6 INPUT AND OUTPUT OF DATA

After you change a SRAM module, you must set various data again.
This chapter describes the procedures to input and output the parameters,
the part programs and the tool offset values.

6.1
SETTING
PARAMETERS
FOR INPUT/OUTPUT

● **Setting procedure of parameters**

Parameter writing is enabled with following steps 1 to 3.

1. Set to MDI mode or emergency stop state.

2. Press $\boxed{\text{OFFSET SETTING}}$ key several times or press soft key **[SETING]** to display **SETTING (HANDY)** screen.

3. Set the cursor to **PARAMETER WRITE** and, press $\boxed{1}$ and $\boxed{\text{INPUT}}$ keys in this order. Here alarm 100 will be displayed.

4. Press $\boxed{\text{SYSTEM}}$ key several times to display the following screen.

```
 PARAMETER (SETTING)           O1234N12345
 0000          SEQ             INI  ISO  TVC
         0    0    0    0    0    0    0    0
 0001                               FCV

         0    0    0    0    0    0    0    0
 0012  RMV               MIR
    X  0    0    0    0    0    0    0    0
    Y  0    0    0    0    0    0    0    0
    Z  0    0    0    0    0    0    0    0
    B  0    0    0    0    0    0    0    0
 0020 I/O  CHANNEL
                               S    0 T0000


 REF **** *** ***          10:15:30
 [ F SRH ][ READ  ][      ][DELETE ][      ]
```

To make the cursor display in bit unit,
press the cursor key $\boxed{\Leftarrow}$ or $\boxed{\Rightarrow}$.

5. Press soft key**[(OPRT)]** and the following operation menu is displayed.

   1) Soft key **[NO. SRH]** : Searched by number.
      Examination) Parameter number → **[NO. SRH]**.

   2) Soft key **[ON : 1]** : Item with cursor position is set to 1 (bit parameter)

   3) Soft key **[OFF : 0]** : Item with cursor position is set to 0 (bit parameter)

   4) Soft key **[+INPUT]** : Input value is added to the value at cursor (word type)

   5) Soft key **[INPUT]** : Input value is replaced with the value at cursor (word type)

   6) Soft key **[READ]** : Parameters are input from reader/puncher interface.

   7) Soft key **[PUNCH]** : Parameters are output to reader/puncher interface.
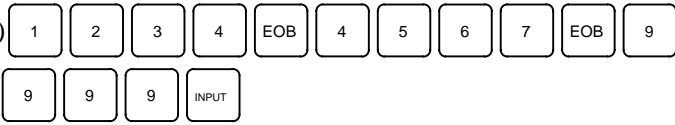
6. After the parameters have been input, set PARAMETER WRITE on the SETTING screen to 0. Press [RESET] to release alram 100.
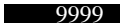
7. Convenient method

   1) To change parameters in bit unit, press cursor key [←] or [→], then the cursor becomes bit length and you can set parameters bit by bit (Bit parameter only).
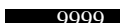
   2) To set data consecutively, use [EOB] key.

   (Ex.1) [1] [2] [3] [4] [EOB] [4] [5] [6] [7] [EOB] [9] [9] [9] [9] [INPUT]

   This key sequence sets data as follows:

   ```
        0              1234
        0       ⇒      4567
        0              9999
        0                0
   ```

   (Ex.2) [1] [2] [3] [4] [EOB] [EOB] [9] [9] [9] [9] [INPUT]
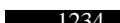
   This key sequence sets data as follows:

   ```
        0              1234
        0       ⇒        0
        0              9999
        0                0
   ```
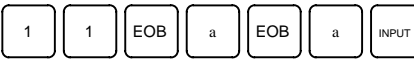
   3) To set the same data sequentially, press [=].

   (Ex.) [1] [2] [3] [4] [EOB] [a] [EOB] [a] [INPUT]

   This key sequence sets data as follows:

   ```
        0              1234
        0       ⇒      1234
        0              1234
        0                0
   ```

   4) Bit parameters can be set as follows:

   (Ex.) [1] [1] [EOB] [a] [EOB] [a] [INPUT]

   This key sequence sets data as follows:

   ```
   0 0 0 0 0 0 0 0        0 0 0 1 1 0 0 0
   0 0 0 0 0 0 0 0   ⇒    0 0 0 1 1 0 0 0
   0 0 0 0 0 0 0 0        0 0 0 1 1 0 0 0
   0 0 0 0 0 0 0 0        0 0 0 0 0 0 0 0
   ```

8. After the required parameters are set, set **PARAMETER WRITE** to 0.

6.2
INPUTTING/
OUTPUTTING
DATA

The main CPU memorized the following data.
Outputting the data 1/O device while the CNC is rurnning normally

(1) CNC paramter

(2) PMC parameter

(3) Pitch error compensation amount

(4) Custom macro variable values

(5) Tool compensation amount

(6) Part program (machining program, custom macro program)

6.2.1
Confirming the
Parameters Required for
Data Output

Be sure that data output cannot be done in an alarm status.
Parameters required for output are as follows :
In addition, ☆ indicates the standard setting for input/output devices made by FANUC. Change these settings according to the unit you actually use.
(Parameter can be changed in MDI mode or emergency stop status.)

	#7	#6	#5	#4	#3	#2	#1	#0
0000							ISO	

#1 (ISO) 0 : Output with EIA code

1 : Output with ISO code (FANUC cassette)

0020	Selection of I/O channel

☆ 0 : Channel 1 (JD36A of mother board)

1 : Channel 1 (JD36A of mother board)

2 : Channel 2 (JD36B of mother board)

3 : Channel 3 (JD38A of serial communication board)

4 : Memory card interface

> **NOTE**
> An operation example shown here assumes that data input/output is performed with an input/output unit connected to the JD36A. (I/O channel = 0)

	#7	#6	#5	#4	#3	#2	#1	#0
0101	NFD				ASI			SB2

#7 (NFD) 0 : Feed is output when data is output.

1 : Feed is not output when data is output.

#3 (ASI) ☆ 0 : EIA or ISO code is used for input/output data.

1 : ASCII code is used.

#0 (SB2) 0 : No. of stop bits is 1.

☆ 1 : No. of stop bits is 2.

0102		pecification number of input/output device

Set value	Input/output device
0	RS–232–C (Used control codes DC1 to DC4)
1	FANUC CASSETTE ADAPTOR 1 (FANUC CASSETTE B1/ B2)
2	FANUC CASSETTE ADAPTOR 3 (FANUC CASSETTE F1)
3	FANUC PROGRAM FILE Mate, FANUC FA Card Adaptor FANUC FLOPPY CASSETTE ADAPTOR, FANUC Handy File FANUC SYSTEM P-MODEL H
4	RS–232–C (Not used control codes DC1 to DC4)
5	Portable tape reader
6	FANUC PPR FANUC SYSTEM P-MODEL G, FANUC SYSTEM P-MODEL H

0103		Baud Rate

1:	50	5:	200	9:	2400
2:	100	6:	300	☆10:	4800
3:	110	7:	600	11:	9600
4:	150	8:	1200	12:	19200 [BPS]

6.2.2
Outputting CNC Parameters

In case of PPR, steps 2 and 3 are not required.

1. Enter **EDIT** mode or the emergency stop condition.

2. PROG Press PROG key and soft key **PRGRM** to select a program text.

3. Press soft key **[(OPRT)]** and soft key ▷.

   And then, put out the head of file by pressing **[FSRH]** 0 **[EXEC]**.

4. Press SYSTEM key and soft key **[PARAM]** to display parameter screen.

5. Press soft key **[(OPRT)]** ,and soft key ▷.

6. Press soft key **[PUNCH]** and **[EXEC]**,and the parameters are started to be output.

6.2.3
Outputting PMC Parameters

1. Select MDI mode.

2. Press ⌈OFFSET/SETTING⌋ key then soft key **[SETTING]** to select a setting screen.

3. Set the cursor to **PARAMETER WRITE** and input ⌈1⌋ and ⌈INPUT⌋.
   At this time, alarm 100 will be generated.

4. Press ⌈SYSTEM⌋ key and soft key **[PMC]**.

5. Press soft key **[PMCPRM]** and soft key **[KEEPRL]**

6. Set the cursor to K17 and set the first bit to 1.

   ⌈X⌋ ⌈X⌋ ⌈X⌋ ⌈X⌋ ⌈X⌋ ⌈X⌋ ⌈1⌋ ⌈X⌋ ⌈INPUT⌋

   Where, mark x is a former value

   Thus, data input/output screen has been selected.

7. Select EDIT mode.

8. Press soft key ⌈◁⌋ then key ⌈▷⌋.

9. Press soft key **[I/O]** and set the parameters on I/O.
   Item selection cursor moves to the following item after data of an item is set.

10. In CHANNEL NO item, input ⌈1⌋ ⌈INPUT⌋ to select I/O channel 1.

11. In DEVICE item, press soft key **[FDCAS]** to select the floppy cassette.

12. In KIND DATA item, press soft key **[PARAM]**.

13. In FUNCTION item, press soft key **[WRITE]**.

14. In FILE No item, specify a file name. In this example input as follows:

    ⌈@⌋ ⌈P⌋ ⌈M⌋ ⌈C⌋ ⌈INPUT⌋

15. Press soft key **[EXEC]**. Then PMC parameters are started to be output.

16. After the PMC parameters have been output, set PARAMETER WRITE to 0.

17. Press ⌈RESET⌋ to release alarm 100.

6.2.4
Outputting Pitch Error Compensation Amount

1. Select EDIT mode.

2. Press ⌈SYSTEM⌋ key several times, press soft key **[PARAM]**, ⌈▷⌋ and **[PITCH]** to select the SETTING screen for pitch error amount.

3. Press soft key **[(OPRT)]** and ⌈▷⌋.

4. Press soft key **[PUNCH]** and **[EXEC]**, then pitch error compensation amount is started to be output.

6.2.5
Outputting Custom Macro Variable Values

When custom macro function is equipped, values of variable no. 500 and later are output.

