is moved to the status line and the next prompt is displayed.

Status Line

```
TOTAL                     0001.00      S


INCLUDING AT STATEMENT NUMBER:    _
```

4. Since the included statement (2) is to be placed between statements 5 and 6 in DSKPNT, key 5.5.

```
   TOTAL                  0001.00      S


INCLUDING AT STATEMENT NUMBER:    5.5_
```

5. Press the ENTER key. The prompt and response is moved to line 5 of the display screen and a new prompt appears on line 6 requesting the statement number (from TOTAL) of the statement being included in DSKPNT.

First statement in TOTAL

Asterisk indicates displayed statement is from include member.

```
 TOTAL                    0001.00 *    S
0001 I
     14  202AMT1

INCLUDING AT STATEMENT NUMBER:    0005.50
INCLUDING FROM STATEMENT NUMBER: _
```

6. You want to include statement 2 from TOTAL in DSKPNT. Key a 2 and press ENTER. The following display appears on the screen:

```
   TOTAL                  0002.00 *    S
0002 I
     21  272AMT2

INCLUDING AT STATEMENT NUMBER:    0005.50
INCLUDING FROM STATEMENT NUMBER: 0002.00
```

7. Press REC ADV. Statement 2 from TOTAL (new statement number 5.5) is inserted between statements 5 and 6 in DSKPNT. The display screen now appears as follows:

```
   TOTAL              0006.00      S
0006 C    01       COUNT     ADD  1
  COUNT    50

INCLUDING AT STATEMENT NUMBER:   _
```

8. Statement 6 of DSKPNT is displayed on the screen. You can now continue processing or go to end of job. For the purposes of this example, assume that you will continue including statements from TOTAL in DSKPNT.

INCLUDE MULTIPLE STATEMENTS

For this example, start at the point shown in step 7, under *Include Single Statement* (preceding). You now want to include statements 3 through 10 from TOTAL, following the last statement (11) in DSKPNT. Follow these steps:

1. Key 12 (statement number of included statement after it is included in signed-on member). The display screen appears as follows:

```
   TOTAL              0006.00      S
0006 C    01       COUNT     ADD  1
  COUNT    50

INCLUDING AT STATEMENT NUMBER:   12_
```

2. Press the MULT STMTS command key. The prompt and response are moved to line 5 of the display screen and a new prompt appears on line 6 requesting the statement number (from TOTAL) of the first statement being included in DSKPNT.

Asterisk indicates displayed statement is from include member TOTAL.

```
   TOTAL              0003.00 *    S
0003 C                     EXSR TOTAL

INCLUDING AT STATEMENT NUMBER:   0012.00
INCLUDING FROM STATEMENT NUMBER: _
```

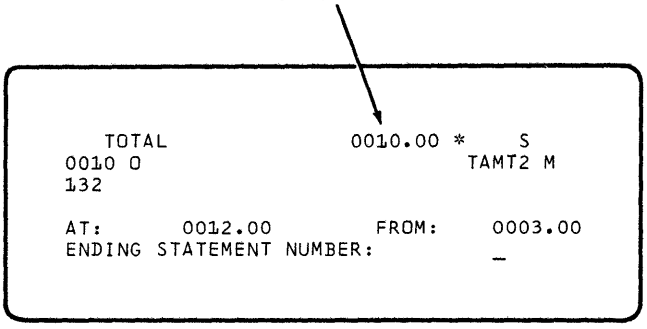
Statement 2 of TOTAL was included in DSKPNT in the include single statement example. Since TOTAL is still the include member, the next statement in TOTAL (3) is displayed.

3. If the displayed statement is the statement where the include starts, it is not necessary to key a statement number. The displayed statement is 3. Therefore, simply press ENTER. The displayed statement is accepted as the first of the statement numbers of statements to be included. You are now prompted for the ending statement number.

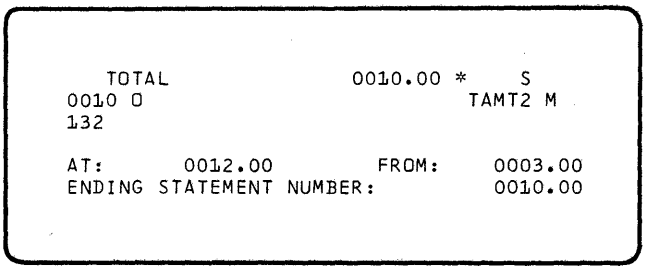
```
   TOTAL              0003.00 *    S
0003 C                     EXSR TOTAL

AT:      0012.00        FROM:     0003.00
ENDING STATEMENT NUMBER:          _
```

4. Press the ROLL↑ function key until the displayed statement from TOTAL is 10 (the last statement to be included).

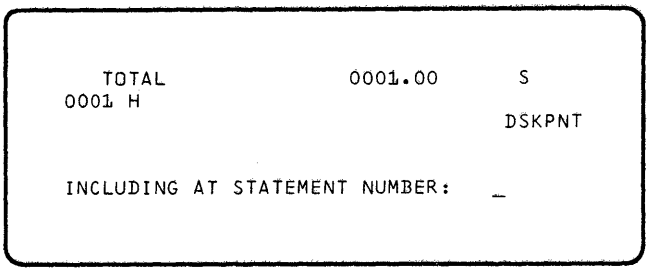
This statement number advances to 0010.00 as the ROLL↑ key is pressed.



