

5. Program Editing

In the program edit mode, modification, insertion, deletion, and others can be conducted for on programs stored in the memory.

- (1) Programs are edited in units of file.
- (2) Program editing-related terms are defined as follows:
 - (a) Edit Line

This is the line on which program edit operation is carried out.

On the display screen, the symbol ">>" appears at the left-most position of the edit line. One line on the display screen contains a maximum of 63 characters.

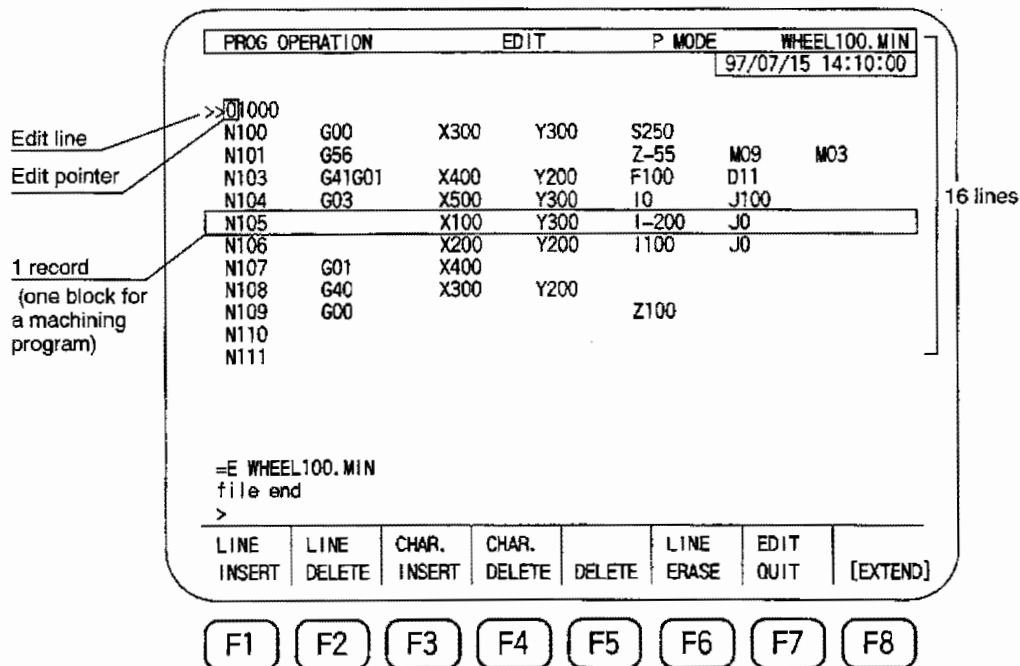
- (b) Edit Pointer

This refers to the identifier indicating the character to be edited. On the display screen, such a character is displayed in the reversed display mode.

- (c) Record

This is so called a block in the program. The record consists of several commands beginning with a character right after the "LF" code and ending with the next "LF" code. If commands in a block cannot be displayed in one line on the display screen, they are displayed on multiple lines with the 2nd and subsequent lines preceded by "&", indicating that the commands are continuous.

- (d) The extract buffer means the buffer where commands are temporarily saved for copy or transfer operation. The buffer capacity is 64 character × 23 lines.



NOTICE

: When program edit operation has been completed, press function key [F7] (PIP QUIT).
Otherwise, edited data cannot be stored in the memory.

PROG OPERATION		EDIT		P MODE		WHEEL100.MIN	
						97/07/15 14:10:00	
>>01000							
N100	G00	X300	Y300	S250			
N101	G56			Z-55	M09	M03	
N103	G41G01	X400	Y200	F100	D11		
N104	G03	X500	Y300	I0	J100		
N105		X100	Y300	I-200	J0		
N106		X200	Y200	I100	J0		
N107	G01	X400					
N108	G40	X300	Y200				
N109	G00			Z100			
N110							
N111							
=E WHEEL100.MIN							
file end							
>							
LINE	LINE	CHAR.	CHAR.		LINE	EDIT	
INSERT	DELETE	INSERT	DELETE	DELETE	ERASE	QUIT	[EXTEND]
F1	F2	F3	F4	F5	F6	F7	F8

Press [F7] (EDIT QUIT).

Program edit operation is complete, and the display screen as indicated to the right will be displayed on the command line.

PROG OPERATION		EDIT		P MODE		WHEEL100.MIN	
						97/07/15 14:10:00	
>>01000							
N100	G00	X300	Y300	S250			
N101	G56			Z-55	M09	M03	
N103	G41G01	X400	Y200	F100	D11		
N104	G03	X500	Y300	I0	J100		
N105		X100	Y300	I-200	J0		
N106		X200	Y200	I100	J0		
N107	G01	X400					
N108	G40	X300	Y200				
N109	G00			Z100			
N110							
N111							
file end							
>							
>Q							
=							
DATE	DIR	PIP	EDIT	MULTI PIP	LIST	CONDENS	[EXTEND]
F1	F2	F3	F4	F5	F6	F7	F8

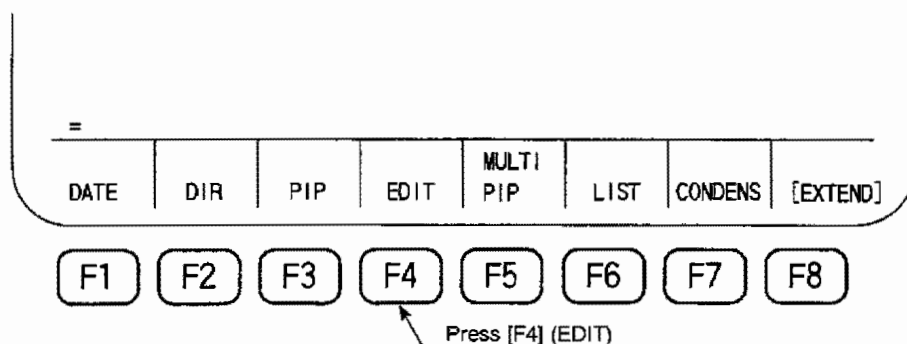
5-1. Commands Used in the Program Edit Mode

Item	Command	Functions
Insert line	INSERT LINE	Inserts a blank line right after the present edit line.
Delete line	DELETE LINE	Deletes the line including the edit pointer.
Insert character	INSERT CHARACTER	Inserts a blank space (for one character) right before the edit pointer.
Delete character	DELETE CHARACTER	Deletes the character identified by the edit pointer.
Delete	DELETE	Deletes the specified number of records (blocks) in a program.
Erase line	ERSE LINE	Erases the commands in the line which contains the edit pointer. The line remains as a blank line.
Quit	QUIT	Ends the program edit mode.
Find	FIND	Searches the specified character-string. Shifts the edit line by the specified number of lines.
Change	CHANGE	Replaces the specified character-string with the newly specified character-string.
Copy	COPY	Duplicates program data in the specified number of lines to the extract buffer. The original program data remains as it is.
Move	MOVE	Duplicates program data in the specified number of lines to the extract buffer. The original program data is deleted.
Extract	XTRACT	Inserts program data in the extract buffer before the edit pointer.
Page mode	PAGE MODE	Replaces the character located by the edit pointer with the keyed-in character.
Insert mode	INSERT MODE	Inserts the character which has been keyed i through the keyboard before the character located by the edit pointer.

5-2. Fundamental Operations Necessary for Program Editing

5-2-1. Readout of a Program File from the Memory

- (1) Press function key [F4] (EDIT).



The screen changes to the directory-selection-based file operation screen and the following is displayed on the screen.

EDIT E

PROGRAM OPERATION						
						97/07/15 14:10:00
EDIT						OVERWRITE
E1						
INDEX DISPLAY PROCEDURE [F2] → MD1:*.MIN [F3] → FDO:*.MIN TO DISPLAY OTHER INDEXES, AFTER PRESSING [F1], INPUT THE DEVICE NAME AND FILE NAME, THEN PRESS [WRITE] KEY. DEFAULT DEVICE NAME = MD1: DEFAULT FILE NAME = *.MIN						
>XE						
>						
INDEX	MD1: INDEX	FDO: INDEX	COMMAND HISTORY	OVERWR/ INSERT	CHAR. DELETE	CANCEL

F1 F2 F3 F4 F5 F6 F7 F8

- (2) Enter the file name of the file to be edited and press the WRITE key.

WHEEL100.MIN

When a program has been stored without specifying a file name, that is, when a program is stored with the file name "A.MIN", this step can be skipped.