1. Press [OFFSET SETTING] key.

2. Press [▷] key and soft key **[MACRO]** to select custom macro variable screen.

3. Press soft key **[(OPRT)]** and then key [▷].

4. Press soft key **[PUNCH]** and **[EXEC]**, then custom macro variable values are output.

6.2.6
Outputting Tool Compensation Amount

1. Select EDIT mode.

2. Press [OFFSET SETTING] key and soft key **[OFFSET]** to display the tool compensation amount screen.

3. Press **[(OPRT)]** key and soft key [▷].

4. Press soft key **[PUNCH]** an **[EXEC]** key, and the tool compensation amount is started to be output.

6.2.7
Outputting Part Program

1. Confirm the following parameters. If this parameter is set to 1, rather than the value indicated by ☆, change to MDI mode and then reset to 0. However, if you changed the parameter setting, restore the original value after finishing this work.

	#7	#6	#5	#4	#3	#2	#1	#0
3202				NE9				NE8

#4 (NE9) ☆ 0 : Programs of 9000s are edited.

1 : Programs of 9000s can be protected.

#0 (NE8) ☆ 0 : Programs of 8000s are edited.

1 : Programs of 8000s can be protected.

2. Select EDIT mode.

3. Press [PROG] key and press soft key **[PRGRM]** to display program text.

4. Press **[(OPRT)]** key and press soft key [▷].

5. Input a program number to be output. To output all programs input as:

    [O] [–] [9] [9] [9] [9]

6. Press **[PUNCH]** and **[EXEC]** key, then program output is started.

6.2.8
Inputting CNC Parameters

1. Set to the emergency stop state.

2. Confirm that the patameters required to input data is correct.
In addition, ☆ indicates the standard setting for input/output devices made by FANUC. Change these settings according to the unit you actually use.

1) Press $\boxed{\substack{\text{OFFSET}\\\text{SETTING}}}$ key several times, and press **[SETING]** to display SETTING screen.

2) Confirm that PARAMETER WRITE=1.

3) Press $\boxed{\text{SYSTEM}}$ key to select the parameter screen.

4)

0020	Selection of I/O channel

   ☆ 0 : Channel 1 (JD36A of mother board)

       1 : Channel 1   (JD36A of mother board)

       2 : Channel 2   (JD36B of mother board)

       3 : Channel 3   (JD38A of serial communication board)

       4 : Memory card interface

5)

	#7	#6	#5	#4	#3	#2	#1	#0
0101	NFD				ASI			SB2

  #7 (NFD) 0 : Feed is output when punching out.

               1 : Feed is not output when punching out.

  #3 (ASI) 0 : EIA or ISO code is used.

               1 : ASCII code is used.

  #0 (SB2) 0 : No. of stop bits is 1.

     ☆ 1 : No. of stop bits is 2.

6)

0102	Specification number of I/O device

| Set value	Input/output device
0	RS–232–C (Used control codes DC1 to DC4)
1	FANUC CASSETTE ADAPTOR 1 (FANUC CASSETTE B1/ B2)
2	FANUC CASSETTE ADAPTOR 3 (FANUC CASSETTE F1)
3	FANUC PROGRAM FILE Mate, FANUC FA Card Adaptor FANUC FLOPPY CASSETTE ADAPTOR, FANUC Handy File FANUC SYSTEM P-MODEL H
4	RS–232–C (Not used control codes DC1 to DC4)
5	Portable tape reader
6	FANUC PPR FANUC SYSTEM P-MODEL G, FANUC SYSTEM P-MODEL H

7)

0103	Baud rate

1:	50	5:	200	9:	2400
2:	100	6:	300	☆10:	4800
3:	110	7:	600	11:	9600
4:	150	8:	1200	12:	19200 [BPS]

3. Press soft key **[(OPRT)]** and soft key ▷

4. Press soft key **[READ]** and **[EXEC]**. Then input of parameters are started.

5. Because alarm 300 will generate for the system with absolute pulse coder, set parameter 1815#5 to 0.

6. Alarm 300 is issued if the system employs an absolute pulse coder. In such a case, perform reference position return again.

6.2.9
Inputting PMC Parameters

Set the emergency stop state.
Operation of 12 is not required when PPR is used.

1. Turn off (KEY4=1) the program protect key.

2. Press OFFSET SETTING key and soft key **[SETTING]** to select the SETTING screen.

3. Confirm that PARAMETER WRITE=1.

4. Press SYSTEM key and soft key **[PMC]**.

5. Press soft key **[PMCPRM]** and soft key **[KEEPRL]**.

6. Set the cursor to K17 and set bit 1 to 1.
   0 0 0 0 0 0 1 0 INPUT .

7. Press ◁ key and ▷ key.

8. Press soft key **[I/O]** and set the parameters required for I/O.
   Item selection cursor displays the next item after an item is set.

9. In CHANNEL item , press 1 INPUT to select channel 1.

10. In DEVICE item, press **[FDCAS]** key to select the floppy cassette.

11. In FUNCTION item, press soft key **[READ]** to input data

12. In FILE NO item, press 2 INPUT to select file no. 2.

13. Press soft key **[EXECT]** and the PMC parameters are started to be input.

14. After data has been read, turn off power and turn it on.

6.2.10
Inputting Pitch Error Compensation Amount

1. Release the emergency stop and select EDIT mode.

2. Confirm that PARAMETER WRITE=1 on the setting screen.

3. Press |PROG| key and soft key **[PRGRM]** to display program contents.

4. Press soft key **[(OPRT)]**, ▷ , **[F SRH]**, and | 3 | **[EXEC]** to select the pitch error compensation file.

5. Press |SYSTEM| key several times, soft key **[PARAM]**, ▷ and **[PITCH]** to select the screen for pitch error compensation amount.

6. Press soft key **[(OPRT)]** and ▷ key.

7. Press soft key **[READ]** and **[EXEC]**, then the pitch error compensation amount is started to be input.

8. After data has been input, press |OFFSET SETTING| key twice to display the SETTING screen and return the PARAMETER WRITE to 0.

6.2.11
Inputting Custom Macro Variable Values

If the system is equipped with the custom macro fucntion, input the variable values.
For PPR, item 4 is not required.

1. Confirm that EDIT mode is selected.

2. Turn off the program protect key (KEY2=1).

3. Press |PROG| key then soft key **[PRGRM]** to display program contents.

4. Press soft key **[(OPRT)]**, ▷ , **[F SRH]**, and | 4 | **[EXEC]** to select a file.

5. Press soft key **[(OPRT)]** and key ▷ .

6. Press address | O | , a program number (0001 for example), soft key **[READ]** and **[EXEC]** key, then custom macro variable values are started to be input.
Input a program number that is not used.

7. Select MEMORY mode on the machine operator's panel and press cycle start button.
When the program is executed, macro variables are set.

8. Press |OFFSET SETTING| key, ▷ key and soft key **[MACRO]** to select the custom macro variable screen.

9. Press 500 and soft key **[NO SRH]** to display variable number 500 and confirm the custom macro variables are set correctly.
Of the data displayed, 0 and vacant differ in meaning.
Vacant is an undefined variable. To set vacant, press soft key **[INPUT]**.

10. Select EDIT mode again.

11. Press |PROG| key to select the program display screen.

12. Press address O and a program number (0001 for example) ,then press |DELETE| to delete the program.

6.2.12
Inputting Tool Compensation Amount

Item 4 is not required for PPR.

1. Select the EDIT mode.
2. Turn off the program protect (KEY=1).
3. Press |PROG| key, and press soft key **[PRGRM]** to display the program contents screen.
4. Press soft key **[(OPRT)]**, |▷|, **[F SRH]**, and | 5 | **[EXEC]** to select the tool compensation amount file.
5. Press |OFFSET SETTING| key, and soft key **[OFFSET]** to display the tool compensation amount screen.
6. Press soft key **[(OPRT)]** and |▷| key.
7. Press **[READ]** key and **[EXEC]** key and data input is started.

6.2.13
Inputting Part Programs

Confirm the following parameters. If the setting is different from the value indicated by ☆, reset to the specified value only during this work. (Change it in MDI mode).

	#7	#6	#5	#4	#3	#2	#1	#0
3201		NPE					RAL	

#6 (NPE) When programs are registered in part program storage area, M02,M30 and M99 are:

0 : regarded as the end of program.

☆ 1 : not regarded as the end of porgram.

#1 (RAL) When programs are registered:

☆ 0 : All programs are registered.

1 : Only one program is registered.

	#7	#6	#5	#4	#3	#2	#1	#0
3202				NE9				NE8

#4 (NE9)

☆ 0 : Programs of 9000s can be edited.

1 : Programs of 9000s are protected.

#0 (NE8)

☆ 0 : Programs of 8000s can be edited.

1 : Programs of 8000s are protected.

For PPR, item 4 is not required.

1. Confirm that mode is EDIT mode.

2. Turn off the program protect (KEY3=1).

3. Press |PROG| key and press soft key **[PRGRM]** to select a part program file.

4. Press soft key **[(OPRT)]**, ▷ **[F SRH]**, and 6 **[EXEC]** to select a part program file.

5. Press soft ◁ key ,**[(OPRT)]** and ▷ key.

6. Press soft key **[READ]** and **[EXEC]**, then data input is started.

6.3
INPUT/OUTPUT
Super CAP*i* DATA

6.3.1
Input/Output of Conversational Data in a Lump(Super CAP*i* M)

The following operation allows all the data used for Super CAP*i* M to be input and output in a lump.

