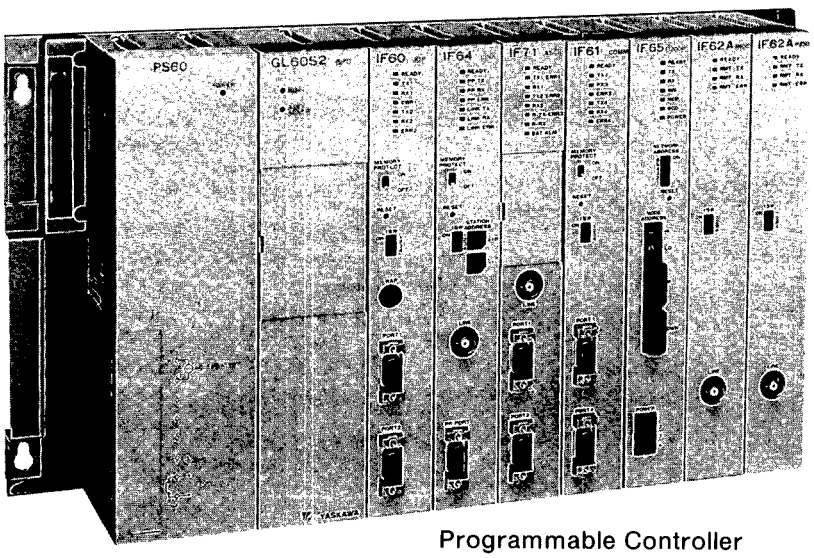
YASKAWA ELECTRIC

SIE-C815-14.4
DESCRIPTIVE INFORMATION

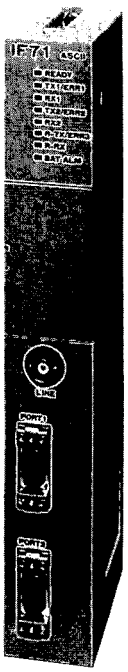
PROGRAMMABLE CONTROLLER
Memocon™-SC GL60S
USER'S MANUAL
ASCII MODULE

This manual summarizes the system configuration and connection between the programmable controller Memocon-SC GL60S and ASCII devices, programming, ASCII module handling, etc. Before handling the ASCII devices, refer to their respective manuals. To use the ASCII devices, refer also to the following documents:

- Memocon-SC GL60S User's Manual No.1
  — Design and Maintenance (SIE-C815-14.1)
- Memocon-SC GL60S User's Manual No.2
  — P150 Programming Panel Basic Information (SIE-C815-14.2)
- Memocon-SC U84S, 684H, R84H-M MEMOBUS
  — Industrial Communication System (SIE-C815-7.60)



Programmable Controller
Memocon-SC **GL60S**



ASCII Modules
Type JAMSC-IF71

NOTE:
1. Inquiries about the information in this manual should be directed to your YASKAWA representative.
2. No part of this manual may be reproduced without permission.

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1. INTRODUCTION

The ASCII modules enable devices conforming to EIA RS-232C specifications (called ASCII devices) such as serial printers, CRT terminals, keyboards, and bar code readers to be connected to the programmable controller Memocon-SC GL60S (GL60S) via the ASCII ports of the ASCII modules.

The GL60S can output various data to devices such as printers and CRT displays for print and display in accordance with the system states, and read necessary data from input devices such as keyboards and bar code readers.

The GL60S also serves as the master of a MEMOBUS system (in-plant communication system) by using ASCII module and signals can be transferred between programmable controllers. A more convenient system can be implemented by using the GL60S functions for monitoring, supervising, and controlling various processes, production lines, etc.