PROGRAM OPERATION
97/07/15 14:10:00

EDIT
OVERWRITE

E WHEEL100.MIN

INDEX DISPLAY PROCEDURE
[F2] → MD1:*.MIN
[F3] → FDO:*.MIN
TO DISPLAY OTHER INDEXES, AFTER PRESSING [F1],
INPUT THE DEVICE NAME AND FILE NAME, THEN PRESS [WRITE] KEY.
DEFAULT DEVICE NAME = MD1:
DEFAULT FILE NAME = *.MIN

>XE
>

INDEX	MD1: INDEX	FDO: INDEX	COMMAND HISTORY	OVERWR/ INSERT	CHAR. DELETE	CANCEL
-------	---------------	---------------	--------------------	-------------------	-----------------	--------

F1

F2

F3


F4

F5

F6

F7

F8



Program data of the specified file is searched and read into the editing area. At the same time, program data is displayed on the display screen.

Program data of the file name "WHEEL100.MIN" is ready for editing.

PROG OPERATION		EDIT		P. MODE		WHEEL100.MIN	
						97/07/15 14:10:00	

>>000
N100 G00 X300 Y300 S250
N101 G56 Z-55 M09 M03
N103 G41G01 X400 Y200 F100 D11
N104 G03 X500 Y300 I0 J100
N105 X100 Y300 I-200 J0
N106 X200 Y200 I100 J0
N107 G01 X400
N108 G40 X300 Y200
N109 G00 Z100
N110
N111

=E WHEEL100.MIN
file end
>

LINE INSERT	LINE DELETE	CHAR. INSERT	CHAR. DELETE	DELETE	LINE ERASE	EDIT QUIT	[EXTEND]
----------------	----------------	-----------------	-----------------	--------	---------------	--------------	----------

F1

F2

F3

F4

F5

F6

F7

F8

[Supplement] If the same file as the one selected for large-capacity program operation (method B, method S, method M) is edited while the selected program is not executed, program selection is canceled.

5-2-2. Readout of a Program File from the Memory Using Wild Card ("*", "*.*)

- (1) Key in "E *" or "E *.*" and press the WRITE key.
- (2) The list of names of stored files is displayed on the screen. Move the cursor to the required file name using the cursor and page keys, then press the WRITE key.

AUTO OPERATION		A. MIN		01	NGTR	1
				97/07/15 14:10:00		
				Tmm		

PROGRAM SELECT INDEX

MAIN PROGRAM FILE

JW. MIN

* B. MIN

D. MIN

KS. MIN

K51. MIN

ABCD. MIN

K52. MIN

K53. MIN

P03. MIN

P00. MIN

PAGE 1

=PS B

=what is the file name for program select ?

PROGRAM SELECT	ACTUAL POSIT.	PART PROGRAM	BLOCK DATA	SEARCH	CHECK DATA	[EXTEND]
-------------------	------------------	-----------------	---------------	--------	---------------	----------

F1

F2

F3

F4

F5

F6

F7

F8

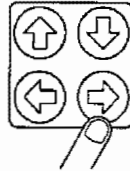
- [Supplement]
1. An asterisk (*) is displayed at the beginning of the file name of the file that has been created or edited last.

When the PROGRAM EDIT INDEX screen is displayed, the cursor is positioned on the file name prefixed by an asterisk.
 2. When there is no file where asterisk should be set, the first page of the PROGRAM EDIT INDEX screen is displayed with the cursor at the top of the file names.
 3. If the same file as the one selected for large-capacity program operation (method B, method S, method M) is edited while the selected program is not executed, program selection is canceled.

5-2-3. Cursor Operations

When the cursor key is pressed, the edit pointer and the edit line can be moved.

(1) Cursor Right Movement



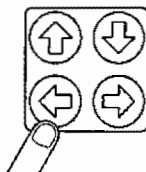
Each time the cursor key is pressed, the edit pointer (reversed display) moves to the right.

The edit pointer moves continuously while the cursor key is held down.

PROG OPERATION		EDIT		P MODE		WHEEL100.MIN	
						97/07/15 14:10:00	
>>01000							
N100	G00	X300	Y300	S250			
N101	G56			Z-55	M09	M03	
N103	G41G01	X400	Y200	F100	D11		
N104	G03	X500	Y300	I0	J100		
N105		X100	Y300	I-200	J0		
N106		X200	Y200	I100	J0		
N107	G01	X400					
N108	G40	X300	Y200				
N109	G00			Z100			
N110							
N111							
=E WHEEL100.MIN							
file end							
>							
LINE	LINE	CHAR.	CHAR.		LINE	EDIT	
INSERT	DELETE	INSERT	DELETE	DELETE	ERASE	QUIT	[EXTEND]

F1
F2
F3
F4
F5
F6
F7
F8

(2) Cursor Left Movement



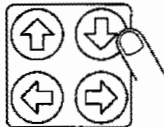
Each time the cursor key is pressed, the edit pointer (reversed display) moves to the left.

The edit pointer moves continuously while the cursor key is held down.

PROG OPERATION		EDIT		P MODE		WHEEL100.MIN	
						97/07/15 14:10:00	
>>01000							
N100	G00	X300	Y300	S250			
N101	G56			Z-55	M09	M03	
N103	G41G01	X400	Y200	F100	D11		
N104	G03	X500	Y300	I0	J100		
N105		X100	Y300	I-200	J0		
N106		X200	Y200	I100	J0		
N107	G01	X400					
N108	G40	X300	Y200				
N109	G00			Z100			
N110							
N111							
=E WHEEL100.MIN							
file end							
>							
LINE	LINE	CHAR.	CHAR.		LINE	EDIT	
INSERT	DELETE	INSERT	DELETE	DELETE	ERASE	QUIT	[EXTEND]

F1
F2
F3
F4
F5
F6
F7
F8

(3) Cursor Downward Movement



Each time the cursor key is pressed, the edit pointer (reversed display) and the edit line (>>) move down one line.

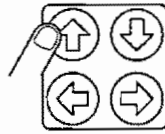
The edit pointer and the edit line move continuously while the cursor key is held down.

When the cursor key is pressed with the edit line (>>) placed at the bottom, the edit line (>>) moves to the next block (the first line in the next page).

PROG OPERATION		EDIT		P MODE		WHEEL100.MIN	
						97/07/15 14:10:00	
>>01000							
N100	G00	X300	Y300	S250			
N101	G56			Z-55	M09	M03	
N103	G41G01	X400	Y200	F100	D11		
N104	G03	X500	Y300	I0	J100		
N105		X100	Y300	I-200	J0		
N106		X200	Y200	I100	J0		
N107	G01	X400					
N108	G40	X300	Y200				
N109	G00			Z100			
N110							
N111							
=E WHEEL100.MIN							
file end							
>							
LINE	LINE	CHAR.	CHAR.		LINE	EDIT	
INSERT	DELETE	INSERT	DELETE	DELETE	ERASE	QUIT	[EXTEND]

F1
F2
F3
F4
F5
F6
F7
F8

(4) Cursor Upward Movement



Each time the cursor key is pressed, the edit pointer (reversed display) and the edit line (>>) move up one line.

The edit pointer and the edit line move continuously while the cursor key is held down.

When the cursor key is pressed with the edit line (>>) placed at the top (O1000 on the display screen), the edit line (>>) does not move.

PROG OPERATION		EDIT		P MODE		WHEEL100.MIN	
						97/07/15 14:10:00	
>>O1000							
N100	G00	X300	Y300	S250			
N101	G56			Z-55	M09	M03	
N103	G41G01	X400	Y200	F100	D11		
N104	G03	X500	Y300	I0	J100		
N05		X100	Y300	I-200	J0		
N106		X200	Y200	I100	J0		
N107	G01	X400					
N108	G40	X300	Y200				
N109	G00			Z100			
N110							
N111							
=E WHEEL100.MIN							
file end							
>							
LINE INSERT	LINE DELETE	CHAR. INSERT	CHAR. DELETE	DELETE	LINE ERASE	EDIT QUIT	[EXTEND]

F1
F2
F3
F4
F5
F6
F7
F8

- [Supplement]
1. When the cursor key is pressed continuously or held down until the edit pointer (reversed display) reaches the left-end or right-end position, the edit line (>>) moves up or down, respectively.
 2. The edit pointer (reversed display) is placed on the edit line (>>). This means that the edit line and the edit pointer move together. The edit pointer moves as the edit line changes.

- [Supplement] 3. If there is a record exceeding 63 characters (one block of data is not displayed within one line) and if the edit data cannot be displayed within the display area (16 lines), a blank line is automatically generated. The symbol of "@" is displayed on the automatically generated blank line so that it is distinguished from the line generated by the "one-line insertion" function.