1. Confirm the parameters shown below:
   P0020: I/O CHANNEL (select I/O device) : 0
   P0102: I/O device number   : 3
   P0103: Baud rate   for 4800 bauds : 10
                             for 9600 bauds : 11

2. Select EDIT mode.

3. Press function key $\boxed{\text{PROG}}$ and press soft key **[CAP]**.

4. Press soft key **[8]** (C.A.P DATA) on the basic menu screen.Serial 16*i* Conversational Data Screen

```
┌─────────────────────────────────────────────────────────────────┐
│  C.A.P. DATA                                                      │
│                                                                   │
│  ┌──────┐                          ┌──────┐   SET DATA OF PRE–    │
│  │ DATA │  INPUT OR OUTPUT OF DATA │ PRE– │── TOOLS BEFORE C.A.P. │
│  │ I/O  │                          │ TOOL │   PROGRAMMING         │
│  └──────┘                          └──────┘                       │
│                                                                   │
│                                    ┌──────┐   DISPLAY AND SET     │
│                                    │ TOOL │── VARIOUS DATA OF      │
│                                    │ FILE │   TOOLS REGISTERED     │
│                                    └──────┘                       │
│                                                                   │
│                                    ┌──────┐   DISPLAY THE DIREC-  │
│                                    │ TOOL │── TORY OF TOOLS IN     │
│                                    │DRCTRY│   TOOL FILE           │
│                                    └──────┘                       │
│  ┌──────┐                          ┌──────┐   DISPLAY THE DIREC-  │
│  │ DEF. │  DISPLAY DEFAULT DATA    │DIVIDE│── TORY OF DIVIDE       │
│  │ FILE │                          │TOLDIR│   TOOLS IN TOOL FILE   │
│  └──────┘                          └──────┘                       │
│  ┌──────┐  DISPLAY A LIST OF TOOL  ┌──────┐   DISPLAY AND SET     │
│  │ TOOL │  USED                    │ F.S. │── DATA OF CUTTING      │
│  │ USED │  SET T–ORDER FOR T–OR-   │ FILE │   CONDITION           │
│  └──────┘  DER CHANGE              └──────┘                       │
│  SELECT FROM SOFT KEY                                             │
│                                                                   │
│ ┌─┬─────┬───┬───┬─────┬─────┬─────┬─────┬─────┬──────┬─────┬───┐  │
│ │<│DATA │   │   │DEF. │TOOL │PRE– │TOOL │TOOL │DIVIDE│F.S. │   │  │
│ │ │I/O  │   │   │FILE │USED │TOOL │FILE │DRCTRY│TOLDIR│FILE │   │  │
│ └─┴─────┴───┴───┴─────┴─────┴─────┴─────┴─────┴──────┴─────┴───┘  │
└─────────────────────────────────────────────────────────────────┘
```

5. Press soft key **[DATA I/O]**.

Series16*i* Conversational Data Screen

```
┌─────────────────────────────────────────────────────────┐
│ DATA I/O                                                  │
│                                                           │
│  ┌─────────────────┐      ┌────────┐  DATA I/O PARA GUIDE │
│  │ ·   READ        │      │ READ   │    I/O CHANNEL    =0  │
│  │                 │      │ EXEC   │    I/O DEVICE NO. =3  │
│  │ ·   PUNCH       │      └────────┘                      │
│  └─────────────────┘           OR                         │
│                                                           │
│  ┌─────────────────┐      ┌────────┐                      │
│  │ ·  ALL CAP DATA │      │ PUNCH  │                      │
│  │ ·  DEFAULT DATA │      │ EXEC   │                      │
│  │ ·  PRE–TOOL LIST│      └────────┘                      │
│  │ ·  TOOL FILE    │                                      │
│  │ ·  CUT COND FILE│                                      │
│  └─────────────────┘                                      │
│                                                           │
│  SELECT FROM SOFT–KEY                                     │
│                                                           │
│ <│FLOPPY│READ│PUNCH│    │    ││ALL │DEF.│PRE–│TOOL│F.S. │ │
│  │DIR   │    │     │    │    ││DATA│FILE│TOOL│FILE│FILE │ │
└─────────────────────────────────────────────────────────┘
```
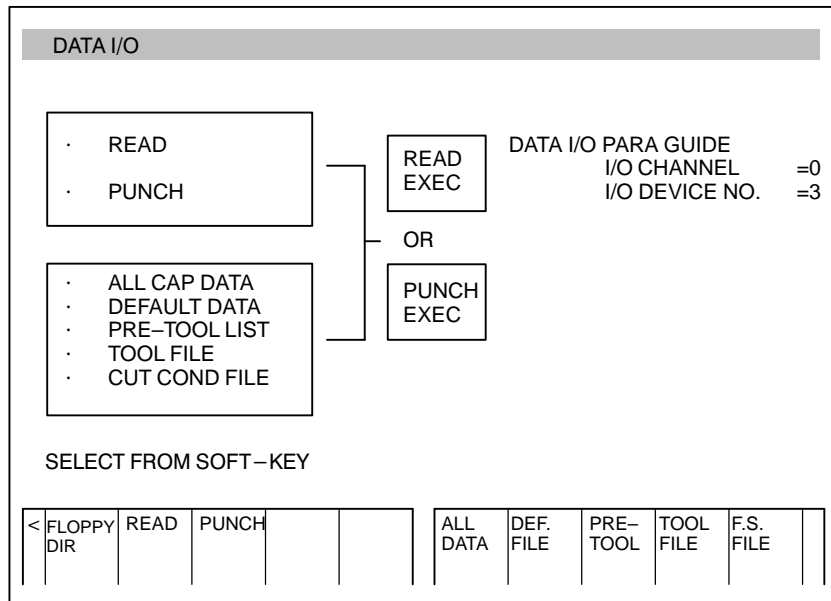
6. Press soft key [READ] or [PUNCH].

7. Press soft key **[ALL DATA]**.

8. For read, input a file no. and press soft key **[READ EXEC]**.(Specify a file no. for all data).

```
│ READ FILE NO. =                                  >        │
│<│FLOPPY│    │PUNCH│READ │   ││ALL │DEF.│PRE–│TOOL│F.S. │ │
│ │DIR   │    │     │EXEC │   ││DATA│FILE│TOOL│FILE│FILE │ │
```
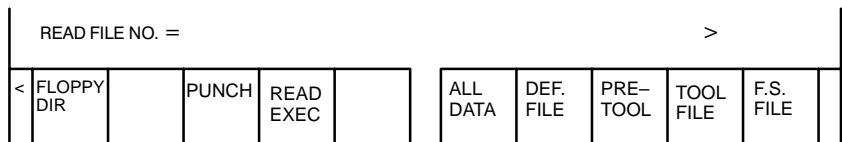
  ·For punch, press soft key [PUNCH EXEC].

```
│ SELECT FROM SOFT KEYS                                     │
│<│FLOPPY│READ│    │PUNCH│   ││ALL │DEF.│PRE–│TOOL│F.S. │  │
│ │DIR   │    │    │EXEC │   ││DATA│FILE│TOOL│FILE│FILE │  │
```
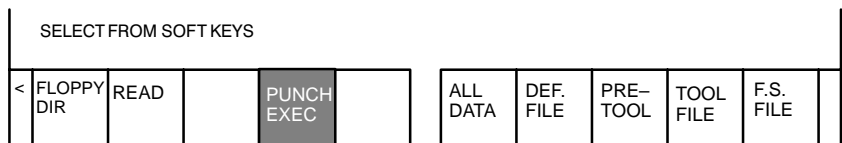
The above operation reads and punches default data, pre–tool list, tool file and F.S. file in a lump.

6.3.2
Input and Output of Each File (Super CAP*i* M)

You can input and output files individually.

Execute the same operations from step **1** to **6** in the previous section 3.3.1.

(1) Reading or Punching default files

    7 Press **[DEF. FILE]**.

    8 · For reading, input a file no. for default data and press soft key **[READ EXEC]**. (Specify a file number of default file).

       · For punching, press **[PUNCH EXEC]**.

(2) Reading or punching pre–tool list

    7 Press PRE–TOOL.

    8 · For reading, press a file number and soft key **[READ EXEC]**. (Specify a file number of pre–tool list).

       · For punching, press soft key **[PUNCH EXEC]**.

(3) Reading or Punching tool file

    7 Press TOOL FILE.

    8 · For reading, press a file number and pres soft key **[READ EXEC]**. (Specify file number of tool file).

       · For punching, press **[PUNCH EXEC]**.

(4) Reading or Punching F, S file

    7 Press F.S. FILE.

    8 · For reading, press a file no. and press soft key **[READ EXEC]**.(Specify a file no. of F.S. FILE).

       · For punching, press **[PUNCH EXEC]**.

6.3.3
Input and Output of Each File (Super CAP*i* T)

Files can be read and punched individually.

Output of conversational machining programs

Conversational machining programs can be output and saved to an external memory unit via a reader/punch interface.

Conversational machining programs can also be saved to a memory card by setting bit 7 (IO4) of parameter No. 27000 to 1.

After switching to EDIT mode, display the registered program list screen for editing. Enter the number of the machining program to be output using numeric keys, or position the cursor to the program number then press **[PUNCH]**. The following soft keys used to confirm operation are displayed.

```
PROGRAM NO.   =  1234        →SFTKY

INITAL SET    FC25      BAR
PROC(01)      BAR       OUTER END  HEAD–L   ROUGH      T0505
PROC(02)      BAR       OUTER END  HEAD–L   FIN        T0505
PROC(03)      TRANS
PROC(04)      BAR       OUTER END  HEAD–R   ROUGH      T0505
PROC(05)      BAR       OUTER END  HEAD–R   FIN        T0505

<      CAN-  EXE
       CEL   C
```

When **[EXEC]** is pressed, punch–out of the specified program starts.

When **[CANCEL]** is pressed, punch–out operation is canceled and the previous state is restored.

To output all the machining programs, specify –9999 for the program number.

When the output device is the FANUC cassette adapter, a new file is created immediately after the existing files.

Upon the start of outputting machining programs, **"OUTPUTTING"** blinks at the bottom of the screen, until the output operation ends.

NOTE

1 Only a machining program created with the conversational input function can be output by applying the above procedure.
  A machining program created using the NC program screen cannot be output by applying the above procedure.

2 When a machining program is output to a memory card, the file name is CAPO****.DAT (with **** representing a specified program number). If the program number –9999 is specified, the file name is CAPALLPR.DAT.

3 When an attempt is made to output a machining program to a memory card, and a file with the same name is already present, the machining program is overwritten to the file.

4 When an attempt is made to output a machining program to a flash ROM card, and a file with the same name is already present, the machining program cannot be written to the card.

Input of conversational machining programs

The machining program punched out by applying the procedure described on the previous page can be read into the NC via a reader/punch interface. A machining program can also be read from the memory card by setting bit 7 (IO4) of parameter No. 27000. (Note, however, that only those files that are output to the memory card according to the procedure described above can be read.)