5. The displayed statement (10) is the statement with which the include ends. It is therefore not necessary to key a statement number. Press ENTER. The displayed statement number is then accepted as the ending statement number response. The display screen now appears as follows:



6. To include statements 3 through 10 from TOTAL in DSKPNT starting at statement 12, press the REC ADV key. The display now changes to show the next statement in DSKPNT. Note that the included statements followed the last statement in DSKPNT; therefore, the displayed statement is the first statement in DSKPNT. You can now continue processing or go to end of job. Assume that you go to end of job.



7. The member TOTAL *still* contains the following statements:

Included in DSKPNT (*Include Single Statement*)

Included in DSKPNT (*Include Multiple Statements*)

```
0001 I                                                    14  202AMT1
0002 I                                                    21  272AMT2
0003 C                          EXSR TOTAL
0004 CSR        TOTAL           BEGSR
0005 CSR        TAMT1           ADD  AMT1       TAMT1   92
0006 CSR        TAMT2           ADD  AMT2       TAMT2   92
0007 CSR                        ENDSR
0008 O                                      100 'TOTAL IS'
0009 O                              TAMT1 M 120
0010 O                              TAMT2 M 132
```

8. DSKPNT now contains the following statements.

For further SEU functions before sign-off, use the new statement numbers.

```
0001.00   0001 H                                                        DSKPNT
0002.00   0002 FMASTER  IP  F     120           DISK
0003.00   0003 FREPORT  O   F     132           PRINTER
0004.00   0004 IMASTER  AA  01
0005.00   0005 I                                     1 120 DATA
0005.50   0002 I                                    21  272AMT2
0006.00   0006 C   01      COUNT     ADD  1        COUNT   50
0007.00   0007 OREPORT  D  1     01
0008.00   0008 O                         DATA     120
0009.00   0009 O         T   06   LR
0010.00   0010 O                                  110 'RECORDS IN FILE'
0011.00   0011 O                         COUNT Z  120
0012.00   0003 C                       EXSR TOTAL
0013.00   0004 CSR          TOTAL      BEGSR
0014.00   0005 CSR          TAMT1      ADD  AMT1       TAMT1   92
0015.00   0006 CSR          TAMT2      ADD  AMT2       TAMT2   92
0016.00   0007 CSR                     ENDSR
0017.00   0008 O                                  100 'TOTAL IS'
0018.00   0009 O                             TAMT1 M 120
0019.00   0010 O                             TAMT2 M 132
```

Following an end of job with list and serialization option, DSKPNT will look as follows:

```
DSKPNT

0001 H                                                                  DSKPNT
0002 FMASTER  IP  F     120           DISK
0003 FREPORT  O   F     132           PRINTER
0004 IMASTER  AA  01
0005 I                                     1 120 DATA
0006 I                                    21  272AMT2
0007 C   01      COUNT     ADD  1        COUNT   50
0008 OREPORT  D  1     01
0009 O                         DATA     120
0010 O         T   06   LR
0011 O                                  110 'RECORDS IN FILE'
0012 O                         COUNT Z  120
0013 C                       EXSR TOTAL
0014 CSR          TOTAL      BEGSR
0015 CSR          TAMT1      ADD  AMT1       TAMT1   92
0016 CSR          TAMT2      ADD  AMT2       TAMT2   92
0017 CSR                     ENDSR
0018 O                                  100 'TOTAL IS'
0019 O                             TAMT1 M 120
0020 O                             TAMT2 M 132
```

MOVE SINGLE STATEMENT

The member DSKPNT contains the following RPG II source statements:

```
0001 H            -                                                    DSKPNT
0002 FMASTER  IP  F      120            DISK
0003 FREPORT  O   F      132            PRINTER
0004 IMASTER  AA  01
0005 I                                        1 120 DATA
0006 I                                       21  272AMT2
0007 C   01       COUNT      ADD  1          COUNT   50
0008 OREPORT  D  1      01
0009 O                             DATA      120
0010 O          T   06   LR
0011 O                                       110 'RECORDS IN FILE'
0012 O                             COUNT Z   120
0013 C                        EXSR TOTAL
0014 CSR          TOTAL       BEGSR
0015 CSR          TAMT1       ADD  AMT1       TAMT1   92
0016 CSR          TAMT2       ADD  AMT2       TAMT2   92
0017 CSR                      ENDSR
0018 O                                       100 'TOTAL IS'
0019 O                             TAMT1 M   120
0020 O                             TAMT2 M   132
```

You want to move statement 13 to a new location between statements 6 and 7. To move statement 13 do the following.