In this processing, a blank line is generated only at the bottom of the screen and not generated at a middle or the top of the screen.

PROG OPERATION		EDIT		P. MODE		WHEEL100.MIN	
97/07/15 14:10:00							
>>N098	G00	X100	Y0				
N099	G00	X200	Y100				
N100	G00	X300	Y300	S250			
N101	G56			Z-55	M09	M03	
N103	G41G01	X400	Y200	F100	D11		
N104	G03	X500	Y300	I0	J100		
N105		X100	Y300	I-200	J0		
N106		X200	Y200	I100	J0		
N107	G01	X400					
N108	G40	X300	Y200				
N109	G00			Z100			
N110		X200					
N111			Y100				
N112	G01	X100	Y200				
N113		X200	Y300				
@							
=E WHEEL100.MIN							
file end							
>							
LINE	LINE	CHAR.	CHAR.	LINE	EDIT		
INSERT	DELETE	INSERT	DELETE	DELETE	ERASE	QUIT	[EXTEND]


F1 F2 F3 F4 F5 F6 F7 F8

The cursor is moved.

PROG OPERATION		EDIT		P. MODE		WHEEL100.MIN	
97/07/15 14:10:00							
>>N099	G00	X200	Y100				
N100	G00	X300	Y300	S250			
N101	G56			Z-55	M09	M03	
N103	G41G01	X400	Y200	F100	D11		
N104	G03	X500	Y300	I0	J100		
N105		X100	Y300	I-200	J0		
N106		X200	Y200	I100	J0		
N107	G01	X400					
N108	G40	X300	Y200				
N109	G00			Z100			
N110		X200					
N111			Y100				
N112	G01	X100	Y200				
N113		X200	Y300				
N114	G00	X300	Y200				
&Z400							
=E WHEEL100.MIN							
file end							
>							
LINE	LINE	CHAR.	CHAR.	LINE	EDIT		
INSERT	DELETE	INSERT	DELETE	DELETE	ERASE	QUIT	[EXTEND]

F1 F2 F3 F4 F5 F6 F7 F8

5-2-4. Page Down


When the page key  is pressed, the next page is displayed.

On the display screen, 16 lines of program data are displayed on one display page. When program data to be edited is not found on the given page, press the page keys until required data is obtained.

Positions of the edit pointer and edit line remain unchanged.

When the last part of the file has been reached while the page key is pressed, the remaining blocks are displayed on the screen. The message "file end" will appear on the command line.

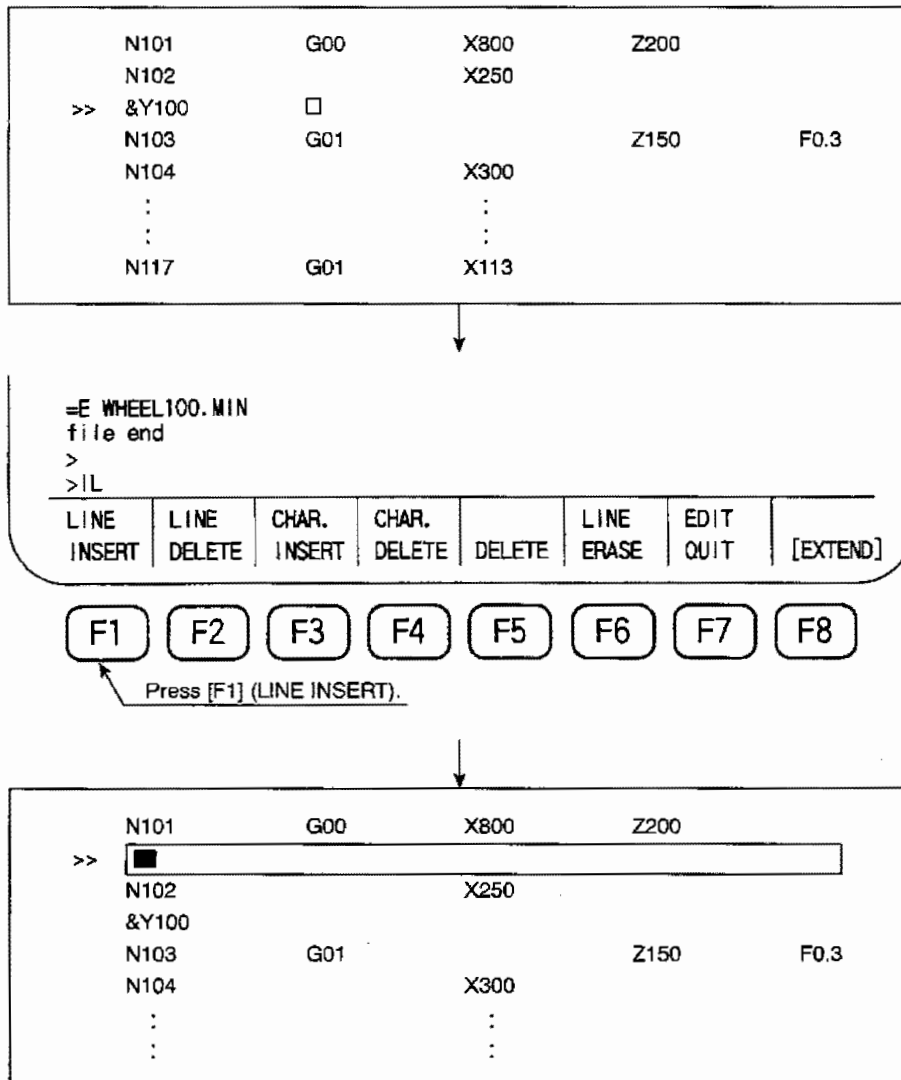
5-2-5. Page Up

When the page key  is pressed, the previous page is displayed.

When the first page has been reached, the display remains unchanged even if the page key is kept pressed. The message "beginning of file" will appear on the command line.

5-3. One Line Insertion

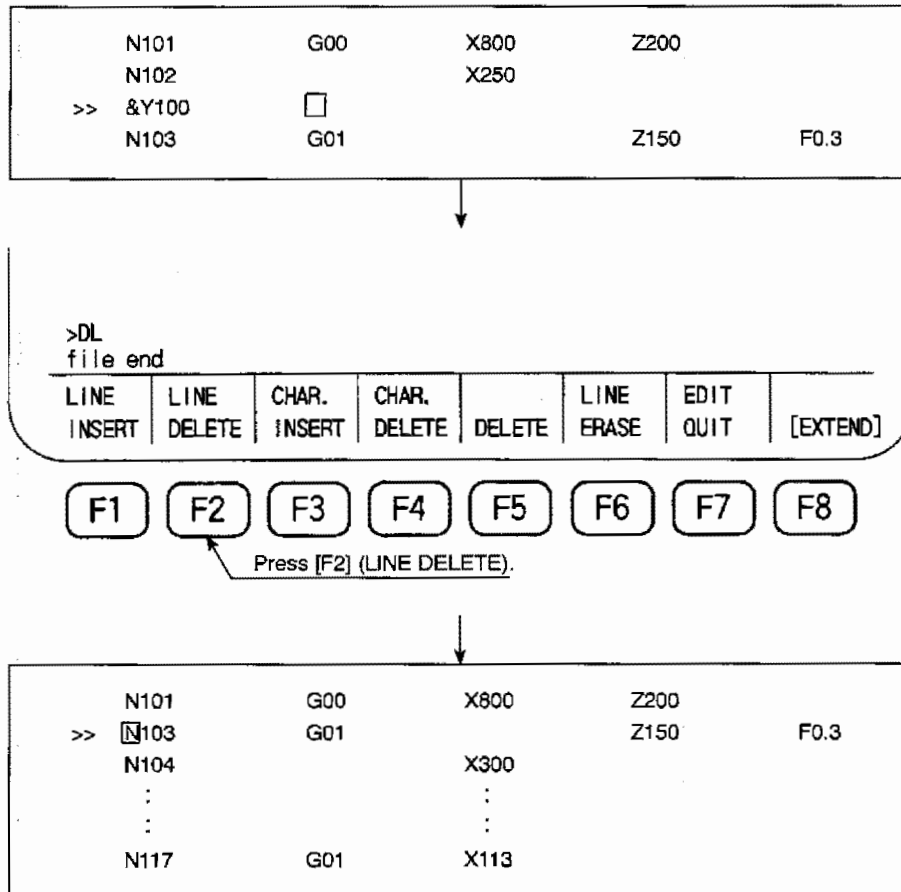
- (1) This function inserts a blank line right before the edit line.
Press function key [F1] (LINE INSERT) to insert a blank line before the edit line (>>).
- (2) Lines following the edit line shift down and the last line on that page disappears from the display and shifts to the next page.
- (3) The edit pointer shifts to the beginning of the inserted blank line.
- (4) One line insertion operation at the line which has more than 63 characters differs from ordinary one line insertion processing. (See the figure.)