At this time, be sure to release the memory protect switch on the machine operator's panel.

Before attempting to read a program, release the memory protect switch on the machine operator's panel.

After switching to EDIT mode, display the registered program list screen for editing, then press **[READ]**. The following message prompting the user to input the file number is displayed, as well as the soft keys used to confirm operation.

```
PROGRAM NO.    = [      ]        →SFTKY
_____

INITAL SET    FC25       BAR
PROC(01)      BAR        OUTER END  [HEAD–L]  ROUGH     T0505
PROC(02)      BAR        OUTER END  [HEAD–L]  FIN       T0505
PROC(03)      TRANS
PROC(04)      BAR        OUTER END  [HEAD–R]  ROUGH     T0505
PROC(05)      BAR        OUTER END  [HEAD–R]  FIN       T0505
```

<		CAN-CEL	EXE C							

Enter the number of the file containing the machining program to be input, using numeric keys, then press **[EXEC]**. Reading of the machining program starts. When the input device is FANUC PPR, press **[EXEC]** without inputting a file number.

When **[CANCEL]** is pressed, read operation is canceled and the previous state is restored.

Upon the start of inputting machining programs, **"INPUTTING"** blinks at the bottom of the screen, until the input operation ends.

NOTE
Only a machining program created with the conversational input function can be input by applying the above procedure.
A machining program created using the NC program screen cannot be input by applying the above procedure.

Output of conversational tool setting data

The tool data file, cutting condition data, surface roughness data, pre–tool list, and chuck/tailstock figure data can be punched out to an external I/O device.

(1) Connect an external I/O device and set necessary parameters, such as device selection.

(2) Select EDIT mode.

(3) Display the tool data menu screen, then press [+]. The following soft keys appear. Press **[PUNCH]**.

<		10	11					READ	PUN CH			CLEA R	\

> **NOTE**
> 1 When data is output to a memory card, the file name is CAPTOOL.DAT.
> 2 When an attempt is made to output data to a memory card, and a file with the same name is already present, the data is overwritten to the file.
> 3 When an attempt is made to output data to a flash ROM card, and a file with the same name is already present, the data cannot be written to the card.

Input of conversational tool setting data

The setting data punched out in the previous section can be read.

(1) Connect an external I/O device and set necessary parameters, such as device selection.

(2) Set **"PARAMETER WRITE"** in the setting data to 1.

(3) When the FANUC cassette adapter is used, set the file number for parameter No. 9887 (TLFLNO).

(4) Display the tool data menu screen and place the system in the emergency stop state.

(5) Press **[READ]**.

Clearing of conversational tool setting data

The tool data file, cutting condition data, surface roughness data, pre–tool list, and chuck/tailstock figure data can be cleared.

(1) Set **"PARAMETER WRITE"** in the setting data to 1.

(2) Display the tool data menu screen. After switching to EDIT mode, place the system in the emergency stop state.

(3) Press **[CLEAR]**.

6.4
INPUTTING/
OUTPUTTING Symbol
CAP*i* T

INITIAL SCREEN

```
Symbolic
FAPT TURN
```

PRESS [FAMILY PROGRAM]

PRESS [DATA SET] KEY

FAMILY PROGRAM

1. FAMILY PROGRAM OUTPUT
2. FAMILY PROGRAM INPUT

PARAMETER & DATA SET

1. SYSTEM DATA SETTING
2. SETTING DATA CORRECTION
3. MATERIAL DATA CORRECTION

| 4 or 5 | INPUT |

| 1 | INPUT |

(REFER TO TABLE 1)   (REFER TO TABLE 2)

SYSTEM DATA SETTING & OUTPUT/INPUT

1. SYSTEM PARAMETER SETTING
2. SYSTEM PARAMETER OUTPUT
3. SYSTEM PARAMETER INPUT

(REFER TO TABLE 3)

[TABLE 1] Input/Output of Family Program

I/O	Item	Operation on I/O device	Remarks
Input	Family program	2, n [INPUT]	n=P⇒FANUC PPR
	Sub cycle	5, n [INPUT]	n=B⇒FANUC Cassette n=C⇒Sub Memory
Output	Family program	1, n [INPUT]	*When n is omitted, parameter
	Sub cycle	4, n [INPUT]	no. 15 becomes valid.

[TABLE 2] Input/Output of Material Data

I/O	Item	Operation on I/O device	Remarks
Input	Material data	5, n [INPUT]	n=P⇒FANUC PPR
	Tooling information	8, n [INPUT]	n=B⇒FANUC Cassette n=C⇒Sub Memory
Output	Material data	4, n [INPUT]	*When n is omitted, parameter
	Tooling information	7, n [INPUT]	no. 15 becomes valid.

[Table 3] Input/Output of system parameters and other data.

I/O	Item	Operation on I/O device	Remarks
Input/ **Read**	System parameter	3, n [INPUT]	1[INPUT]⇒[SAVE END]
	MTF	7, n [INPUT]	5[INPUT]⇒[SAVE END]
	Tool data	11, n [INPUT]	9[INPUT]⇒[SAVE END]
	Setting	14, n [INPUT]	
	Graphic data	16, n [INPUT]	**n=P⇒FANUC PPR** n=B⇒FANUC Cassette
Out- put/ Regis- tera- tion	System parameter	2, n [INPUT]	
	MTF	6, n [INPUT]	
	Tool data	10, n [INPUT]	
	Setting	13, n [INPUT]	
	Graphic data	15, n [INPUT]	
Colla- tion	System parameter	4, n [INPUT]	
	MTF	8, n [INPUT]	
	Tool data	12, n [INPUT]	

6.5
DUMP/RESTORE OF Symbol CAP*i* T DATA

Symbol CAP*i* T data is stored in the sub–memory (SRAM) on the symbol CAP*i* T board. When replacing the symbol CAP*i* T board, perform data input/output operation according to this section.

6.5.1
Kind of Data in Sub Memory

1. System parameter (FAPT–SYS. PARAM.)
2. MTF (FAPT–MTF)
3. Setting data (FAPT–SETTING)
4. Tool data (FAPT–TOOL)
5. Graphic data (FAPT–GRAPHIC)
6. Files
   - Family program   (FAPT–FAMILY)
   - Material file   (FAPT–MATERIAL)
   - Tooling information   (FAPT–TOOL)
   - Sub cycle file   (FAPT–SUB. CYCLE)

6.5.2
Operation

● **Outputting data (Dump)**

1. Display the screen of Symbolic FAPT TURN.
2. To output data on FANUC Cassette, press keys as follows:

   [AUXILIARY]⇒ D U M P , B INPUT

        Be careful that data is memorized from top of the file.

   To output data on FANUC PPR, press keys as follows:

   [AUXILIARY]⇒ D U M P , P INPUT

● **Inputting data (Restore)**

1. Hold SP key and turn on power.
2. To input data from FANUC Cassette, press keys as follows :

   [AUXILIARY]⇒ R S T R , B INPUT

   To input data from FANUC PPR, press keys as follows :

   [AUXILIARY]⇒ R S T R , P INPUT

3. Turn off the power once.

6.6
CLEARING Symbol
CAP*i* T DATA

6.6.1
Deleting File Name and Files

Symbolic FAPT TURN (Initial screen)

Press [Family program] key

Press [DATA SET] key

"Family program" menu screen

"PARAMETER & DATASET" menu key

Press [FILE NAME] key

File name list stored in submemory

Not only file names of family programs, but also file names and sub cycle files are displayed.

Delete a file ?

No

Yes

Meet the cursor to a no. to be deleted using [CURSOR⇓] or [CURSOR⇑] key

Press [END]

DEL EOB , INPUT

YES(Delete)

Delete really ?

NO(Not delete)

1 , INPUT

0 , INPUT

6.6.2
Clearing Symbol
CAP*i* T Memory

Press $\boxed{\text{SP}}$ while turning on power.

6.7
DATA INPUT/OUTPUT ON THE ALL IO SCREEN

To input/output a particular type of data, the corresponding screen is usually selected. For example, the parameter screen is used for parameter input from or output to an external input/output unit, while the program screen is used for program input or output. However, programs, parameters, offset data, and macro variables can all be input and output using a single common screen, that is, the ALL IO screen.

```
READ/PUNCH (PROGRAM)                    O1234 N12345

I/O CHANNEL            3        TV CHECK            OFF
DEVICE NUM.            0        PUNCH CODE          ISO
BAUDRATE            4800        INPUT CODE         ASCII
STOP BIT              2         FEED OUTPUT         FEED
NULL INPUT (EIA)      NO        EOB OUTPUT (ISO)    CR
TV CHECK (NOTES)      ON        BAUDRATE CLK.     INNER
CD CHECK (232C)      OFF        RESET/ALARM         ON
PARITY BIT           OFF        SAT COMMAND        HOST
INTERFACE          RS422        COM PROTCOL          A
END CODE             EXT        COM CODE          ASCII

(0:EIA  1:ISO)>1_

 MDI   ****  ***  ***  ***           12:34:56

 ( PRGRM ) ( PARAM ) (OFFSET) ( MACRO ) ( (OPRT) )
```

Fig. 6.7   ALL IO screen (when channel 3 is being used for input/output)

6.7.1
Setting
Input/Output–Related
Parameters

Input/output–related parameters can be set on the ALL IO screen. Parameters can be set, regardless of the mode.

Setting input/output–related parameters

Procedure

1   Press function key [SYSTEM] .

2   Press the rightmost soft key [▷] (continuous menu key) several times.

3   Press soft key **[ALL IO]** to display the ALL IO screen.

> **NOTE**
> 1 If program or floppy is selected in EDIT mode, the program directory or floppy screen is displayed.
> 2 When the power is first turned on, program is selected by default.

```
READ/PUNCH (PROGRAM)                    O1234 N12345

I/O CHANNEL           3        TV CHECK           OFF
DEVICE NUM.           0        PUNCH CODE         ISO
BAUDRATE           4800        INPUT CODE        ASCII
STOP BIT              2        FEED OUTPUT       FEED
NULL INPUT (EIA)     NO        EOB OUTPUT (ISO)    CR
TV CHECK (NOTES)     ON        BAUDRATE CLK.    INNER
CD CHECK (232C)     OFF        RESET/ALARM         ON
PARITY BIT          OFF        SAT COMMAND       HOST
INTERFACE         RS422        COM PROTCOL          A
END CODE            EXT        COM CODE         ASCII
(0:EIA  1:ISO)>1_

 MDI   ****  ***  ***  ***                  12:34:56
 ( PRGRM )( PARAM )(OFFSET)( MACRO )( (OPRT) )
```

> **NOTE**
> Baud rate clock, CD check (232C), reset/alarm report, and the parity bit for parameter No. 134, as well as the communication code, end code, communication protocol, interface, and SAT command for parameter No. 135 are displayed only when channel 3 is being used for input/output.