1. Sign on the member DSKPNT by keying SEU DSKPNT,R. Press the ENTER key. Press the MOVE command key. The display screen appears as follows:

```
                        0001.00      S


MOVING TO STATEMENT NUMBER:      _
```

2. Since the statement being moved (13) is to be placed between statements 6 and 7, key 6.5. The number keyed must be a statement number that does not exist in the member.

```
                        0001.00      S


MOVING TO STATEMENT NUMBER:      6.5_
```

3. Press the ENTER key. The prompt and response is moved to line 5 of the display screen and a new prompt appears on line 6 requesting the statement number of the statement being moved.

```
                        0001.00      S


MOVING TO STATEMENT NUMBER:       0006.50
MOVING FROM STATEMENT NUMBER:     _
```

4. Key 13.

```
                        0001.00      S


MOVING TO STATEMENT NUMBER:       0006.50
MOVING FROM STATEMENT NUMBER:     13_
```

5. Press the ENTER key. Statement 13 is displayed and the screen appears as follows:

```
                        0013.00      S
0013 C                       EXSR TOTAL


MOVING TO STATEMENT NUMBER:       0006.50
MOVING FROM STATEMENT NUMBER:     0013.00
```

6. Press REC ADV. Statement number 13 is assigned statement number 6.5 (DSKPNT no longer contains statement 13) and statement 14 is displayed.

```
                        0014.00      S
0014 CSR          TOTAL     BEGSR


MOVING TO STATEMENT NUMBER:       _
```

7. You can now continue processing or go to end of job. For the purposes of this example, assume that you will continue moving statements in DSKPNT.

MOVE MULTIPLE STATEMENTS

For this example start at the point shown in step 6, under *Move Single Statement* (preceding). You now want to move statements 14 through 17 to follow statement 7.

1. Since the statements being moved are being placed between statements 7 and 8, key 7.5.

```
                        0014.00      S
0014 CSR          TOTAL     BEGSR


MOVING TO STATEMENT NUMBER:       7.5_
```

2. Press the MULT STMTS command key. The prompt and response shown in step 1 is moved to line 5 of the display screen and a new prompt appears on line 6, requesting the statement number of the first statement being moved.

```
                        0014.00      S
0014 CSR          TOTAL     BEGSR


MOVING TO STATEMENT NUMBER:       0007.50
MOVING FROM STATEMENT NUMBER:     _
```

3. If the displayed statement is the first statement being moved, it is not necessary to key a statement number. The displayed statement is 14, so simply press the ENTER key. The display screen appears as follows:

```
                          0014.00      S
0014 CSR          TOTAL     BEGSR

TO:      0007.50         FROM:     0014.00
ENDING STATEMENT NUMBER:                _
```

4. Key 17 as the ending statement number.

```
                          0014.00      S
0014 CSR          TOTAL     BEGSR

TO:      0007.50         FROM:     0014.00
ENDING STATEMENT NUMBER:          17_
```

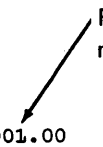
5. Press the ENTER key. Statement 17 is displayed and the display screen appears as follows:

```
                          0017.00      S
0017 CSR                    ENDSR

TO:      0007.50         FROM:     0014.00
ENDING STATEMENT NUMBER:          0017.00
```

6. Press REC ADV. Statement numbers 7.50, 7.51, 7.52 and 7.53 are assigned to the statements being moved (DSKPNT no longer contains statements 14 through 17) and statement 18 is displayed.

```
                          0018.00      S
0018 D
100 'TOTAL IS'

MOVING TO STATEMENT NUMBER:       _
```

7. DSKPNT now contains the following statements:




```
0001.00   0001 H                                                                DSKPNT
0002.00   0002 FMASTER  IP  F     120            DISK
0003.00   0003 FREPORT  O   F     132            PRINTER
0004.00   0004 IMASTER  AA  01
0005.00   0005 I                                      1 120 DATA
0006.00   0006 I                                     21  272AMT2
0006.50   0013 C                      EXSR TOTAL
0007.00   0007 C   01       COUNT     ADD  1         COUNT   50
0007.50   0014 CSR          TOTAL     BEGSR
0007.51   0015 CSR          TAMT1     ADD  AMT1      TAMT1   92
0007.52   0016 CSR          TAMT2     ADD  AMT2      TAMT2   92
0007.53   0017 CSR                    ENDSR
0008.00   0008 OREPORT  D   1     01
0009.00   0009 O                          DATA      120
0010.00   0010 O         T   06   LR
0011.00   0011 O                                    110 'RECORDS IN FILE'
0012.00   0012 O                          COUNT Z   120
0018.00   0018 O                                    100 'TOTAL IS'
0019.00   0019 O                          TAMT1 M   120
0020.00   0020 O                          TAMT2 M   132
```

8. You can now continue processing or go to end of job. Assume that you go to end of job. Following an end of job with list and serialization option, DSKPNT will look as follows:

```
DSKPNT

0001 H                                                                  DSKPNT
0002 FMASTER  IP  F     120            DISK
0003 FREPORT  O   F     132            PRINTER
0004 IMASTER  AA  01
0005 I                                      1 120 DATA
0006 I                                     21  272AMT2
0007 C                      EXSR TOTAL
0008 C   01       COUNT     ADD  1         COUNT   50
0009 CSR          TOTAL     BEGSR
0010 CSR          TAMT1     ADD  AMT1      TAMT1   92
0011 CSR          TAMT2     ADD  AMT2      TAMT2   92
0012 CSR                    ENDSR
0013 OREPORT  D   1     01
0014 O                          DATA      120
0015 O         T   06   LR
0016 O                                    110 'RECORDS IN FILE'
0017 O                          COUNT Z   120
0018 O                                    100 'TOTAL IS'
0019 O                          TAMT1 M   120
0020 O                          TAMT2 M   132
```