2. CONFIGURATION

2.1 ASCII MODULES

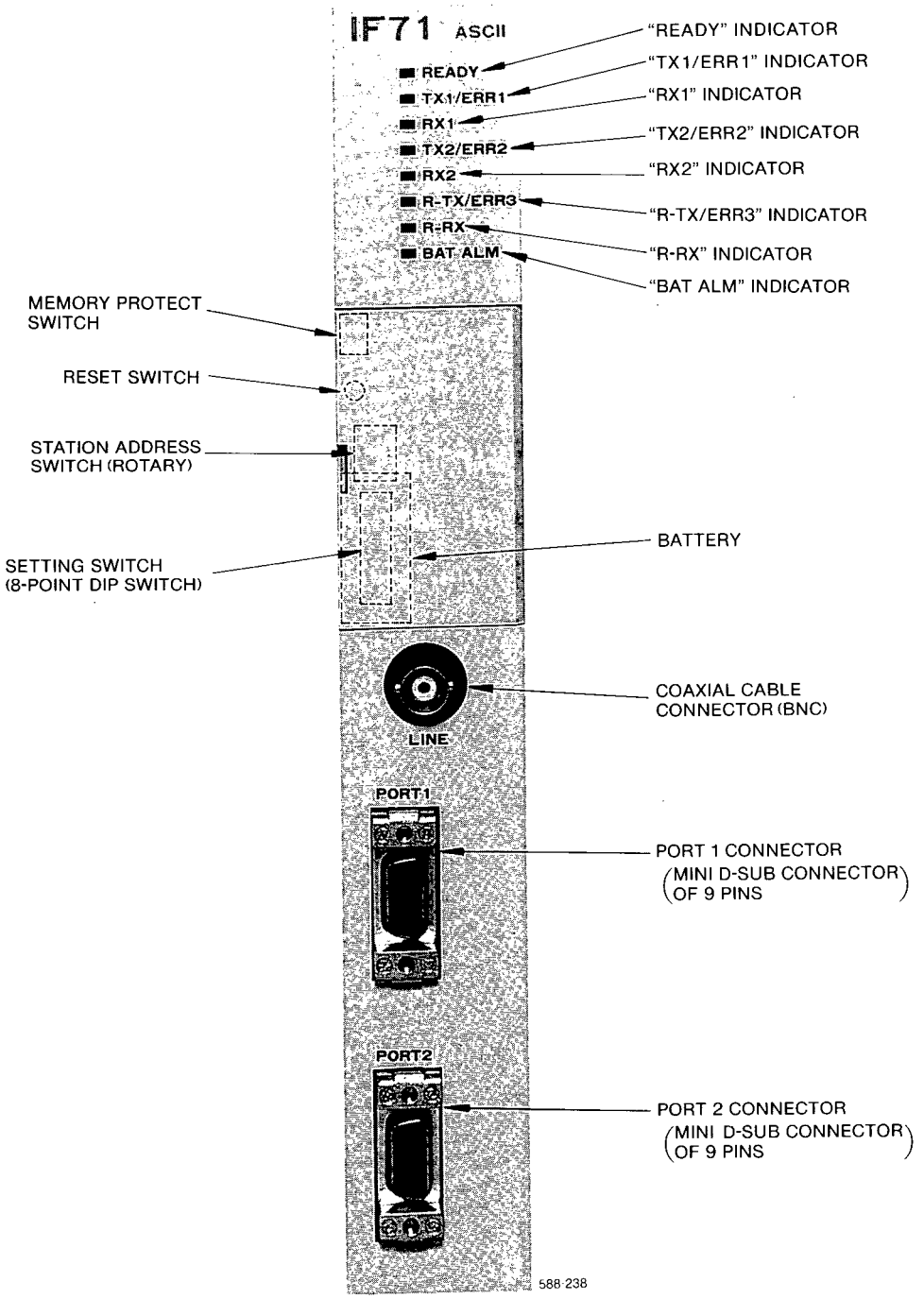


Fig. 2.1 Front View of ASCII Module

2.2 SYSTEM CONFIGURATION

An ASCII module contains two ASCII ports (PORT 1 and PORT 2). Since up to eight ASCII modules can be connected to the GL60S, a maximum of sixteen ASCII devices can be connected to one GL60S unit. ASCII module occupies a place in which GL60S I/O module is installed.

Fig. 2.2 shows the system configuration when the ASCII modules are used. For communication between CPU and ASCII module, a remote I/O line (coaxial cable) is utilized.