- (5) The prompt ">IL" will be displayed on the command line.
- (6) This function is effective for inserting lines in the stored program.

5-4. One Line Deletion

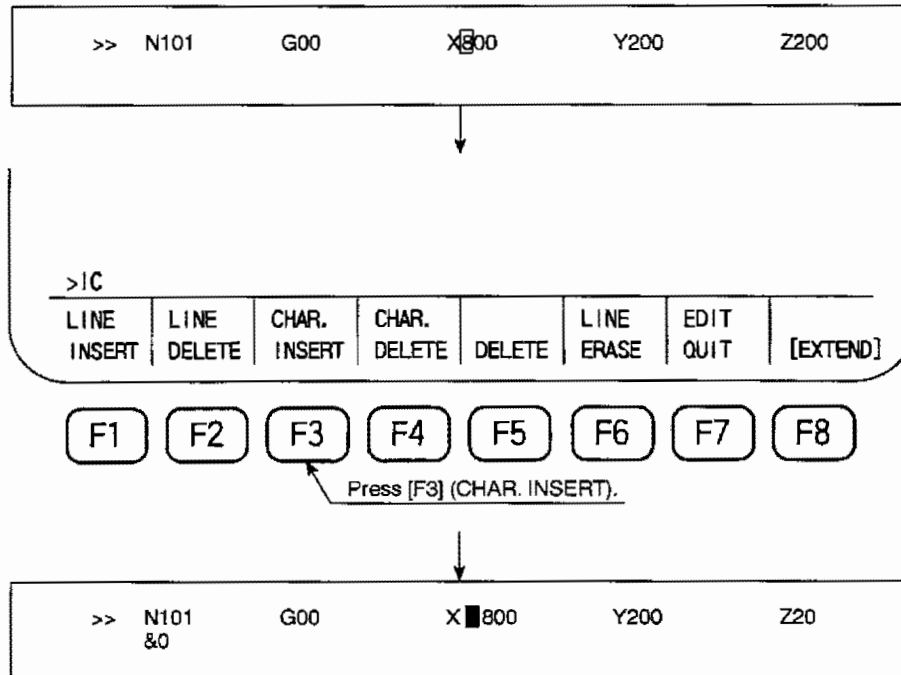
- (1) This function deletes the edit line.
Press function key [F2] (LINE DELETE) to delete the edit line.
- (2) Lines following the edit line shift up and the first line on the next page shifts to the current page and displayed on the last line.
- (3) The edit pointer shifts to the first character of the line next to the deleted line.
- (4) One line deletion operation at the line which has more than 63 characters differs from ordinary one line deletion processing. (See the figure.)



- (5) The prompt ">DL" will be displayed on the command line.
- (6) This function is effective for deleting an entire line in the stored program.

5-5. One Character Insertion

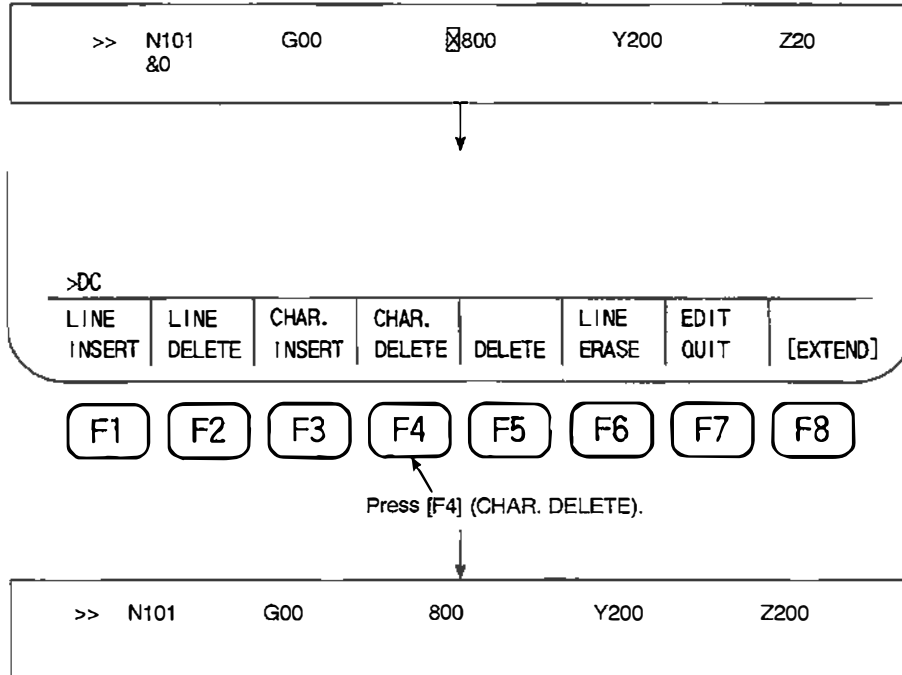
- (1) This function inserts a space before the edit pointer.
Press function key [F3] (CHAR. INSERT) to insert a space right before the edit pointer.
- (2) Data following the edit pointer shifts to the right when a space has been inserted.
- (3) One character insertion operation at the line which has more than 63 characters differs from ordinary one character insertion processing. (See the figure.)



- (4) The position of the edit pointer remains unchanged.
- (5) The prompt ">IC" will be displayed on the command line.
- (6) This function is effective for inserting a character (numeral).

5-6. One Character Deletion

- (1) This function deletes a character located by the edit pointer.
Press function key [F4] (CHAR. DELETE) to delete the character located by the edit pointer.
- (2) When the character is deleted, characters following the deleted one shift to the left.
- (3) One character deletion operation at the line which has more than 63 characters differs from ordinary one character deletion processing. (See the figure.)



- (4) The position of the edit pointer remains unchanged.
- (5) The prompt ">DC" will be displayed on the command line.

5-7. Deletion

- (1) Program data in a specified range is deleted.

After specifying the number of lines to be deleted, press function key [F5] (DELETE). The specified number of lines will be deleted including the edit line (>>).

- (2) The edit pointer is placed at the first character of the block which follows the final line of the deleted blocks.
- (3) When the number of the specified lines to be deleted is larger than the final block of the file, all program data up to the end of the file is deleted and the line right after the final line of the file becomes the edit line. In this case, the message "file end" will appear.
- (4) After program data has been deleted, the message "**RECORD DELETE" appears on the command line. Here, "**" indicates the number of the deleted lines.
- (5) Lines following the deleted range will shift up.

Operation:

[F5] (DELETE)-4 [WRITE]

Four lines preceding the edit line (edit line not included) are deleted.

[F5] (DELETE) [WRITE]

Only the edit line is deleted.

	N101	G00	X800	Z200	
	N102		X250		
>>	N103	G01		Z150	F0.3
	N104		X300		
	N105	G00	X310	Z200	
	N106		X200		
	N107	G01		Z100	
	:			:	
	:			:	

To delete four blocks from N103 to N106

>DEL 4

LINE INSERT	LINE DELETE	CHAR. INSERT	CHAR. DELETE	DELETE	LINE ERASE	EDIT QUIT	[EXTEND]
----------------	----------------	-----------------	-----------------	--------	---------------	--------------	----------

F1	F2	F3	F4	F5	F6	F7	F8
----	----	----	----	----	----	----	----

Press [F5] (DELETE).

Key in "4" through the keyboard.

Press the WRITE key.



>>	N101	G00	X800	Z200	
	N102		X250		
	N107	G01		Z100	
	:			:	
	:			:	

The command line of the screen will show the following message.