DELETE SINGLE STATEMENT

The member DSKPNT contains the following RPG II source statements:

```
0001 H                                                                  DSKPNT
0002 FMASTER  IP  F     120            DISK
0003 FREPORT  O   F     132            PRINTER
0004 IMASTER  AA  01
0005 I                                      1 120 DATA
0006 I                                     21  272AMT2
0007 C                    EXSR TOTAL
0008 C   01       COUNT   ADD  1          COUNT   50
0009 CSR          TOTAL   BEGSR
0010 CSR          TAMT1   ADD  AMT1       TAMT1   92
0011 CSR          TAMT2   ADD  AMT2       TAMT2   92
0012 CSR                  ENDSR
0013 OREPORT  D   1     01
0014 O                        DATA     120
0015 O            T   06  LR
0016 O                                 110 'RECORDS IN FILE'
0017 O                        COUNT Z  120
0018 O                                 100 'TOTAL IS'
0019 O                        TAMT1 M  120
0020 O                        TAMT2 M  132
```

You want to delete statement 10. To delete statement 10 do the following:

1. Sign on the member DSKPNT by keying SEU DSKPNT,R. Press the ENTER key. Press the DELETE command key. The display screen appears as follows:

```
                        0001.00      S


  DELETING STATEMENT NUMBER:        _
```

2. Key 10.

```
                        0001.00      S


  DELETING STATEMENT NUMBER:       10_
```

3. Press the ENTER key. Statement 10 is displayed.

```
                          0010.00       S
0010 CSR            TAMT1      ADD   AMT1
  TAMT1    92

DELETING STATEMENT NUMBER:          0010.00
```

4. Press the REC ADV key. Statement 10 is deleted and statement 11 is displayed.

```
                          0011.00       S
0011 CSR            TAMT2      ADD   AMT2
  TAMT2    92

DELETING STATEMENT NUMBER:
```

5. You can now continue processing or go to end of job. For the purposes of this example, assume that you will continue deleting statements in DSKPNT.

DELETE MULTIPLE STATEMENTS

For this example remain in delete mode at the point shown in step 4, under *Delete Single Statement* (preceding). You now want to delete statements 18 and 19.

1. Key 18 (the first statement being deleted).

```
                          0011.00       S
0011 CSR            TAMT2      ADD   AMT2
  TAMT2    92

DELETING STATEMENT NUMBER:          18_
```

2. Press the MULT STMTS command key. Statement 18 is displayed. The prompt and response shown in step 1 is moved to line 5 of the display screen and a new prompt appears on line 6 requesting the statement number of the last statement being deleted.

```
                          0018.00       S
0018 O
100 'TOTAL IS'

DELETING STATEMENT NUMBER:          0018.00
ENDING STATEMENT NUMBER:            _
```

3. Key 19 (the last statement being deleted).

```
                          0018.00       S
0018 O
100 'TOTAL IS'

DELETING STATEMENT NUMBER:          0018.00
ENDING STATEMENT NUMBER:            19_
```

4. Press the ENTER key. Statement 19 is displayed.

```
                          0019.00       S
0019 O                              TAMT1 M
120

DELETING STATEMENT NUMBER:          0018.00
ENDING STATEMENT NUMBER:            0019.00
```

5. Press the REC ADV key. Statements 18 and 19 are deleted and statement 20 is displayed.

```
                          0020.00       S
0020 O                                TAMT2 M
132

DELETING STATEMENT NUMBER:          _
```

6. You can now continue processing or go to end of job. Following an end of job with the list option, DSKPNT will look as follows if the statements were previously serialized:

```
DSKPNT

0001 H                                                                  DSKPNT
0002 FMASTER  IP  F     120            DISK
0003 FREPORT  O   F     132            PRINTER
0004 IMASTER  AA  01
0005 I                                      1 120 DATA
0006 I                                     21  272AMT2
0007 C                     EXSR TOTAL
0008 C   01       COUNT     ADD  1          COUNT   50
0009 CSR          TOTAL     BEGSR
0011 CSR          TAMT2     ADD  AMT2       TAMT2   92
0012 CSR                    ENDSR
0013 OREPORT  D  1     01
0014 O                          DATA      120
0015 O         T   06   LR
0016 O                                    110 'RECORDS IN FILE'
0017 O                          COUNT Z   120
0020 O                          TAMT2 M   132
```

Appendix D. SEU Diagnostic Messages

An SEU diagnostic message appears on the display screen as an unformatted message display when the SEU program detects an error in an RPG II specification statement. An operator response is required. For all SEU diagnostic messages, the operator should press ERROR RESET and correct the RPG II statement.

This section contains a listing of the SEU diagnostic messages. Where necessary, an explanation of the message is included.

For further information about RPG II specification statements, see the *IBM System/32 RPG II Reference Manual*, SC21-7595.

SEU-1001 FORM TYPE (POS 6) IS INVALID OR DOES NOT AGREE WITH THE FORMAT TYPE. POSITION 6 MUST CONTAIN H, U, F, E, L, I, C, O, OR T.

SEU-1002 FILENAME (POS 7-14) IS INVALID OR SPECIFIED IMPROPERLY.

SEU-1081 PACK NAME IS NOT F1 OR THE MEMBER NAME IS NOT SPECIFIED CORRECTLY.

SEU-1101 FILE TYPE (POS 15) DOES NOT CONTAIN I, O, U, OR C OR IS NOT VALID FOR THE DEVICE SPECIFIED IN POSITIONS 40-46.

SEU-1102 BLOCK LENGTH (POS 20-23) IS NOT BLANK, OR DOES NOT CONTAIN A NUMBER FROM 1 TO 4096, OR IS NOT A MULTIPLE OF THE DISK FILE RECORD LENGTH.