4   Select the soft key corresponding to the desired type of data (program, parameter, and so forth).

5 Set the parameters corresponding to the type of input/output unit to be used. (Parameter setting is possible regardless of the mode.)

Tip

First, set an I/O channel. The parameters on this screen change to those corresponding to a specified I/O channel.

● I/O channel (0 to 3)

Setting	Corresponding parameter
0	No. 101 to 103
1	No. 111 to 113
2	No. 121 to 123
3	No. 131 to 135

● Device number

Setting	Input/output device
0	RS–232–C (The control codes DC1 through DC4 are used.)
1	FANUC CASSETTE ADAPTOR 1 (FANUC CASSETTE B1/B2)
2	FANUC CASSETTE ADAPTOR 3 (FANUC CASSETTE F1)
3	FANUC PROGRAM FILE MATE, FANUC FA Card Adaptor FANUC FLOPPY CASSETTE ADAPTOR, FANUC Handy File FANUC SYSTEM P–MODEL H
4	RS–232–C (The control codes DC1 through DC4 are not used.)
5	Portable tape reader
6	FANUC PPR FANUC SYSTEM P–MODEL G, FANUC SYSTEM P–MODEL H

● Baud rate (bps)

Set a desired baud rate value indicated below.

Baud rate (bps)
50
100
110
150
200
300
600
1200
2400
4800
9600
19200

6.7.2	A program can be input and output using the ALL IO screen.
Inputting and Outputting Programs	When entering a program using a cassette or card, the user must specify the input file containing the program (file search).

File search

Procedure

1　Press soft key **[PRGRM]** on the ALL IO screen, described in Section 6.7.1.

2　Select **EDIT** mode. A program directory is displayed.

3　Press soft key **[(OPRT)]**. The screen and soft keys change as shown below.

　·　A program directory is displayed only in EDIT mode. In all other modes, the ALL IO screen is displayed.

```
                                                    O0001 N00010

                        PROGRAM (NUM.)        MEMORY (CHAR.)
                   USED  :     60                 3321
                   FREE  :      2                  429

           O0010 O0001 O0003 O0002 O0555 O0999
           O0062 O0004 O0005 O1111 O0969 O6666
           O0021 O1234 O0588 O0020 O0040



           >_
           EDIT  ****  ***  ***  ***              14:46:09
         ( F SRH )( READ )( PUNCH )( DELETE )( (OPRT) )
```

4　Enter address N.

5　Enter the number of the file to be found.

　·　N0

　　The first floppy file is found.

　·　One of N1 to N9999

　　Among the files numbered from 1 to 9999, a specified file is found.

　·　N–9999

　　The file immediately after that used most recently is found.

　·　N–9998

　　When –9998 is specified, the next file is found. Then, each time a file input/output operation is performed, N–9999 is automatically inserted. This means that subsequent files can be sequentially found automatically.

　　This state is canceled by specifying N0, N1 to N9999, or N–9999, or upon a reset.

6　Press soft keys **[F SRH]** and **[EXEC**].
The specified file is found.

```
( 　 )( 　 )( 　 )( CAN )( EXEC )
```

Inputting a program

Procedure

1 Press soft key **[PRGRM]** on the ALL IO screen, described in Section 6.7.1.

2 Select EDIT mode. A program directory is displayed.

3 Press soft key **[(OPRT)]**. The screen and soft keys change as shown below.

· A program directory is displayed only in EDIT mode. In all other modes, the ALL IO screen is displayed.

```
                                              O0001 N00010

                     PROGRAM (NUM.)          MEMORY (CHAR.)
                USED   :    60                    3321
                FREE   :     2                     429

        O0010 O0001 O0003 O0002 O0555 O0999
        O0062 O0004 O0005 O1111 O0969 O6666
        O0021 O1234 O0588 O0020 O0040



        >_
        EDIT  ****  ***  ***  ***              14:46:09
      ( F SRH  ) ( READ ) ( PUNCH ) ( DELETE ) ( (OPRT) )
```

4 To specify a program number to be assigned to an input program, enter address O, followed by the desired program number.
If no program number is specified, the program number in the file or on the NC tape is assigned as is.

5 Press soft key **[READ]**, then **[EXEC]**.
The program is input with the program number specified in step **4** assigned.
To cancel input, press soft key **[CAN]**.
To stop input prior to its completion, press soft key **[STOP]**.

```
(     ) (     ) (STOP) ( CAN ) (EXEC)
```

Outputting programs

Procedure

1 Press soft key **[PRGRM]** on the ALL IO screen, described in Section 6.7.1.

2 Select EDIT mode. A program directory is displayed.

3 Press soft key **[(OPRT)]**. The screen and soft keys change as shown below.

· A program directory is displayed only in EDIT mode. In all other modes, the ALL IO screen is displayed.

```
                                              O0001 N00010

                      PROGRAM (NUM.)        MEMORY (CHAR.)
                 USED  :     60                 3321
                 FREE  :      2                  429

        O0010 O0001 O0003 O0002 O0555 O0999
        O0062 O0004 O0005 O1111 O0969 O6666
        O0021 O1234 O0588 O0020 O0040



        >_
        EDIT  ****  ***  ***  ***              14:46:09
        ( F SRH  ) ( READ  ) ( PUNCH ) ( DELETE ) ( (OPRT) )
```

4 Enter address O.

5 Enter a desired program number.
If –9999 is entered, all programs in memory are output.
To output a range of programs, enter OΔΔΔΔ, O□□□□.. The programs numbered from ΔΔΔΔ to □□□□ are output.
When bit 4 (SOR) of parameter No. 3107 for sorted display is set to 1 on the program library screen, programs are output in order, starting from those having the smallest program numbers.

```
( ) ( ) (STOP) (CAN) (EXEC)
```

6 Press soft key **[PUNCH]**, then **[EXEC]**.
The specified program or programs are output. If steps **4** and **5** are omitted, the currently selected program is output.
To cancel output, press soft key **[CAN]**.
To stop output prior to its completion, press soft key **[STOP]**.

Deleting files

Procedure

1 Press soft key **[PRGRM]** on the ALL IO screen, described in Section 6.7.1.

2 Select EDIT mode. A program directory is displayed.

3 Press soft key **[(OPRT)]**. The screen and soft keys change as shown below.

· A program directory is displayed only in EDIT mode. In all other modes, the ALL IO screen is displayed.

```
                                        O0001 N00010

                    PROGRAM (NUM.)      MEMORY (CHAR.)
                 USED   :    60             3321
                 FREE   :     2              429

       O0010 O0001 O0003 O0002 O0555 O0999
       O0062 O0004 O0005 O1111 O0969 O6666
       O0021 O1234 O0588 O0020 O0040




       >_
       EDIT  ****  ***  ***  ***              14:46:09
      ┌ F SRH  ┐┌ READ  ┐┌ PUNCH ┐┌ DELETE ┐┌ (OPRT) ┐
```

4 Press soft key **[DELETE]**.

5 Enter a file number, from 1 to 9999, to indicate the file to be deleted.

6 Press soft key **[EXEC]**.
The k–th file, specified in step 5, is deleted.
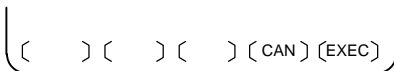
```
┌    ┐┌    ┐┌    ┐┌ CAN ┐┌ EXEC ┐
```

6.7.3
Inputting and
Outputting Parameters

Parameters can be input and output using the ALL IO screen.

Inputting parameters

Procedure

1   Press soft key **[PARAM]** on the ALL IO screen, described in Section 6.7.1.

2   Select EDIT mode.

3   Press soft key **[(OPRT)]**. Soft keys change as shown below.

$$\boxed{\; \big[\quad \big] \big[\text{READ} \big] \big[\text{PUNCH} \big] \big[\quad \big] \big[\quad \big] \;}$$

$$\big[\quad \big] \big[\quad \big] \big[\quad \big] \big[\text{CAN} \big] \big[\text{EXEC} \big]$$

4   Press soft key **[READ]**, then **[EXEC]**.
    The parameters are read, and the "INPUT" indicator blinks at the lower–right corner of the screen. Upon the completion of input, the "INPUT" indicator is cleared from the screen.
    To cancel input, press soft key **[CAN]**.

Outputting parameters

Procedure

1   Press soft key **[PARAM]** on the ALL IO screen, described in Section 6.7.1.

2   Select EDIT mode.

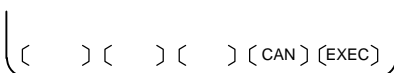3   Press soft key **[(OPRT)]**. Soft keys change as shown below.

$$\boxed{\; \big[\quad \big] \big[\text{READ} \big] \big[\text{PUNCH} \big] \big[\quad \big] \big[\quad \big] \;}$$

$$\big[\quad \big] \big[\quad \big] \big[\quad \big] \big[\text{CAN} \big] \big[\text{EXEC} \big]$$

4   Press soft key **[PUNCH]**, then **[EXEC]**.
    The parameters are output, and the "OUTPUT" indicator blinks at the lower–right corner of the screen. Upon the completion of output, the "OUTPUT" indicator is cleared from the screen.
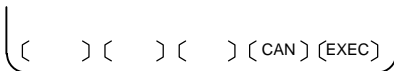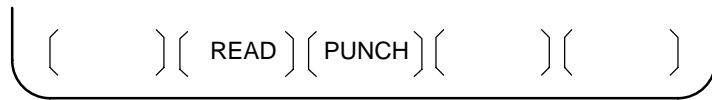   To cancel output, press soft key **[CAN]**.