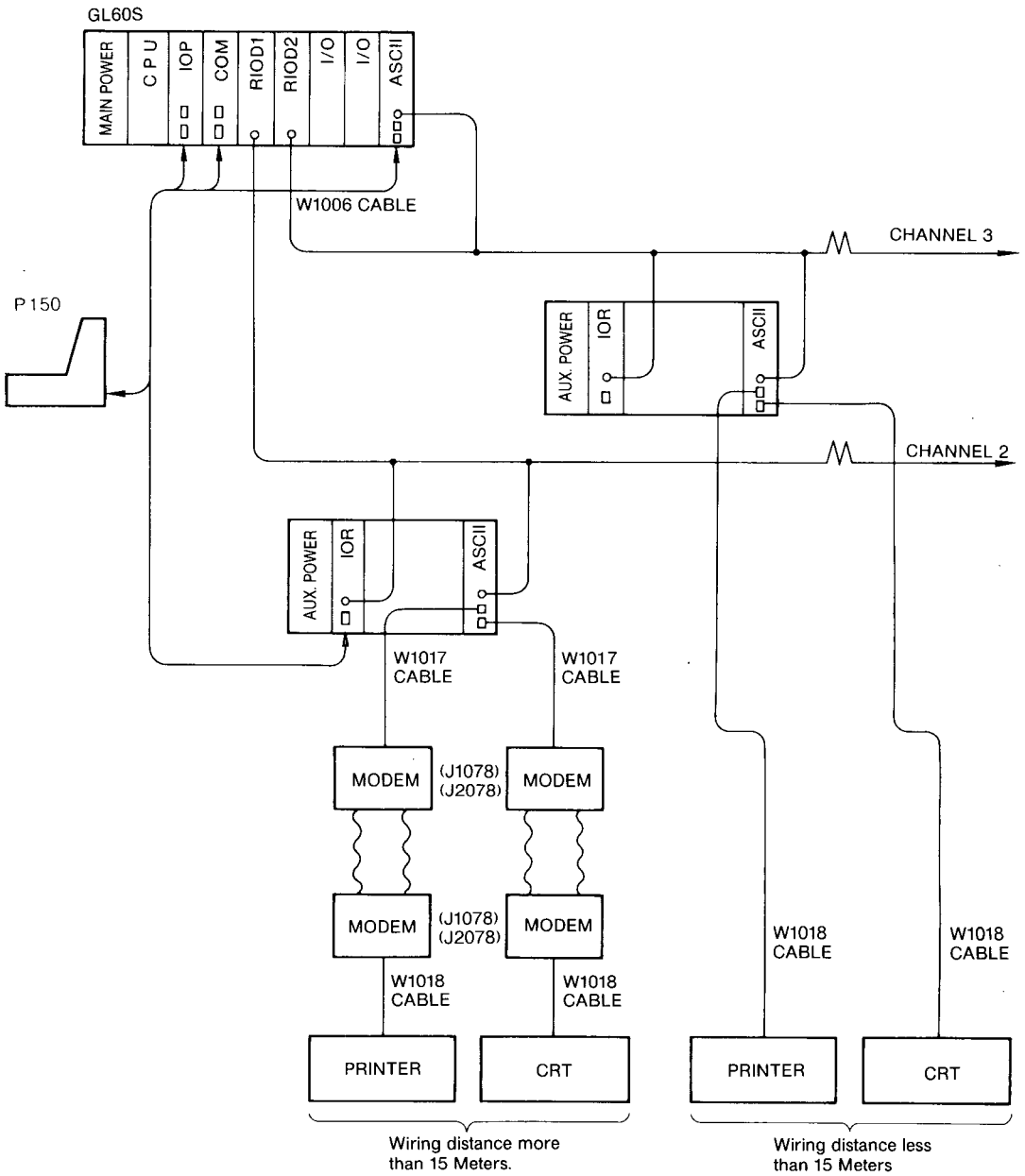


Fig. 2.2 ASCII Module System Configuration

2.3 ASCII TRAFFIC COP

For ASCII traffic cop, refer to "USER'S MANUAL-NO.2 P150 PROGRAMMING PANEL BASIC INFORMATION" (SIE-C815-14.2). Table 2.1 shows corresponding list of ASCII modules, ASCII ports and channel Nos.

Table 2.1 Corresponding List of ASCII Modules, ASCII Ports and Channel Nos.

ASCII Module No.	ASCII Port No.	Channel No.
1	1, 2	2 or 3
2	3, 4	
3	5, 6	
4	7, 8	
5	9, 10	
6	11, 12	
7	13, 14	
8	15, 16	

Note: Where setting channel No.2 to ASCII module No.1, connect coaxial cable of remote line 1 (RIOD 1) to ASCII module No.1.

2.4 EXPLANATION OF DEVICES

(1) GL60S

The GL60S stores network or SFC data, and controls data transfer between the ASCII module and ASCII devices (or MEMOBUS system slaves) by transferring signals with the ASCII module.

(2) P150 Programming Panel

P150 programming panel is mainly used to store network data in the GL60S and messages (to specify the data I/O format) in the ASCII module.

(3) ASCII Module

The ASCII module contains two ASCII ports (PORT1 and PORT2). Where programming panel (PP) is in disconnection mode, it sends data received from the GL60S to ASCII devices (or MEMOBUS slaves) and data received from ASCII devices (or MEMOBUS slaves) to the GL60S. Where PP is in connection mode, ASCII messages can be directly programmed using P150 connected to the ASCII port. A maximum of eight ASCII modules can be mounted in one GL60S system.