SEU-1103 RECORD LENGTH (POS 24-27) DOES NOT CONTAIN A NUMBER FROM 1-4096 FOR A DISK FILE.

SEU-1104 FILE DESIGNATION (POS 16) FOR THE FILE ASSIGNED TO THE KEYBOARD MUST BE P OR D.

SEU-1105 FILE DESIGNATION (POS 16) MUST BE R FOR ADDROUT FILES.

SEU-1106 MODE OF PROCESSING (POS 28) MUST BE L, R, OR BLANK.

SEU-1107 MODE OF PROCESSING (POS 28) MUST BE BLANK FOR FILES THAT ARE NOT PRIMARY, SECONDARY, DEMAND, OR CHAINED DISK FILES.

SEU-1108 LENGTH OF KEY FIELD (POS 29-30) INVALID OR INCORRECTLY SPECIFIED. THE ENTRY MUST BE 29 OR LESS (UNPACKED KEYS) OR 8 OR LESS (PACKED KEYS).

SEU-1109 RECORD ADDRESS TYPE (POS 31) MUST BE A,P,I, OR BLANK.

SEU-1110 RECORD ADDRESS TYPE (POS 31) MUST BE A BLANK FOR A NON DISK FILE.

SEU-1111 TYPE OF FILE ORGANIZATION (POS 32) MUST BE 1 FOR INDEXED FILES.

SEU-1112 OVERFLOW INDICATOR (POS 33-34) MUST BE OA-OG, OV, OR BLANK.

SEU-1113 KEY FIELD START LOCATION (POS 35-38) IS INVALID FOR THIS FILE TYPE OR IS BLANK; OR LENGTH OF FIELD (POS 29-30) PLUS START LOCATION EXCEEDS RECORD LENGTH.

SEU-1114 DEVICE NAME (POS 40-46) IS INVALID. VALID NAMES ARE: DISK, PRINTER, CONSOLE, KEYBORD, CRT, SPECIAL AND BSCA. (AMPERSAND IS VALID FOR AUTO REPORT.)

SEU-1115 NAME OF LABEL EXIT (POS 54-59) IS NOT SUBRXX OR SRXXXX, OR DEVICE NAME IS NOT SPECIAL, OR TABLE OR ARRAY NAME NOT SPECIFIED ON CONTINUATION SPECIFICATION.

SEU-1116 FILE ADDITION/UNORDERED (POS 66) IS INVALID. (SEE SEU REFERENCE MANUAL FOR A FURTHER DESCRIPTION OF THIS ERROR.)

One of the following errors was detected:
- Position 66 is not A, U, or blank (ampersand is also valid when auto report specifications are being processed).
- U is specified in position 66 but the file is not an output file.
- A nonblank entry is specified in position 66, but the file is not a disk file.

SEU-1117 NUMBER OF EXTENTS (POS 68-69) IS NOT 01 OR BLANK, OR AN ENTRY IS SPECIFIED FOR A NON-DISK DEVICE.

SEU-1118 FILE CONDITION (POS 71-72) MUST BE U1-U8 OR BLANK.

SEU-1120 FILE DESIGNATION (POS 16) MUST BE P (PRIMARY), D (DEMAND), OR BLANK FOR FILES ASSIGNED TO THE KEYBOARD.

SEU-1121 FILE DESIGNATION (POS 16) MUST BE R OR BLANK FOR ADDROUT FILES.

SEU-1122 MODE OF PROCESSING (POS 28) IS NOT L, R, BLANK, OR AMPERSAND (&).

SEU-1123 MODE OF PROCESSING (POS 28) IS NOT BLANK OR AMPERSAND (&) FOR A FILE THAT IS NOT A PRIMARY, SECONDARY, OR CHAINED DISK FILE.

SEU-1124 RECORD ADDRESS TYPE (POS 31) IS NOT A,P,I,K,BLANK, OR AMPERSAND (&).

SEU-1125 RECORD ADDRESS TYPE (POS 31) IS NOT BLANK OR AMPERSAND (&) FOR A FILE THAT IS NOT A DISK FILE.

SEU-1126 TYPE OF FILE ORGANIZATION (POS 32) IS NOT I OR BLANK FOR AN INDEXED FILE.

SEU-1127 OVERFLOW INDICATOR (POS 33-34) IS NOT OA-OG, OV, BLANK, OR AMPERSAND (&).

SEU-1128 FILE CONDITION (POS 72-72) IS NOT U1-U8, BLANK, OR AMPERSAND (&).

SEU-1201 FROM FILENAME (POS 11-18) NOT SPECIFIED PROPERLY.

SEU-1202 TO FILENAME (POS 19-26) SPECIFIED IMPROPERLY, OR IS SPECIFIED WITH AN EXECUTION TIME ARRAY.

SEU-1203 TABLE OR ARRAY NAME (POS 27-32 OR 46-51) IS INVALID, SPECIFIED IMPROPERLY, OR IS BLANK AND POSITIONS 33-45 OR 52-57 DESCRIBE A TABLE/ARRAY.

SEU-1204 NUMBER OF ENTRIES PER RECORD (POS 33-35) IS SPECIFIED IMPROPERLY, IS BLANK IN A STATEMENT WITH A FROM FILE-NAME, OR EXCEEDS THE NO. OF ENTRIES PER TABLE/ARRAY.