6.7.4
Inputting and
Outputting Offset Data

Offset data can be input and output using the ALL IO screen.

Inputting offset data

Procedure

1　Press soft key **[OFFSET]** on the ALL IO screen, described in Section 6.7.1.

2　Select EDIT mode.

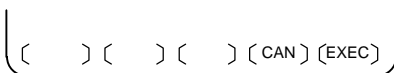3　Press soft key **[(OPRT)]**.　Soft keys change as shown below.

```
(        ) ( READ ) ( PUNCH ) (        ) (        )
```

```
(    ) (    ) (    ) ( CAN ) (EXEC)
```

4　Press soft key **[READ]**, then **[EXEC]**.
The offset data is read, and the "INPUT" indicator blinks at the lower–right corner of the screen.
Upon the completion of input, the "INPUT" indicator is cleared from the screen.
To cancel input, press soft key **[CAN]**.

Outputting offset data

Procedure

1　Press soft key **[OFFSET]** on the ALL IO screen, described in Section 6.7.1.

2　Select EDIT mode.

3　Press soft key **[(OPRT)]**.　Soft keys change as shown below.

```
(        ) ( READ ) ( PUNCH ) (        ) (        )
```

```
(    ) (    ) (    ) ( CAN ) (EXEC)
```

4　Press soft key **[PUNCH]**, then **[EXEC]**.
The offset data is output, and the "OUTPUT" indicator blinks at the lower–right corner of the screen.　Upon the completion of output, the "OUTPUT" indicator is cleared from the screen.
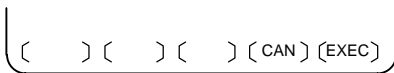To cancel output, press soft key **[CAN]**.

6.7.5
Outputting Custom Macro Common Variables

Custom macro common variables can be output using the ALL IO screen.

Outputting custom macro common variables

Procedure

1 Press soft key **[MACRO]** on the ALL IO screen, described in Section 6.7.1.

2 Select EDIT mode.

3 Press soft key **[(OPRT)]**. Soft keys change as shown below.

〔   〕〔 READ 〕〔 PUNCH 〕〔   〕〔   〕

〔   〕〔   〕〔   〕〔CAN〕〔EXEC〕

4 Press soft key **[PUNCH]**, then **[EXEC]**.
The custom macro common variables are output, and the "OUTPUT" indicator blinks at the lower–right corner of the screen. Upon the completion of output, the "OUTPUT" indicator is cleared from the screen.
To cancel output, press soft key **[CAN]**.

> **NOTE**
> To input a macro variable, read the desired custom macro statement as a program, then execute the program.
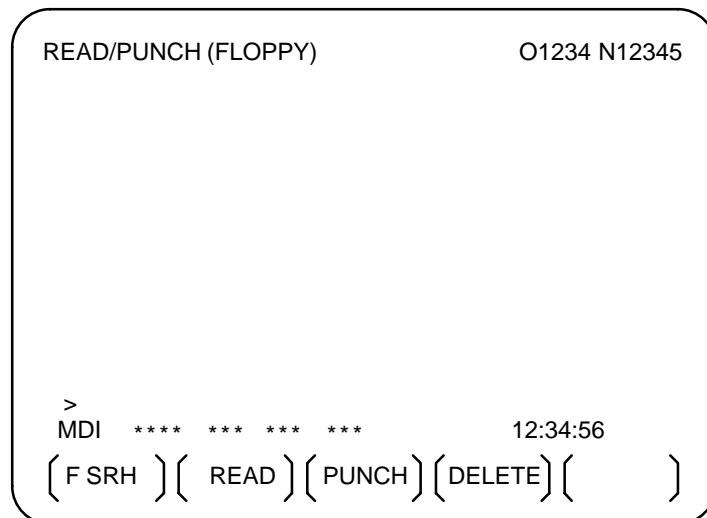
6.7.6
Inputting and Outputting Floppy Files

The ALL IO screen supports the display of a directory of floppy files, as well as the input and output of floppy files.


Displaying a file directory

Procedure

1 Press the rightmost soft key ▷ (continuous menu key) on the ALL IO screen, described in Section 6.7.1.

2 Press soft key **[FLOPPY**].

3 Select EDIT mode. The floppy screen is displayed.

4 Press soft key **[(OPRT)]**. The screen and soft keys change as shown below.

· The floppy screen is displayed only in EDIT mode. In all other modes, the ALL IO screen is displayed.

```
READ/PUNCH (FLOPPY)              O1234 N12345




      >
     MDI   ****  ***  ***  ***              12:34:56
    ( F SRH )( READ )( PUNCH )( DELETE )(        )
```

5 Press soft key **[F SRH]**.

6 Enter the number of the desired file, then press soft key **[F SET]**.

```
( F SET )(     )(     )( CAN )( EXEC )
```

7 Press soft key **[EXEC]**. A directory is displayed, with the specified file uppermost. Subsequent files in the directory can be displayed by pressing the page key.
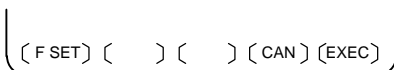
```
READ/PUNCH (FLOPPY)                    O1234 N12345
   No.     FILE NAME                    (Meter)  VOL
  0001     PARAMETER                       46.1
  0002     ALL.PROGRAM                     12.3
  0003     O0001                            1.9
  0004     O0002                            1.9
  0005     O0003                            1.9
  0006     O0004                            1.9
  0007     O0005                            1.9
  0008     O0010                            1.9
  0009     O0020                            1.9

  F SRH
      File No.=2
  >2_
  EDIT  ****  ***  ***  ***            12:34:56

  [ F SRH ][        ][        ][ CAN ][ EXEC ]
```

A directory in which the first file is uppermost can be displayed simply by pressing the page key. (Soft key **[F SRH]** need not be pressed.)
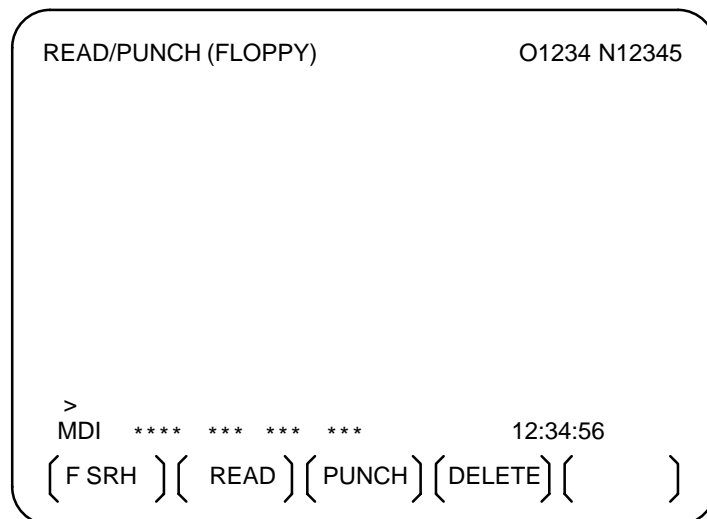

Inputting a file

Procedure

1   Press the rightmost soft key $\boxed{\triangleright}$ (continuous menu key) on the ALL IO screen, described in Section 6.7.1.

2   Press soft key **[FLOPPY]**.

3   Select EDIT mode. The floppy screen is displayed.

4   Press soft key **[(OPRT)]**. The screen and soft keys change as shown below.
    The floppy screen is displayed only in EDIT mode. In all other modes, the ALL IO screen is displayed.

```
  ╭─────────────────────────────────────────────────╮
  │                                                   │
  │  READ/PUNCH (FLOPPY)              O1234 N12345    │
  │                                                   │
  │                                                   │
  │                                                   │
  │                                                   │
  │                                                   │
  │                                                   │
  │                                                   │
  │                                                   │
  │   >                                               │
  │   MDI   ****  ***  ***  ***          12:34:56     │
  │  ( F SRH )( READ )( PUNCH )( DELETE )(        )    │
  ╰─────────────────────────────────────────────────╯
```

5   Press soft key **[READ]**.

6   Enter the number of a file or program to be input.

    ·   Setting a file number: Enter the number of the desired file, then press soft key **[F SET]**.

    ·   Setting a program number: Enter the number of the desired program, then press soft key **[O SET]**.

7   Press soft key **[EXEC]**.
    The specified file or program is read, and the "INPUT" indicator blinks at the lower–right corner of the screen. Upon the completion of input, the "INPUT" indicator is cleared from the screen.
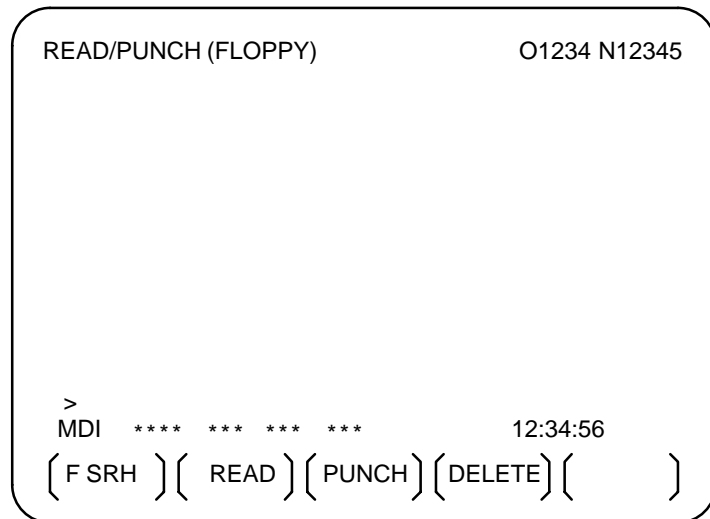
(F SET)(O SET)(STOP)(CAN)(EXEC)

Outputting a file

Procedure

1 Press the rightmost soft key $\boxed{\triangleright}$ (continuous menu key) on the ALL IO screen, described in Section 6.7.1.