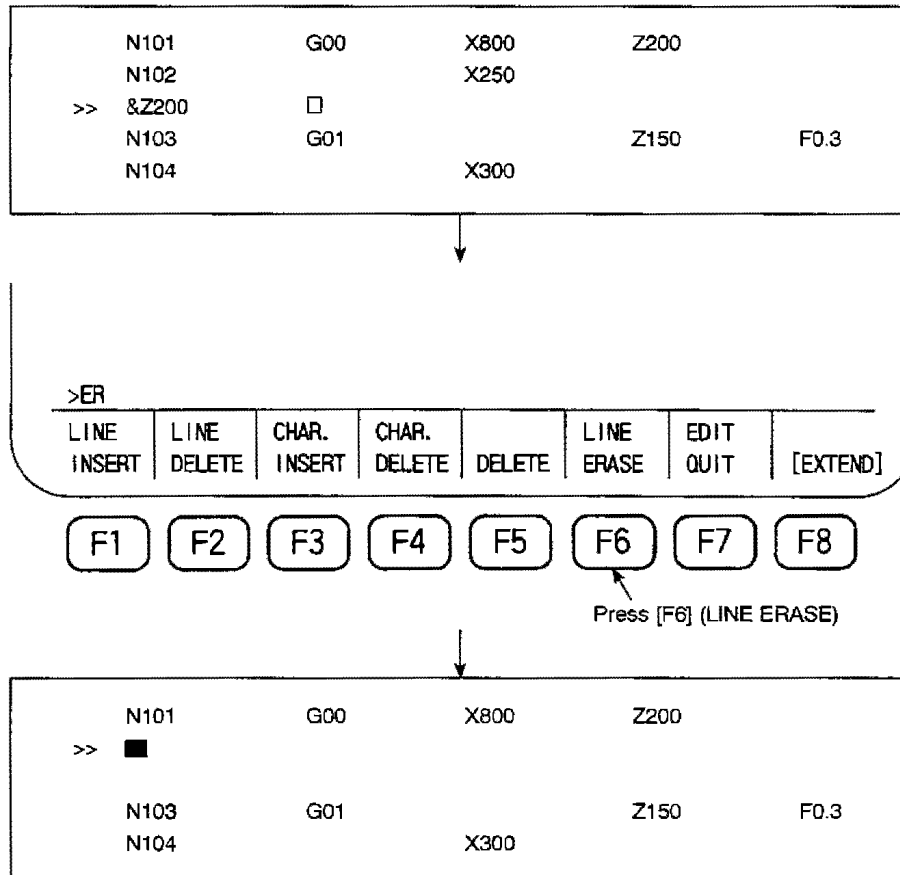
>DEL 4
4 RECORD DELETE
file end
beginning of file

LINE INSERT	LINE DELETE	CHAR. INSERT	CHAR. DELETE	DELETE	LINE ERASE	EDIT QUIT	[EXTEND]
----------------	----------------	-----------------	-----------------	--------	---------------	--------------	----------

F1	F2	F3	F4	F5	F6	F7	F8
----	----	----	----	----	----	----	----

5-8. One Line Erasing

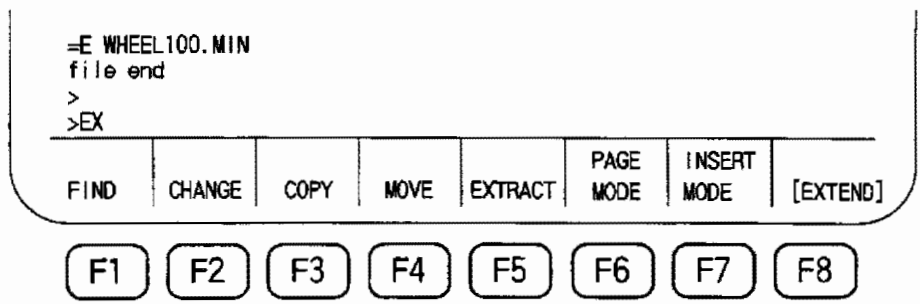
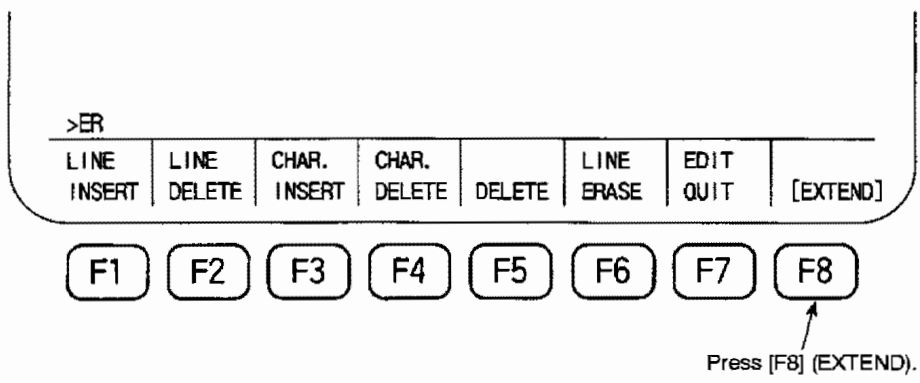
- (1) This function erases program data in the edit line (>>). The blank line remains.
Press function key [F6] (LINE ERASE) to erase program data in the edit line. When data is erased, a blank line will remain.
- (2) The edit pointer is placed at the first character of the erased edit line.
- (3) The prompt ">ER" will be displayed on the command line.
- (4) One line deletion operation at the line which has more than 63 characters differs from ordinary one line deletion processing. (See the figure.)



- (5) This function is effective when replacing entire program data in a block with new program data.

- * Before executing operations explained in 5-9. "Find", press function key [F8] (EXTEND).

Press function key [F8] (EXTEND). The function names on the display screen will change as shown below.



5-9. Find

This function searches for a specified character-string. It is also possible to advance or return the edit pointer by the specified number of lines.

(1) Search for Character-string

Example: To search "X300" in the following program

- (a) The character-string specified by keying-in operation is searched for, starting from the character which is next to the one located by the edit pointer.
- (b) When the specified character-string has been found, the edit pointer stops at the first character of the character-string.
- (c) To specify a character-string, key in a character before and after it. Here, the character before and after the character-string must be the same, and the following characters cannot be used.
+, -, ,, ;, :, 0 through 9, space, and characters used within the character-string

Example: /X300/

- (d) The symbol "?" which specifies an arbitrary character can be used.

Example: /N?01/

This is the command to search for three-digit N codes whose lower two digits are "01".

Once a character-string has been specified, it is searched for each time function key [F1] (FIND) and the WRITE key are pressed.

- (e) The symbol "□" in character-strings represents one character other than numbers and a decimal point.

Example: /X10□/

With this command, character-strings such as X100, X10.5, and others are not searched for.

- (f) Pressing any key on the operation panel interrupts this function at the point the key has been pressed.

>>	N101	G00	X800	Z200	
	N102		X250		
	N103	G01		Z150	F0.3
	N104		X300		
	N105	G00	X310	Z200	
	N106		X200		
	N107	G01		Z100	
	:			:	
	:			:	

file end

>

>EX

>F /X300/

FIND

CHANGE

COPY

MOVE

EXTRACT

PAGE
MODEINSERT
MODE

[EXTEND]

F1

F2

F3

F4

F5

F6

F7

F8

Press [F1] (FIND).

Key in "/X300/" through the keyboard.

Press the WRITE key.

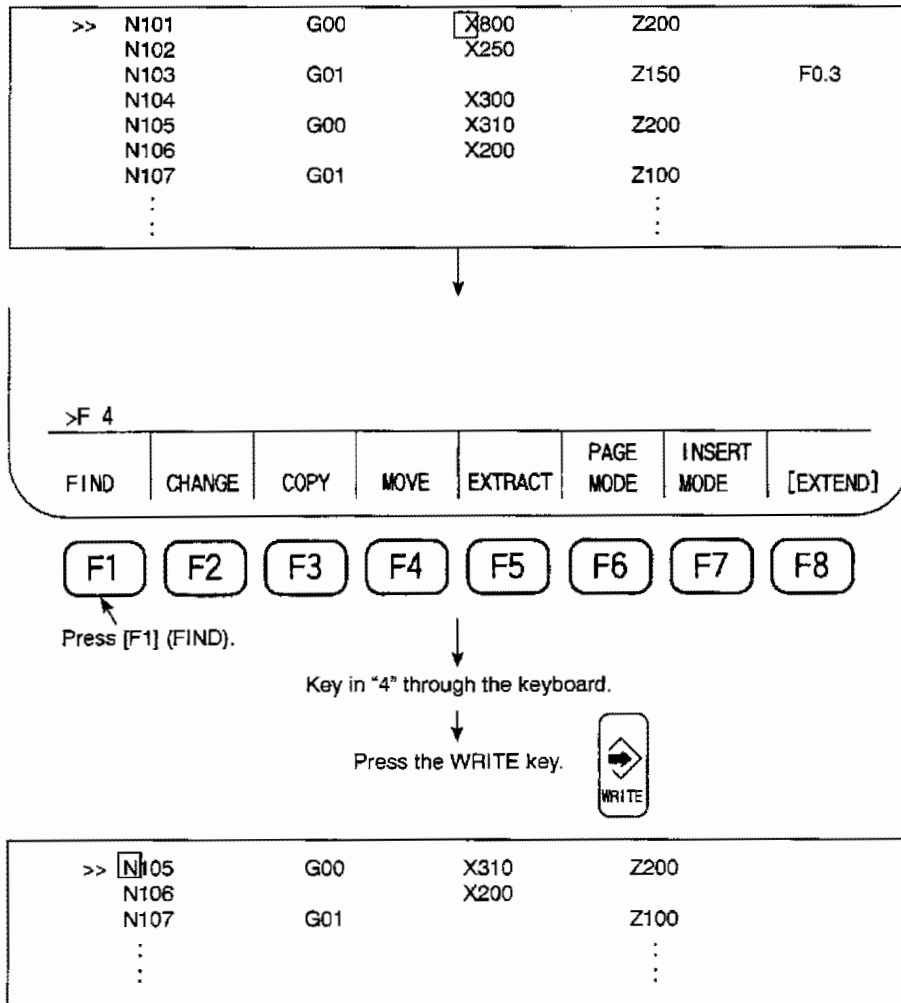


	N101	G00	X800	Z200	
	N102		X250		
	N103	G01		Z150	F0.3
>>	N104		X300		
	N105	G00	X310	Z200	
	N106		X200		
	N107	G01		Z100	
	:			:	
	:			:	