SEU-1205 LENGTH OF ENTRY (POS 40-42 OR 52-54) IS INVALID OR BLANK. (SEE SEU REFERENCE MANUAL FOR A FURTHER DESCRIPTION OF THIS ERROR.)

The length of the entry is either incorrect or blank. The entry must not exceed 15 for numeric entries or 256 for execution time alphameric table or array entries. For compile time alphameric table or array entries, this entry must not exceed 96. For binary table or array entries, this entry must be either 4 or 9.

SEU-1206 DECIMAL POS (POS 44 OR 56) IS NOT BLANK OR 0-9, OR THE NUMBER ENTERED IS GREATER THAN THE VALUE FOR LENGTH OF ENTRY.

SEU-1207 SEQUENCE ENTRY (POS 45 OR 57) MUST BE A,D,OR BLANK.

SEU-1208 POSITIONS 27-32 AND 46-51 MUST BOTH CONTAIN TABLE NAMES OR MUST BOTH CONTAIN ARRAY NAMES.

SEU-1209 PACKED/BINARY (POS 43 OR 55) MUST BE BLANK FOR ALPHA-BETIC TABLES OR ARRAYS.

SEU-1210 NUMBER OF ENTRIES PER TABLE/ARRAY (POS 36-39) IS BLANK OR NOT SPECIFIED CORRECTLY.

SEU-1251 FORM LENGTH (POS 15-17) IS NOT SPECIFIED CORRECTLY OR IS GREATER THAN 112, THE MAXIMUM ALLOWED.

SEU-1252 OVERFLOW LINE (POS 20-22) IS NOT SPECIFIED CORRECTLY OR THE NUMBER SPECIFIED IS GREATER THAN THE FORM LENGTH ENTRY.

SEU-1301 CONFIGURATION (POS 15) MUST BE P, M, S, OR BLANK.

SEU-1302 TRANSMIT/RECEIVE (POS 16) MUST BE T OR R.

SEU-1303 AUTOANSWER (POS 20) MUST BE M, A, B, OR BLANK.

SEU-1305 IDENTIFICATION FOR THIS STATION (POS 33-39) IS INVALID. IF POS 32 CONTAINS AN E, THIS FIELD MUST BE AN IDENTIFI-CATION SEQUENCE. IF 32 IS S, A SYMBOLIC NAME.

SEU-1306 IDENTIFICATION FOR REMOTE STATION (POS 41-47) IS INVALID WITH THE STATION IDENTIFICATION TYPE IN POS 40.

SEU-1307 REMOTE TERMINAL (POS 48-51) MUST BE BLANK.

SEU-1308 PERMANENT ERROR INDICATOR (POS 53-54) MUST BE 01-99, L1-L9, LR, H1-H9, OR BLANK.

SEU-1309 RECORD AVAILABLE INDICATOR (POS 58-59) MUST BE 01-99, L1-L9, LR, H1-H9, OR BLANK.

SEU-1310 LAST FILE PROCESSED (POS 60) MUST BE L OR BLANK.

SEU-1311 POLLING CHARACTERS (POS 61-62) ARE INVALID FOR THE CODE TYPE IN POS 18 OR ARE MISSING.

SEU-1312 ADDRESSING CHARACTERS (POS 63-64) ARE INVALID FOR THE CODE TYPE IN POS 18 OR ARE MISSING.

SEU-1313 REMOTE DEVICE (POS 65-70) MUST BE BLANK.

SEU-1314 TRANSPARENCY (POS 19) IS INVALID FOR AN ADAPTER USING ASCII DATA LINK CHARACTERS (POS 18).

SEU-1315 AUTOANSWER (POS 20) MUST BE BLANK FOR A NON-SWITCHED NETWORK.

SEU-1316 POSITION 32 AND/OR POSITION 40 IS NOT BLANK FOR A NON-SWITCHED NETWORK.

SEU-1317 AUTOANSWER (POS 20) MUST NOT BE BLANK FOR A SWITCHED NETWORK.

SEU-1401 POSITION OF RECORD ID CODES POS 21-24, 28-31, OR 35-38) DOES NOT CONTAIN A NUMBER FROM 1 TO 4096.

SEU-1402 FROM FIELD LOCATION (POS 44-47) IS GREATER THAN TO FIELD LOCATION (POS 48-51) OR ONE OF THE ENTRIES DOES NOT CONTAIN A NUMBER FROM 1 TO 4096.

SEU-1403 FIELD NAME (POS 53-58) BEGINS WITH TAB, IS SPECIFIED INCORRECTLY, OR IS MISSING.

SEU-1404 CONTROL LEVEL INDICATOR (POS 59-60) IS NEITHER L1-L9 NOR BLANK. (AMPERSAND IS VALID FOR AUTO REPORT.)

SEU-1405 MATCHING FIELDS (POS 61-62) IS NEITHER M1-M9 NOR BLANK. (AMPERSAND IS VALID FOR AUTO REPORT.)

SEU-1406 RECORD TYPE (POS 7-42) AND FIELD TYPE (POS 43-70) ENTRIES ARE BOTH SPECIFIED IN ONE STATEMENT.

SEU-1407 NUMBER (POS 17) AND/OR OPTION (POS 18) ARE NOT VALID WITH ALPHAMERIC SEQUENCE (POS 15-16).