2 Press soft key **[FLOPPY]**.

3 Select EDIT mode. The floppy screen is displayed.

4 Press soft key **[(OPRT)]**. The screen and soft keys change as shown below.
   The floppy screen is displayed only in EDIT mode. In all other modes, the ALL IO screen is displayed.

```
READ/PUNCH (FLOPPY)                      O1234 N12345




        >
        MDI  ****  ***  ***  ***              12:34:56
     [ F SRH ] [  READ ] [ PUNCH ] [ DELETE ] [       ]
```

5 Press soft key **[PUNCH]**.

6 Enter the number of the program to be output, together with a desired output file number.

   ·   Setting a file number: Enter the number of the desired file, then press soft key **[F SET]**.

   ·   Setting a program number: Enter the number of the desired program, then press soft key **[O SET]**.

```
[ F SET ] [ O SET ] [ STOP ] [ CAN ] [ EXEC ]
```

7 Press soft key **[EXEC]**.
   The specified program is output, and the "OUTPUT" indicator blinks at the lower–right corner of the screen. Upon the completion of output, the "OUTPUT" indicator is cleared from the screen.
   If no file number is specified, the program is written at the end of the currently registered files.


Deleting a file

Procedure

1 Press the rightmost soft key ▷ (continuous menu key) on the ALL IO screen, described in Section 6.7.1.

2 Press soft key **[FLOPPY]**.

3 Select EDIT mode. The floppy screen is displayed.

4 Press soft key **[(OPRT)]**. The screen and soft keys change as shown below.
The floppy screen is displayed only in EDIT mode. In all other modes, the ALL IO screen is displayed.

```
READ/PUNCH (FLOPPY)                    O1234 N12345




      >
    MDI  ****  ***  ***  ***               12:34:56
  ( F SRH )( READ )( PUNCH )( DELETE )(        )
```
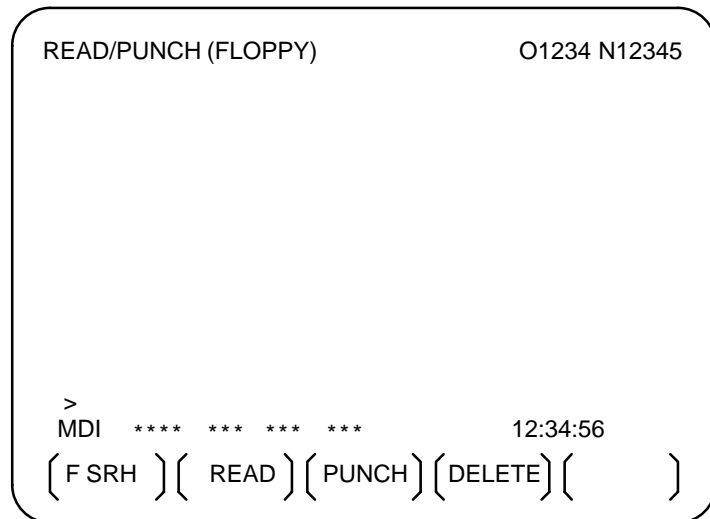
5 Press soft key **[DELETE]**.

6 Enter the number of the desired file, then press soft key **[F SET]**.

(F SET)(   )(   )(CAN)(EXEC)

7 Press soft key **[EXEC]**. The specified file is deleted. After the file has been deleted, the subsequent files are shifted up.
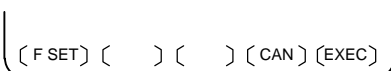
6.8
DATA INPUT/OUTPUT USING A MEMORY CARD

By setting the I/O channel (parameter No. 20) to 4, files on a memory card can be referenced, and different types of data such as part programs, parameters, and offset data on a memory card can be input and output in text file format.

The major functions are listed below.

· Displaying a directory of stored files

   The files stored on a memory card can be displayed on the directory screen.

· Searching for a file

   A search is made for a file on a memory card and, if found, it is displayed on the directory screen.

· Reading a file

   Text–format files can be read from a memory card.

· Writing a file

   Data such as part programs can be stored to a memory card in text file format.

· Deleting a file

   A file can be selected and deleted from a memory card.
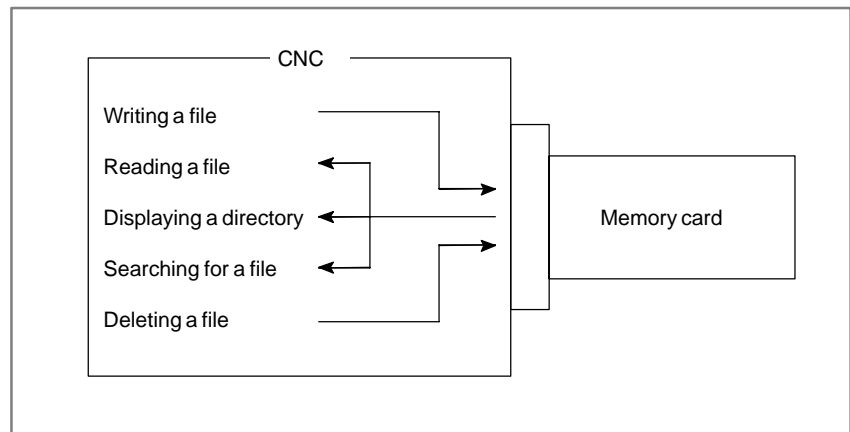

NOTE
   When using the program stored on a memory card to make a subprogram call for RMT mode operation (DNC operation) or the M198 command, use the special retainer for securing a memory card to the CNC.

---

Displaying a directory of stored files

Procedure

1 Press the EDIT switch on the machine operator's panel.

2 Press function key PROG .

3 Press the rightmost soft key ▷ (continuous menu key).

4 Press soft key **[CARD]**. The screen shown below is displayed. Using page keys ↑ and ↓ , the screen can be scrolled.

```
DIRECTORY (M–CARD)                    O0034 N00045
   No.     FILE NAME        SIZE         DATE
   0001    O1000           123456      01/07/10
   0002    O1001             8458      01/07/30
   0003    O0002             3250      01/07/30
   0004    O2000            73456      01/07/31
   0005    O2001             3444      01/07/31
   0006    O3001             8483      01/08/02
   0007    O3300              406      01/08/05
   0008    O3400             2420      01/07/31
   0009    O3500             7460      01/07/31


  [ PROG ] [        ] [ DIR + ] [        ] [ (OPRT) ]
```

5 Comments relating to each file can be displayed by pressing soft key **[DIR+]**.

```
DIRECTORY (M–CARD)                    O0034 N00045
   No.     FILE NAME                   COMMENT
   0001    O1000                 (COMMENT      )
   0002    O1001                 (SUB PROGRAM )
   0003    O0002                 (12345678     )
   0004    O2000                 (             )
   0005    O2001                 (             )
   0006    O3001                 (SKIP–K       )
   0007    O3300                 (HI–SPEED     )
   0008    O3400                 (             )
   0009    O3500                 (TEST PROGRAM)


  [ PROG ] [        ] [ DIR + ] [        ] [ (OPRT) ]
```

6 Repeatedly pressing soft key **[DIR+]** toggles the screen between the display of comments and the display of sizes and dates.
Any comment described after the O number in the file is displayed.
Up to 18 characters can be displayed on the screen.

Searching for a file

Procedure

1 Press the EDIT switch on the machine operator's panel.

2 Press function key PROG .

3 Press the rightmost soft key ▷ (continuous menu key).

4 Press soft key **[CARD]**. The screen shown below is displayed.

```
DIRECTORY (M–CARD)              O0034 N00045
   No.     FILE NAME      SIZE       DATE
  0001     O1000        123456    01/07/10
  0002     O1001          8458    01/07/30
  0003     O0002          3250    01/07/30
  0004     O2000         73456    01/07/31
  0005     O2001          3444    01/07/31
  0006     O3001          8483    01/08/02
  0007     O3300           406    01/08/05
  0008     O3400          2420    01/07/31
  0009     O3500          7460    01/07/31


 [ PROG ] [        ] [ DIR + ] [        ] [ (OPRT) ]
```

5 Press soft key **[(OPRT)]**.

6 Set the number of the desired file number with soft key **[F SRH]**. Then, start the search by pressing soft key **[EXEC]**. If found, the file is displayed at the top of the directory screen.

[F SRH] [F READ] [N READ] [PUNCH] [DELETE]

When a search is made for file number 19

```
DIRECTORY (M–CARD)                O0034 N00045
   No.     FILE NAME          COMMENT
  0019     O1000          (MAIN PROGRAM)
  0020     O1010          (SUBPROGRAM–1)
  0021     O1020          (COMMENT       )
  0022     O1030          (COMMENT       )
```

Reading a file

Procedure

1 Press the EDIT switch on the machine operator's panel.

2 Press function key $\boxed{\text{PROG}}$.

3 Press the rightmost soft key $\boxed{\triangleright}$ (continuous menu key).

4 Press soft key **[CARD]**. Then, the screen shown below is displayed.

```
DIRECTORY (M–CARD)                    O0034 N00045
  No.    FILE NAME          SIZE         DATE
  0001   O1000             123456      01/07/10
  0002   O1001               8458      01/07/30
  0003   O0002               3250      01/07/30
  0004   O2000              73456      01/07/31
  0005   O2001               3444      01/07/31
  0006   O3001               8483      01/08/02
  0007   O3300                406      01/08/05
  0008   O3400               2420      01/07/31
  0009   O3500               7460      01/07/31


~  [ PROG ] [        ] [ DIR + ] [       ] [ (OPRT) ]  ~
```

5 Press soft key **[(OPRT)]**.

$\lceil$ F SRH $\rceil$ $\lceil$ F READ $\rceil$ $\lceil$ N READ $\rceil$ $\lceil$ PUNCH $\rceil$ $\lceil$ DELETE $\rceil$

6 To specify a file number, press soft key **[F READ]**. The screen shown below is displayed.

```
DIRECTORY (M–CARD)                    O0001 N00010
  No.    FILE NAME                   COMMENT
  0019   O1000                  (MAIN PROGRAM)
  0020   O1010                  (SUBPROGRAM–1)
  0021   O1030                  (COMMENT      )

~                                                    ~
  READ
         FILE NAME=20         PROGRAM No.=120
  >

  EDIT  ***  ****  ***  ****              15:40:21
  [ F NAME ] [ O SET ] [ STOP ] [ CAN ] [ EXEC ]
```

7 Enter file number 20 from the MDI panel, then set the file number by pressing soft key **[F SET]**. Next, enter program number 120, then set the program number by pressing soft key **[O SET]**. Then, press soft key **[EXEC]**.