(2) Edit Line Shifting

Example: When the 4th block is specified in the following program

- (a) This function shifts the edit line by a specified number of lines.
- (b) The edit pointer is placed at the first character of that line.
- (c) On the display screen, the display changes so that the edit line is located on the first line of the screen.
- (d) When the specified number is larger than the last line of the file, the edit pointer is placed in the line next to the last line. In this case, two lines from the last line are displayed on the screen, followed by the following message on the command line.
file end
- (e) When a negative number is specified, the edit line shifts backward and the edit pointer is placed at the first character of the specified line.
- (f) When a negative number exceeding the first line of the file is specified, the edit pointer is placed at the beginning of the file. The message "beginning of file" will be displayed on the command line.



5-10. Change

Example: To change "Z200" in N105 block to "Z210" in the following program

- (1) This function replaces a specified character-string with another character-string specified.
Press function key [F2] (CHANGE) to select this function.
- (2) The edit pointer is placed at the first character of the character-string which has replaced the previous character-string.
When the specified character-string is not found, the message "no character string" is displayed and the edit pointer does not move.
- (3) The same delimiter as explained in 5-9 is used.
- (4) The symbol "?" is used in quite the same manner as in 5-9. "Find" operation.
- (5) When program data contains several same character-strings, press function key [F2] (CHANGE) and the WRITE key. The character-strings will be replaced one by one.
- (6) Pressing any key on the operation panel interrupts this function at the point the key has been pressed. In this case, character-strings are not replaced.
- (7) The following option code can be used:
";A" When this option code is designated, global search and replace can be executed. The character-strings are replaced at one time.

SECTION 2 PROGRAM OPERATION

>>	N101	G00	X800	Z250	
	N102		X250		
	N103	G01		Z150	F0.300
	M104		X300		
	N105	G00	X310	Z200	
	N106		X200		
	⋮		⋮		
	⋮		⋮		

>C /210/200/
file end
file start
>C /Z200/Z210/

FIND	CHANGE	COPY	MOVE	EXTRACT	PAGE MODE	INSERT MODE	[EXTEND]
------	--------	------	------	---------	--------------	----------------	----------

F1	F2	F3	F4	F5	F6	F7	F8
----	----	----	----	----	----	----	----

Press [F2] (CHANGE).

Key in "/Z200/Z210/" through the keyboard.

Press the WRITE key.



	N101	G00	X800	Z250	
	N102		X250		
	N103	G01		Z150	F0.300
>>	N104		X300		
	N105	G00	X310	Z210	
	N106		X200		
	⋮		⋮		
	⋮		⋮		

5-11. Copy, Move, and Extract

These functions are used to transfer a group of commands from one program to another or to insert the same group of commands into several different positions of a program.

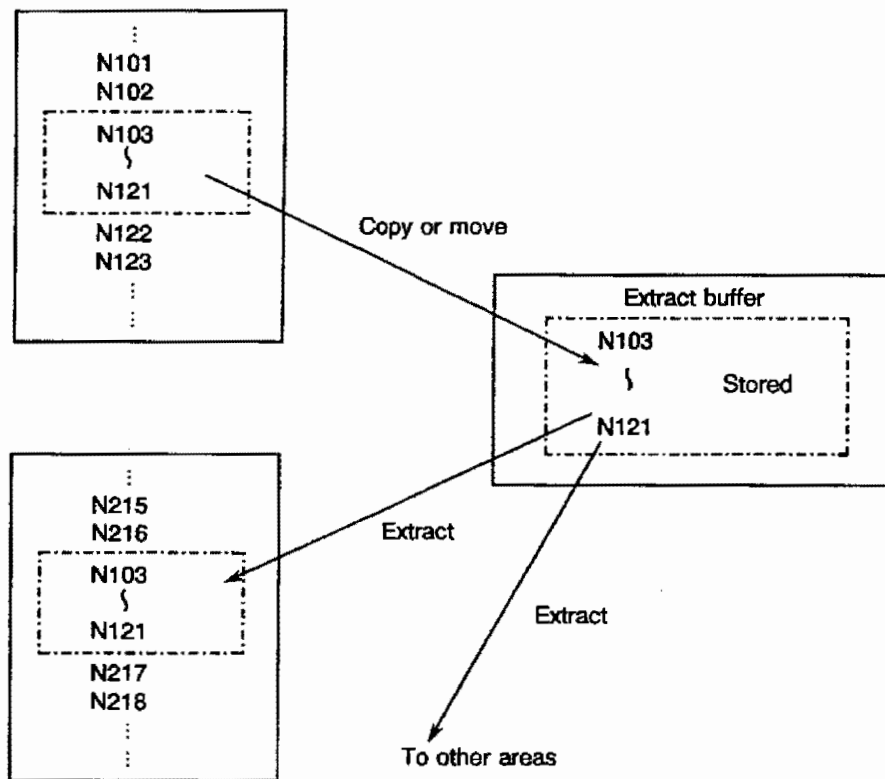


Fig. 2-1 Copy, Move, and Extract Functions

Operation sequence:

- (1) Save the group of commands into the extract buffer using the COPY or MOVE command.
- (2) The EXTRACT command will insert the commands saved in the extract buffer into the specified sequence.

5-11-1. Copy

This function transfers specified program data to the extract buffer.

Press function key [F3] (COPY) after the range (in terms of lines) of program data to be duplicated has been specified.

Example: To copy blocks from "N103" to "N105" in the following program

- (1) Program data in the specified range which starts from the edit line (>>) is transferred to the extract buffer.
- (2) The edit pointer is placed at the first character of the line that is preceded by the last line of the specified range.
- (3) Program data previously registered in the extract buffer is erased.
- (4) When the specified number is larger than the last line of the file, program data up to the last line is transferred.
- (5) When a negative number is specified, program data in the blocks preceding the edit line (edit line not included) is transferred.

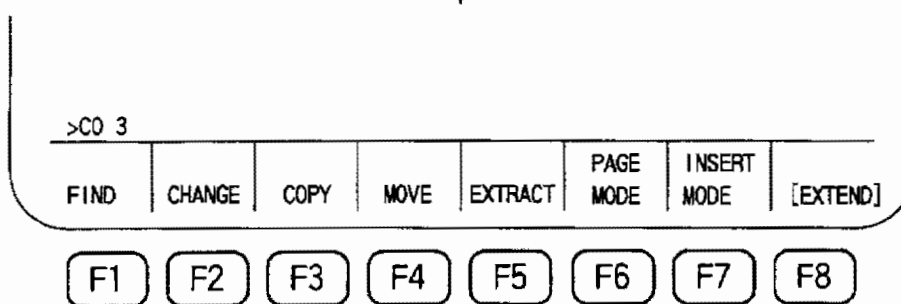
When a negative number exceeding the first line of the file is specified, program data up to the first line of the file is transferred.

- (6) Pressing the WRITE key without entering the number of lines causes program data in the edit line to be transferred.
- (7) When an attempt has been made to transfer program data which is larger than the extract buffer, the message "extract buffer overflow" will appear on the display screen and copy operation is not executed.

SECTION 2 PROGRAM OPERATION

N101	G00	X800	Z200	
N102		X250		
>> N103	G01		Z150	F0.300
M104		X300		
N105	G00	X310	Z200	
N106		X200		
N107	G01		Z170	
:			:	
:			:	

Move the symbol ">>" to N103 using the cursor control keys.