(4) ASCII Devices (Serial Printers, CRT displays, etc.)

Obtain the ASCII devices satisfying the following specifications directly from the manufacturers or their agencies:

(a) Interface: EIA RS-232C (half duplex, asynchronous)

(b) Baud rate: Any one of 150, 300, 600, 1200, 2400, 4800, 9600, or 19200 bauds

(c) Data format:

- Data length: Any one of 5 to 8 bits
- Stop bits: Either 1 or 2 bits
- Parity check: Odd parity, even parity, or none
- Available character codes: ASCII or a maximum of 128 codes containing the ASCII codes

(5) P150 Floppy Disk

- F60S-E001: GL60S programmer
- F60S-E002: GL60S ladder lister
- F60S-E003: ASCII programmer

(6) Connection Cables between ASCII Module and ASCII Devices

Although a normal ASCII device is provided with a standard 25-pin connector, connection to the connector depends on the manufacturer and/or model. Standard cables are provided for ASCII device connections. For details, see Section 4.

(7) Modem (DISCT-J1078)

To communicate with an ASCII device over a long distance, the modem (DISCT-J1078) is used to connect the ASCII module and ASCII device. It is also used for connecting more than one slave in the MEMOBUS system.

2.5 INSTALLATION AND WIRING

2.5.1 Installation

ASCII module installation can be made in any slot on mounting base for 2000 series I/O module installation. A special mounting base is prepared for ASCII module.

For more information on mounting base or ASCII module installation, refer to Section 9 in Memocon-SC GL60S User's Manual No.1 (SIE-C815-14.1).

2.5.1 Installation (Cont'd)

(1) MB60 Mounting Base

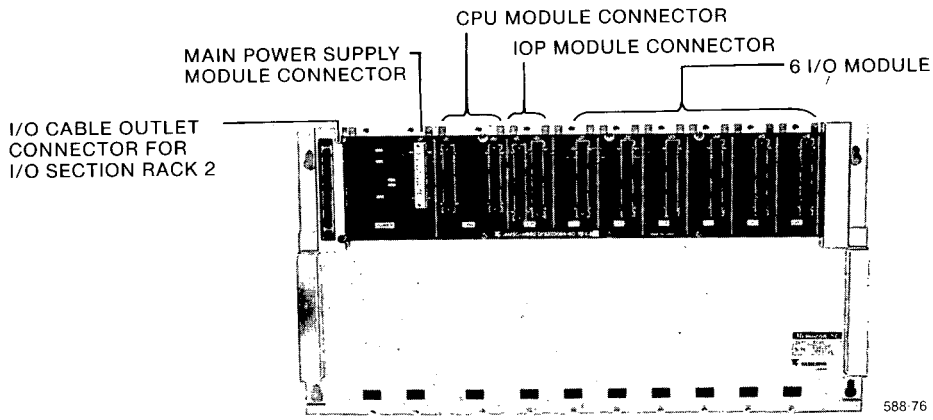


Fig. 2.3 MB60 Mounting Base

Table 2.2 Mounting Base MB60 Specifications

Items	Specifications
Type	JRMSI-MB60
Application	For mounting main power supply module, CPU module, I/O processor module, remote I/O driver module, ASCII module, and up to 6 I/O modules.
Dimensions in mm (inches)	480 (18.90) W × 250 (9.84) H × 21 (0.83) D
Approx Weight	1.4 kg 3.1 lb

(2) MB21 Mounting Base

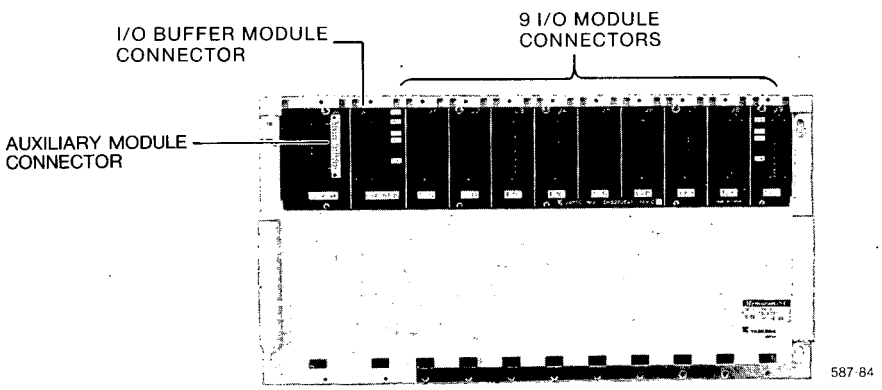


Fig. 2.4 MB21 Mounting Base

Table 2.3 Mounting Base MB21 Specifications

Items	Specifications
Type	JRMSI-MB21
Application	• For I/O expansion • For mounting auxiliary power supply module, I/O buffer module, ASCII module, and up to 9 I/O modules.
Dimensions in mm (inches)	480 (18.90) W × 250 (9.84) H × 21 (0.83) D
Approx Weight	1.3 kg 2.9 lb