SEU-1408 DECIMAL POSITIONS (POS 52) IS NOT 0-9 OR BLANK. (AMPERSAND IS VALID FOR AUTO REPORT.)

SEU-1410 POSITIONS 14-16 MUST NOT CONTAIN 'AND' OR 'OR' FOR A LOOK-AHEAD RECORD (** IN POS 19-20).

SEU-1411 POSITIONS 21-42 MUST BE BLANK FOR A LOOK-AHEAD SPECIFICATION (** IN POS 19-20).

SEU-1412 PLUS AND MINUS FIELD INDICATORS (POS 65-68) MUST NOT BE SPECIFIED FOR AN ALPHAMERIC FIELD.

SEU-1413 CONTROL AND MATCH FIELDS (POS 59-62) MUST NOT BE SPECIFIED FOR BINARY FIELDS.

SEU-1414 SEQUENCE (POS 15-16) MUST NOT BE NUMERIC FOR A LOOK-AHEAD RECORD TYPE (** IN POS 19-20).

SEU-1415 DECIMAL POSITIONS (POS 52) IS NOT 0-9 OR BLANK, IS GREATER THAN THE LENGTH OF THE FIELD, OR IS PRESENT FOR A RESULT FIELD FOR WHICH NO FIELD LENGTH IS SPECIFIED.

SEU-1416 RECORD IDENTIFYING INDICATOR (POS 19-20) IS NOT 01-99, H1-H9, L1-L9, LR, OR **.

SEU-1417 POSITIONS 71-74 MUST BE BLANK.

SEU-1418 FIELD RECORD RELATION INDICATOR IS NOT 01-99, L1-L9, MR, U1-U8, OR H1-H9; OR FIELD INDICATOR IS NOT 01-99, OR H1-H9. (AMPERSAND IS VALID FOR AUTO REPORT.)

SEU-1501 CONTROL LEVEL (POS 7-8) IS INVALID. (SEE SEU REFERENCE MANUAL FOR A FURTHER DESCRIPTION OF THIS ERROR.)

Positions 7 and 8 must contain AN, OR, L0-L9, LR, SR, or be blank. If RLABL is specified, positions 7 and 8 must not contain either AN or OR. If BEGSR or ENDSR is specified, positions 7 and 8 must contain SR. If FORCE is specified, position 7 and 8 must contain L0-L9 or LR.

SEU-1502 CONDITIONING INDICATOR (POS 9-17) IS INVALID OR IS SPECIFIED WITH TAG, BEGSR, ENDSR, OR RLABL.

SEU-1503 FACTOR 1 (POS 18-27) IS INVALID. (SEE SEU REFERENCE MANUAL FOR A FURTHER DESCRIPTION OF THIS ERROR.)

One of the following errors exists:

- The entry is not a valid symbolic name, array name, or literal.
- An entry was made but factor 1 is not allowed.
- The entry is an alphameric literal but a numeric field or literal is required.
- The entry is a numeric literal but an alphameric field or literal is required.

SEU-1504 OPERATION CODE (POS 28-32) IS NOT SPECIFIED CORRECTLY OR THE OPERATION CODE AND CONDITIONING INDICATORS ARE BOTH BLANK.

SEU-1505 FACTOR 2 (POS 33-42) IS INVALID. (SEE SEU REFERENCE MANUAL FOR A FURTHER DESCRIPTION OF THIS ERROR.)

One of the following errors exists:
- The entry is not a valid symbolic name, array name, or literal.
- An entry was made, but factor 2 is not allowed.
- The entry is an alphameric literal, but a numeric field or literal is required.
- The entry is a numeric literal, but an alphameric field or literal is required.
- The entry is not a valid symbolic name for the FORCE, CHAIN, READ, or DEBUG operation.
- The entry is a zero constant and is specified with the DIV operation code.
- The entry is specified with the EXIT operation code, but it does not begin with SUBR.
- The entry is a negative constant and is specified with the SQRT operation code.
- The entry is not 0-7 for mask bits for a BIT operation.

SEU-1506 RESULT FIELD (POS 43-48) IS INVALID. (SEE SEU REFERENCE MANUAL FOR A FURTHER DESCRIPTION OF THIS ERROR.)

One of the following errors exists:
- The entry is not a valid symbolic name.
- An entry was made, but result field is not allowed.
- The entry is the reserved word CONTD.
- The entry is an invalid field type as determined by the field length or decimal positions assigned to it.

SEU-1507 FIELD LENGTH (POS 49-51) IS INVALID. (SEE SEU REFERENCE MANUAL FOR A FURTHER DESCRIPTION OF THIS ERROR.)

One of the following errors exists:
- The entry is not specified correctly.
- The entry is greater than 15 and applies to a numeric field.
- The entry is greater than 40 and applies to a field specified with the KEY operation.
- The entry is not blank or 1 and applies to a TESTB, BITON, or BITOF operation.
- The entry is greater than 256 for an alphameric field.

SEU-1508 RESULTING INDICATOR (POS 54-59) IS INVALID. (SEE SEU REFERENCE MANUAL FOR A FURTHER DESCRIPTION OF THIS ERROR.)

One of the following errors exists:
- The entry is not a valid indicator.
- A resulting indicator is not allowed for the operation.
- Both high and low indicators are specified for a LOKUP operation.
- The entry is not a command key and applies to the SET operation.