Press [F3] (COPY).

Key in "3" through the keyboard.

Press the WRITE key.



N101	G00	X800	Z200	
N102		X250		
N103	G01		Z150	F0.300
N104		X300		
N105	G00	X310	Z210	
>> N106		X200		
N107	G01		Z170	
:			:	
:			:	

5-11-2. Move

This function extracts program data in the specified range of a file and transfers it to the extract buffer. Press function key [F4] (MOVE) after the range (in terms of lines) of program data to be transferred has been specified.

Example: To transfer blocks from "N103" to "N105" in the following program

- (1) Program data in the specified range which starts from the edit line (>>) is transferred to the extract buffer.
- (2) The lines transferred to the extract buffer are erased from the display screen.
- (3) The edit pointer is shifted to the first character of the line next to the last line of transferred lines.
- (4) Program data previously registered in the extract buffer is erased.
- (5) When the specified number is larger than the last line of the file, program data up to the last line is transferred.
- (6) After program data has been transferred, the message "**RECORD DELETE" appears on the command line. Here, "**" indicates the number of the specified lines.
- (7) When a negative number is specified, program data in the blocks preceding the edit line (edit line not included) is transferred.

When a negative number exceeding the first line of the file is specified, program data up to the first line of the file is transferred.

- (8) When an attempt has been made to transfer program data which is larger than the extract buffer, the message "extract buffer overflow" will appear on the display screen and move operation is not executed.
- (9) Pressing the WRITE key without entering the number of lines causes program data in the edit line to be transferred.

N101	G00	X800	Z200	
N102		X250		
>> N103	G01		Z150	F0.300
M104		X300		
N105	G00	X310	Z200	
N106		X200		
N107	G01		Z170	
:			:	
:			:	

Move the symbol ">>" to N103 using the cursor control keys.

>M 3

FIND	CHANGE	COPY	MOVE	EXTRACT	PAGE MODE	INSERT MODE	[EXTEND]
------	--------	------	------	---------	--------------	----------------	----------

F1 F2 F3 F4 F5 F6 F7 F8

Press [F4] (MOVE).

Key in "3" through the keyboard.

Press the WRITE key.



N101	G00	X800	Z200	
N102		X250		
>> N106		X200		
N107	G01		Z170	
:			:	
:			:	

The following message is displayed on the command line.

>M 3
3 RECORD DELETE

FIND	CHANGE	COPY	MOVE	EXTRACT	PAGE MODE	INSERT MODE	[EXTEND]
------	--------	------	------	---------	--------------	----------------	----------

F1 F2 F3 F4 F5 F6 F7 F8

5-11-3. Extract

This function inserts program data which is registered in the extra buffer before the edit line (>>).

Press function key [F5] (EXTRACT) and the WRITE key after the edit line has been selected.

Example: When the extra buffer data insert before the block "N203"

- (1) Data in the extract buffer is inserted before the edit line (>>).
- (2) Data in the extract buffer is not erased.
- (3) The edit pointer remains at the same position.
- (4) If no data is registered in the extract buffer when EXTRACT operation is attempted, the message "extract buffer empty" is displayed and data transfer is not initiated.
- (5) To erase program data registered in the extract buffer, proceed as follows.

[F5] (EXTRACT);C [WRITE]

File data is not changed.

Data in the extract buffer				
N103	G01		Z150	F0.300
N104		X300		
N105	G00	X310	Z200	
N210	G00	X600	Z200	
N202		X150		
>> N203	G01		Z150	F0.400
N204		X200		
N205	G00	X210	Z200	

Move the symbol ">>" to N103 using the cursor control keys.

>X

FIND

CHANGE

COPY

MOVE

EXTRACT

PAGE
MODE

INSERT
MODE

[EXTEND]

F1

F2

F3

F4

F5

F6

F7

F8

Press [F5] (EXTRACT).

Press the WRITE key.

WRITE

N210	G00	X600	Z200	
N202		X150		
N103	G01		Z150	F0.300
M104		X300		
N105	G00	X310	Z200	
>> N203	G01		Z150	F0.400
N204		X200		
N205	G00	X210	Z200	

5-12. Page Mode

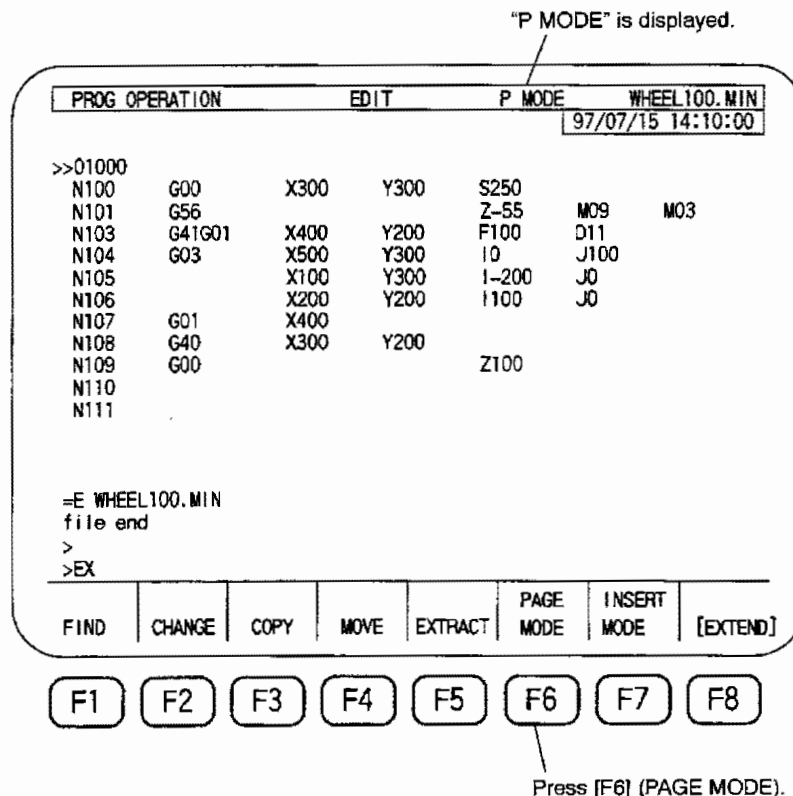
In the page mode (P mode), displayed screen is fixed and keying in of a character, etc. overwrites the existing screen data. For the input on the screen, insert mode (I mode) is also provided in which keyed in characters, etc. are inserted. For details of the insert mode, refer to 5-13. "Insert Mode".

This page mode is used in the following cases:

- (1) creating a new file
- (2) replacing one character in an existing file
- (3) adding a character-string to the end of a line

The operating procedure is as indicated below.


Press function key [F6] (PAGE MODE) "P MODE" will be displayed on the 1st line of the screen.




- (a) When a character is keyed in in the page mode, the cursor-located character is replaced by the keyed-in character and the cursor moves to the right. In other words, in the page mode, the cursor is moved to the right and the character (including a space) located by the cursor is replaced by a keyed-in character each time data is entered. Therefore, if an attempt has been made to assign a character-string many digits of characters, subsequent character data might be replaced.
- (b) If one line has more than 63 characters, such a line is displayed in two lines on the screen with the second line preceded by "&". These lines are processed as one line. In this case, the edit pointer and the edit line move to the lower line.
- (c) Each page has a total of 16 lines for edit operation.

When the WRITE key is pressed while the bottom line is designated as the edit line, 16 lines of data are shifted by one line each and a blank line is created on the 16th line. The edit line does not change and the edit pointer is placed at the beginning of that line.

(d) When the WRITE key is pressed while a line other than the bottom line is designated as the edit line, the edit line is moved to the subsequent line and the edit pointer is moved to the beginning of that line. This also applies to the insert mode.

(e) When the program cannot be displayed in one page (16 lines), press the page key .