· File number 20 is registered as O0120 in the CNC.

· Set a program number to register a read file with a separate O number. If no program number is set, the O number in the file name column is registered.

8   To specify a file with its file name, press soft key **[N READ]** in step 6 above. The screen shown below is displayed.

```
DIRECTORY (M–CARD)                    O0001 N00010
   No.    FILE NAME              COMMENT
   0012   O0050               (MAIN  PROGRAM)
   0013   TESTPRO             (SUB PROGRAM–1)
   0014   O0060               (MACRO PROGRAM)
~                                                          ~

   READ           FILE NAME   =TESTPRO
                  PROGRAM No. =1230
   >

   EDIT  ***  ****  ***  ****              15:40:21
  [ F NAME ] [ O SET ] [  STOP ] [  CAN  ] [ EXEC ]
```

9   To register file name TESTPRO as O1230, enter file name TESTPRO from the MDI panel, then set the file name with soft key **[F NAME]**. Next, enter program number 1230, then set the program number with soft key [O SET]. Then, press soft key **[EXEC]**.

Writing a file

Procedure

1 Press the EDIT switch on the machine operator's panel.

2 Press function key |PROG| .

3 Press the rightmost soft key ▷ (continuous menu key).

4 Press soft key **[CARD]**. The screen shown below is displayed.

```
DIRECTORY (M–CARD)                    O0034 N00045
   No.    FILE NAME         SIZE         DATE
   0001   O1000            123456      01/07/10
   0002   O1001              8458      01/07/30
   0003   O0002              3250      01/07/30
   0004   O2000             73456      01/07/31
   0005   O2001              3444      01/07/31
   0006   O3001              8483      01/08/02
   0007   O3300               406      01/08/05
   0008   O3400              2420      01/07/31
   0009   O3500              7460      01/07/31


 [ PROG ] [        ] [ DIR + ] [        ] [ (OPRT) ]
```

5 Press soft key **[(OPRT)]**.

6 Press soft key **[PUNCH]**.

[F SRH] [F READ] [N READ] [PUNCH] [DELETE]

7 Enter a desired O number from the MDI panel, then set the program number with soft key **[O SET]**.
When soft key **[EXEC]** is pressed after the setting shown below has been made, for example, the file is written under program number O1230.

```
 PUNCH            FILE NAME  =
                  PROGRAM No. =1230
 >
 EDIT  ***  ****  ***  ****              15:40:21
 [ F NAME ] [ O SET ] [ STOP ] [ CAN ] [ EXEC ]
```

8 In the same way as for O number setting, enter a desired file name from the MDI panel, then set the file name with soft key **[F SET]**.
When soft key **[EXEC]** is pressed after the setting shown below has been made, for example, the file is written under program number O1230 and file name ABCD12.

```
 PUNCH            FILE NAME  =ABCD12
                  PROGRAM No. =1230
 >
 EDIT  ***  ****  ***  ****              15:40:21
 [ F NAME ] [ O SET ] [ STOP ] [ CAN ] [ EXEC ]
```

Deleting a file

Procedure

1 Press the EDIT switch on the machine operator's panel.

2 Press function key PROG .

3 Press the rightmost soft key ▷ (continuous menu key).

4 Press soft key **[CARD]**. The screen shown below is displayed.

```
DIRECTORY (M–CARD)                    O0034 N00045
   No.     FILE NAME        SIZE         DATE
  0001     O1000          123456      01/07/10
  0002     O1001            8458      01/07/30
  0003     O0002            3250      01/07/30
  0004     O2000           73456      01/07/31
  0005     O2001            3444      01/07/31
  0006     O3001            8483      01/08/02
  0007     O3300             406      01/08/05
  0008     O3400            2420      01/07/31
  0009     O3500            7460      01/07/31
```

```
[ PROG ] [        ] [ DIR + ] [        ] [ (OPRT) ]
```

5 Press soft key **[(OPRT)]**.

[F SRH] [F READ] [N READ] [PUNCH] [DELETE]

6 Set the number of the desired file with soft key **[DELETE]**, then press soft key **[EXEC]**. The file is deleted, and the directory screen is displayed again.

When file number 21 is deleted

```
DIRECTORY (M–CARD)                    O0034 N00045
   No.     FILE NAME            COMMENT
  0019     O1000           (MAIN PROGRAM)
  0020     O1010           (SUBPROGRAM–1)
  0021     O1020           (COMMENT      )
  0022     O1030           (COMMENT      )
```

File name O1020 is deleted.

```
DIRECTORY (M–CARD)                    O0034 N00045
   No.     FILE NAME            COMMENT
  0019     O1000           (MAIN PROGRAM)
  0020     O1010           (SUBPROGRAM–1)
  0021     O1020           (COMMENT      )
  0022     O1030           (COMMENT      )
```

File number 21 is assigned to the next file name.

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Batch input/output with a memory card

On the ALL IO screen, different types of data including part programs, parameters, offset data, pitch error data, custom macros, and workpiece coordinate system data can be input and output using a memory card; the screen for each type of data need not be displayed for input/output.
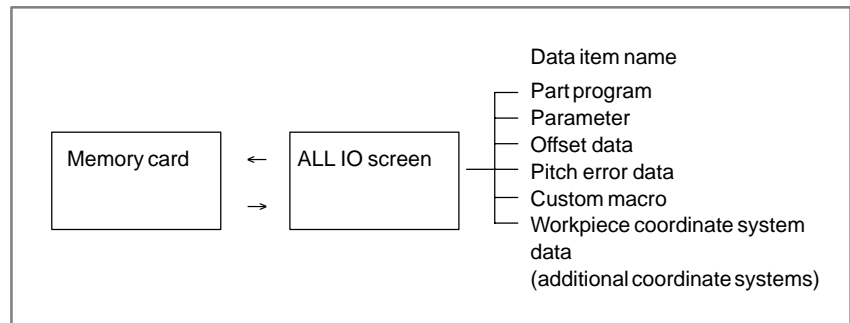
```
                                        Data item name
                                      ── Part program
                                      ── Parameter
 ┌─────────────┐    ←   ┌─────────────┐── Offset data
 │ Memory card │        │ ALL IO screen│── Pitch error data
 │             │    →   │             │── Custom macro
 └─────────────┘        └─────────────┘── Workpiece coordinate system
                                          data
                                          (additional coordinate systems)
```

Procedure

1 Press the EDIT switch on the machine operator's panel.

2 Press function key [SYSTEM] .

3 Press the rightmost soft key [▷] (continuous menu key) several times.

4 Press soft key **[ALL IO]**. The screen shown below is displayed.

```
READ/PUNCH (PROGRAM)              O0001 N00001
   No.     FILE NAME      SIZE        DATE
 * 0001   O0222          332010    01–04–06
   0002   O1003          334450    01–05–04
   0003   MACROVAR.DAT   653400    01–05–12
   0004   O0002          341205    01–05–13
     [PROGRAM]
   O0001   O0002   O0003   O0005   O0100   O0020
   O0006   O0004   O0110   O0200   O2200   O0441
   O0330
   >
   EDIT  ***  ****  ***  ****              10:07:37

  [ PROG ] [ PARAM ] [OFFSET] [          ] [ (OPRT) ]
```

Upper part : Directory of files on the memory card
Lower part : Directory of registered programs

5 With cursor keys [↑] and [↓] , the user can choose between upper part scrolling and lower part scrolling. (An asterisk (*) displayed at the left edge indicates the part for which scrolling is possible.)

[↑] : Used for memory card file directory scrolling.

[↓] : Used for program directory scrolling.

6   With page keys ⬆PAGE and ⬇PAGE , scroll through the file directory or
program directory.

7   When this screen is displayed, the program data item is selected. The
soft keys for other screens are displayed by pressing the rightmost soft
key ▷ (continuous menu key).

[PITCH] [WORK] [   ] [   ] [(OPRT)]

When a data item other than program is selected, the screen displays only
a file directory.
A data item is indicated, in parentheses, on the title line.

```
READ/PUNCH (PARAMETER)                 O0001 N00001
     No.    FILE NAME              SIZE      DATE
    0001   O0222                  32010   96/04/06
    0002   O1003                   4450   96/05/04
    0003   MACROVAR.DAT          653400   96/05/12
    0004   O0003                   4610   96/05/04
    0005   O0001                   4254   96/06/04
    0006   O0002                    750   96/06/04
    0007   CNCPARAM.DAT           34453   96/06/04

  ~                                                    ~
```

8   Display the following soft keys with soft key **[(OPRT)]**.

[F SRH] [F READ] [N READ] [PUNCH] [DELETE]

The operation of each function is the same as on the directory (memory
card) screen. Soft key **[O SET]**, used for program number setting, and the
"PROGRAM NUMBER =" indication are not displayed for data items
other than program.

　　[F SRH]　　: Finds a specified file number.
　　[F READ]　: Reads a specified file number.
　　[PUNCH]　: Writes a file.
　　[N READ]　: Reads a file under a specified file name.
　　[DELETE]　: Deletes a specified file number.

Error codes

Memory card error codes

Code	Meaning
007	The memory card is protected.
030	The memory card is not inserted into its slot.
032	The memory card's battery is exhausted.
102	The memory card does not have sufficient free space.
105	No memory card is mounted.
106	A memory card is already mounted.
110	The specified directory cannot be found.
111	There are too many files under the root directory to allow a directory to be added.
114	The specified file cannot be found.
115	The specified file is protected.
117	The file has not yet been opened.
118	The file is already open.
119	The file is locked.
121	A file end was detected.
122	The specified file name is invalid.
124	The extension of the specified file is invalid.
129	A non–corresponding function was specified.
130	The specification of a device is invalid.
131	The specification of a pathname is invalid.
133	Multiple files are open at the same time.
135	The device is not formatted.
140	The file has the read/write disabled attribute.