SEU-1509 MESSAGE ID CODE IS SPECIFIED INCORRECTLY OR IS MISSING AND FACTOR ONE IS BLANK, OR NO FUNCTION IS SPECIFIED FOR THE SET OR KEY OPERATION.

SEU-1601 LINE TYPE (POS 15) DOES NOT CONTAIN H, D, T, OR E; OR POS 14-15 DO NOT CONTAIN 'AN' OR 'OR'.

SEU-1602 FIELD NAME (POS 32-37) IS MISSING, NOT SPECIFIED CORRECTLY, OR IS BLANK AND POSITION 38 CONTAINS AN EDIT CODE.

SEU-1603 EDIT CODE (POS 38) IS NOT 1-4, A-D, J-M, X, Y, Z, OR BLANK; IS SPECIFIED WITH A CONSTANT; IS X, Y, OR Z USED WITH $ OR * OR POS 45-47 ARE NOT $ OR *

SEU-1604 BLANK AFTER (POS 39) IS NOT B OR BLANK, OR IF AUTO REPORT SPECIFICATIONS ARE BEING USED, POS 39 IS NOT A, B, C, R, 1-9, OR BLANK.

SEU-1605 END POSITION IN OUTPUT RECORD (POS 40-43) IS MISSING, IS SPECIFIED INCORRECTLY, IS MORE THAN 256 WITH *PLACE, OR IS TOO SMALL WITH CONSTANT OR EDIT WORD USED.

SEU-1606 CONSTANT OR EDIT WORD (POS 45-70) IS NOT SPECIFIED CORRECTLY OR POSITION 39 OF AN AUTO REPORT SPECIFICATION IS C AND THE LITERAL IS MISSING.

SEU-1607 RECORD TYPE AND FIELD TYPE ENTRIES ARE BOTH PRESENT OR BOTH MISSING ON AN OUTPUT SPECIFICATION. (SEE SEU REFERENCE MANUAL FOR A FURTHER DESCRIPTION.)

An output specification must contain either record description entries or field or constant entries, but not both. If auto report statements are being processed, *AUTO may be entered as the field name entry of a record description statement.

SEU-1608 OUTPUT INDICATOR (POS 23-31) IS INVALID, OVERFLOW INDICATOR IS SPECIFIED ON EXCEPTION OUTPUT LINE, OR AN INDICATOR OTHER THAN U1-U8 IS USED ALONG WITH 1P.

SEU-1609 POSITIONS 23-31, 38, 39, AND 44-70 MUST BE BLANK FOR *PLACE.

SEU-1610 ADD IS NOT ALLOWED IN POSITION 16-18 ON AND/OR LINES.

SEU-1611 TOTALING (A IN POS 39) IS NOT VALID WITH A TABLE, INDEXED ARRAY, PAGE FIELD, OR A BLANK FIELD NAME ENTRY.

command key: One of the top rows of data keys on the keyboard (numeric, -, =) when used in conjunction with the CMD function key. These keys allow functions which are not provided by the function keys defined for the system. The command key functions are identified by a template inserted directly above the keys.

cursor: A dash of light on the display screen that looks like an underscore and indicates where the next character will be entered.

format description: Used to control input to a statement. Format descriptions consist of a field definition for each field in the statement being processed. The field definitions define the type of data in each field and the field length.

library member: A named collection of statements in the library on the disk that can contain source statements, format descriptions, OCL statements, or executable instructions.

message identification code (MIC): a 4-character identifier associated with a specific error or informational message. The MIC is printed following the SEU identifier to allow the message to be reviewed after the SEU program is signed off.

original statement: A statement as it existed before a function was performed which modified the statement.

previous statement: The statement whose statement number consecutively precedes the current statement. During update, the previous statement is the original statement.

procedure: An independent, named group of statements that contains instructions for processing data or programs. For example, the OCL statements used to initiate SEU are a procedure.

prompt: A statement appearing on the display screen that aids the user by requesting a particular kind of response in order to continue processing.

serialization: Consecutive numbering of statements in a designated position. Performed at end of job by SEU if requested.

sign-on: The steps required to initiate the SEU program so that a library member can be processed.

signed-on member: Member in the work area on the disk that is being processed.

statement: A statement is a collection of one or more related items of data or control information treated as a unit.

work area: An area on the disk that contains a member while it is being processed. While a new member is being created using SEU, that member is only present in the work area. If an existing member is being maintained, that member is first copied to the work area. The work area is created by SEU as a scratch file.

wraparound: The ability to display the first statement in a member following the displaying of the last statement, or the last statement following displaying of the first statement.

Index

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This technical newsletter, a part of version 8 modification 0 of the IBM System/32 Utilities Program Product (Program 5725-UT1), provides replacement pages for the subject publication. These replacement pages remain in effect for subsequent versions unless specifically altered. Pages to be inserted and/or removed are:

Title Page, Edition Notice
9, 10
37, 38
61, 62
87, 88
91, 92

Changes to text and illustrations are indicated by a vertical line at the left of the change.

Summary of Amendments

Miscellaneous technical and editorial changes.

Note: Please file this cover letter at the back of the manual to provide a record of changes.

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1, 2
7, 8
39, 40
57, 58
58.1, 58.2 (added to accommodate new and moved text)
61, 62
85, 86
95, 96

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Summary of Amendments

- Addition of program name duplication option.
- Miscellaneous technical and editorial changes.

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