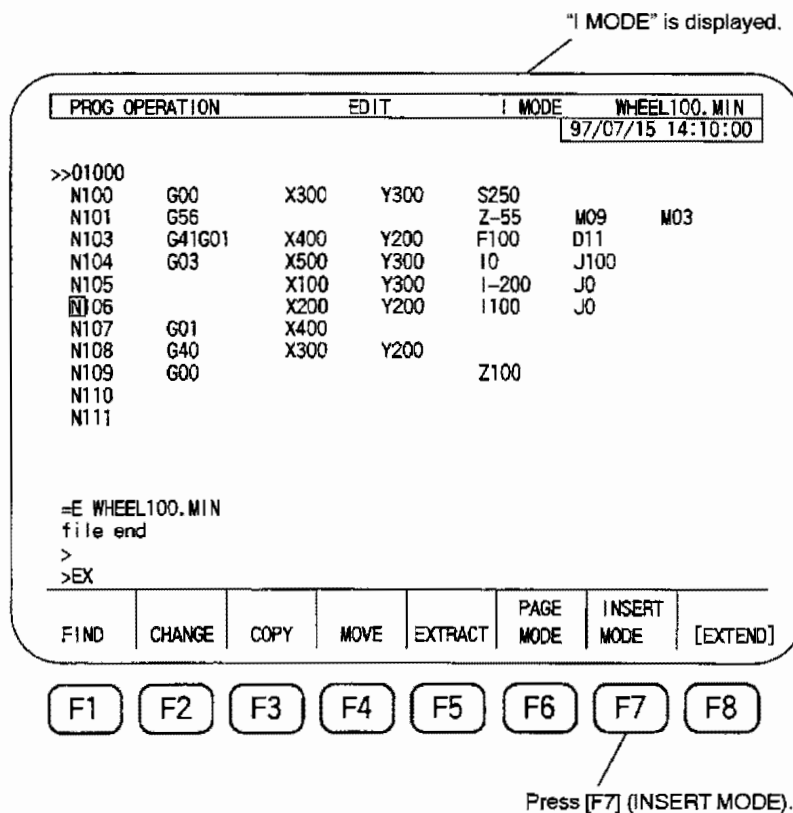
To return the display to the previous page, press the page key .

5-13. Insert Mode

In the insert mode (I mode), keyed in characters are added to the data in the displayed file. For the input on the screen, page mode (P mode) is also provided in which keyed in characters, etc. overwrites the existing characters. For details of the page mode, refer to 5-12. "Page Mode".

The operating procedure is as indicated below.

- (1) Press function key [F7] (INSERT MODE) "I MODE" will be displayed on the 1st line of the screen.





(a) Each time a character is keyed in in the insert mode, it is inserted before the edit pointer and the character-strings following the edit pointer are shifted by one character. When data is inserted successively and the currently displayed data has reached the right end, data is inserted in the next line that is preceded by "&". These lines are processed as one line.

(b) Each page has a total of 16 lines for edit operation.

When the WRITE key is pressed while the bottom line is designated as the edit line, 16 lines of data are shifted by one line each and a blank line is created on the 16th line. The edit line does not change and the edit pointer is placed at the beginning of that line.

(c) When the WRITE key is pressed while a line other than the bottom line is designated as the edit line, the edit line is moved to the subsequent line and the edit pointer is moved to the beginning of that line. This also applies to the page mode.

(d) When the program cannot be displayed in one page (16 lines), press the page key .

To return the display to the previous page, press the page key .

5-14. Power Failure/Shutdown during Editing

The function to avoid the file from being lost is provided even if power failure occurs or power is shut down by mistake during editing.

5-14-1. In-editing Comment

If power is shut down during editing, the following "in-editing comment" is attached to the first data block of the file having been edited.

```
'                                     '
'                                     '
'      "THIS FILE NEEDS EDITING AGAIN!"      '
'                                     '
'                                     '
'      '
'      '
'      OKUMA MACHINERY WORKS LTD.'
```

This comment is deleted when the same file is read out from the memory.

Note: This comment is not displayed on the edit screen.

5-14-2. Alarm

If the file with the "in-editing" comment is run, the following alarm occurs.

2230 Unusable: direct of left side

If this alarm message is displayed, read out the same file from the memory and complete editing.

AUTO OPERATION		A. MIN		0		N		1	
								97/07/15 14:10:00	
2230 ALARM B		direct of left side 3E00							
PROGRAM		*CURRENT MAIN PROGRAM*							
		1mm							
		DIS		X				0.000	
				Y				0.000	
				Z				0.000	
				W				0.000	
>>		"THIS FILE NEEDS EDITING AGAIN!"							
		OKUMA MACHINERY WORKS LTD.							
LOAD MAX		▽							
SPINDLE LOAD				0%					
				X		Y			
ACT POSIT (WORK)				0.000		0.000			
				A-Mtd					
=XPS									
>									
=PS A. MIN									
=									
PROGRAM	ACTUAL	PART	BLOCK			CHECK			
SELECT	POSIT.	PROGRAM	DATA	SEARCH		DATA		[EXTEND]	
F1	F2	F3	F4	F5	F6	F7	F8		

To give warning to an operator, the following alarm is displayed on the screen when the power is turned on after the power was shut down during editing. In this case, an error file name is stored to the file of "MD0:ERROR.BAK" (or "MD0:ERROR.LOG").

4248 Error File

5-14-3. Not-guaranteed Area Indicating Symbol

If the power is shut down during editing, the first character of the program displayed on the screen (16 lines × 63 columns) where a character was changed or added last is replaced with the not-guaranteed area indicating symbol "<".

Note that this replacement occurs only when "1" is set for NC optional parameter (bit) No. 16, bit 4.

Example: NC optional parameter (bit) No. 16, bit 4 = 0

PROG OPERATION		EDIT		P MODE		WHEEL100.MIN	
						97/07/15 14:10:00	
><N1000							
N100	G00	X300	Y300	S250			
N101	G56			Z-55	M09	M03	
N103	G41G01	X400	Y200	F100	D11		
N104	G03	X500	Y300	I0	J100		
N105		X100	Y300	I-200	J0		
N106		X200	Y200	I100	J0		
N107	G01	X400					
N108	G40	X300	Y200				
N109	G00			Z100			
N110							
N111							
=E WHEEL100.MIN							
file end							
>							
LINE INSERT	LINE DELETE	CHAR. INSERT	CHAR. DELETE	DELETE	LINE ERASE	EDIT QUIT	[EXTEND]
F1	F2	F3	F4	F5	F6	F7	F8

Example: NC optional parameter (bit) No. 16, bit 4 = 1

PROG OPERATION		EDIT		P MODE		WHEEL100.MIN	
						97/07/15 14:10:00	
><N1000							
N100	G00	X300	Y300	S250			
N101	G56			Z-55	M09	M03	
N103	G41G01	X400	Y200	F100	D11		
N104	G03	X500	Y300	I0	J100		
N105		X100	Y300	I-200	J0		
N106		X200	Y200	I100	J0		
N107	G01	X400					
N108	G40	X300	Y200				
N109	G00			Z100			
N110							
N111							
=E WHEEL100.MIN							
file end							
>							
LINE INSERT	LINE DELETE	CHAR. INSERT	CHAR. DELETE	DELETE	LINE ERASE	EDIT QUIT	[EXTEND]
F1	F2	F3	F4	F5	F6	F7	F8

5-14-4. File Edit Starting Processing

If the first data block of a file, selected for editing, is the "in-editing" symbol (see 5-14-1), the message of "under repair of error file." is displayed.

If the file includes the "not-guaranteed area" symbol (see 5-14-3), the screen where the "not-guaranteed area" symbol is included is displayed.

Example: File not including the "not-guaranteed area" symbol

PROG OPERATION		EDIT		P MODE		WHEEL100.MIN	
						97/07/15 14:10:00	
>>[N] 000							
N100	G00	X300	Y300	S250			
N101	G56			Z-55	M09	M03	
N103	G41G01	X400	Y200	F100	D11		
N104	G03	X500	Y300	I0	J100		
N105		X100	Y300	I-200	J0		
N106		X200	Y200	I100	J0		
N107	G01	X400					
N108	G40	X300	Y200				
N109	G00			Z100			
N110							
N111							
=E A.MIN under repair of error file. Please file maintenance. >							
LINE INSERT	LINE DELETE	CHAR. INSERT	CHAR. DELETE	DELETE	LINE ERASE	EDIT QUIT	[EXTEND]
F1	F2	F3	F4	F5	F6	F7	F8

Example: File including the "not-guaranteed area" symbol

PROG OPERATION		EDIT		P MODE		WHEEL100.MIN	
						97/07/15 14:10:00	
>>[N] 000							
N100	G00	X300	Y300	S250			
N101	G56			Z-55	M09	M03	
N103	G41G01	X400	Y200	F100	D11		
N104	G03	X500	Y300	I0	J100		
N105		X100	Y300	I-200	J0		
N106		X200	Y200	I100	J0		
N107	G01	X400					
N108	G40	X300	Y200				
N109	G00			Z100			
N110							
N111							
=E A.MIN under repair of error file. Please edit because abort editing in the page. >							
LINE INSERT	LINE DELETE	CHAR. INSERT	CHAR. DELETE	DELETE	LINE ERASE	EDIT QUIT	[EXTEND]
F1	F2	F3	F4	F5	F6	F7	F8