(3) MB70 Mounting Base

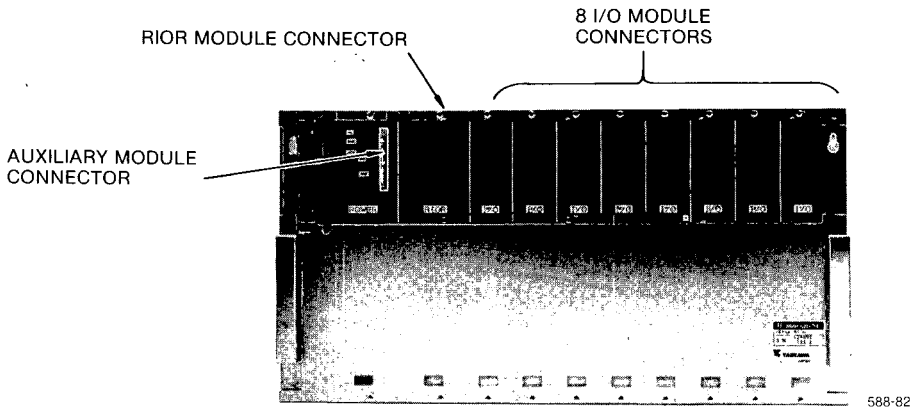


Fig. 2.5 MB70 Mounting Base

Table 2.4 Mounting Base MB70 Specifications

Items	Specifications
Type	JRMSI-MB70
Application	For mounting auxiliary power supply module, remote I/O receiver module, ASCII module, and up to 8 I/O modules.
Dimensions in mm (inches)	480 (18.90) W × 250 (9.84) H × 21 (0.83) D
Approx Weight	1.3 kg 2.9 lb

(4) MB71-1 Mounting Base (For ASCII Module)

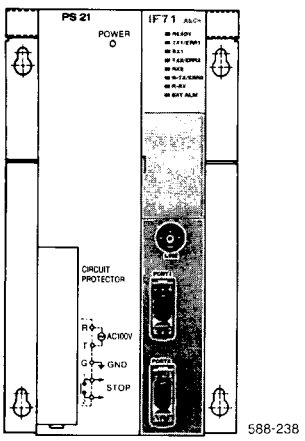


Fig. 2.6 MB71-1 Mounting Base

Table 2.5 Mounting Base MB71-1 Specifications

Items	Specifications
Type	JRMSI-MB71-1
Application	For mounting one auxiliary power supply module and one ASCII module.
Dimensions in mm (inches)	135 (5.32) W × 250 (9.84) H × 21 (0.83) D
Approx Weight	0.4 kg 0.9 lb

(5) MB71-2 Mounting Base (For ASCII Module)

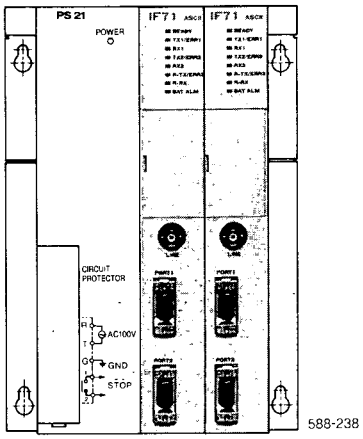


Fig. 2.7 MB71-2 Mounting Base

Table 2.6 Mounting Base MB71-2 Specifications

Items	Specifications
Type	JRMSI-MB71-2
Applicaiton	For mounting one auxiliary power supply module and up to 2 I/O modules.
Dimensions in mm (inches)	170 (6.69) W × 250 (9.84) H × 21 (0.83) D
Approx Weight	0.5 kg 1.1 lb

2.5.2 Wiring

Data communication between CPU and ASCII module is made via remote I/O line. ASCII module must be wired as a slave station in the GL60S remote I/O line. For detailed information, refer to GL60S Remote I/O User's Manual (SIE-C815-14.7).

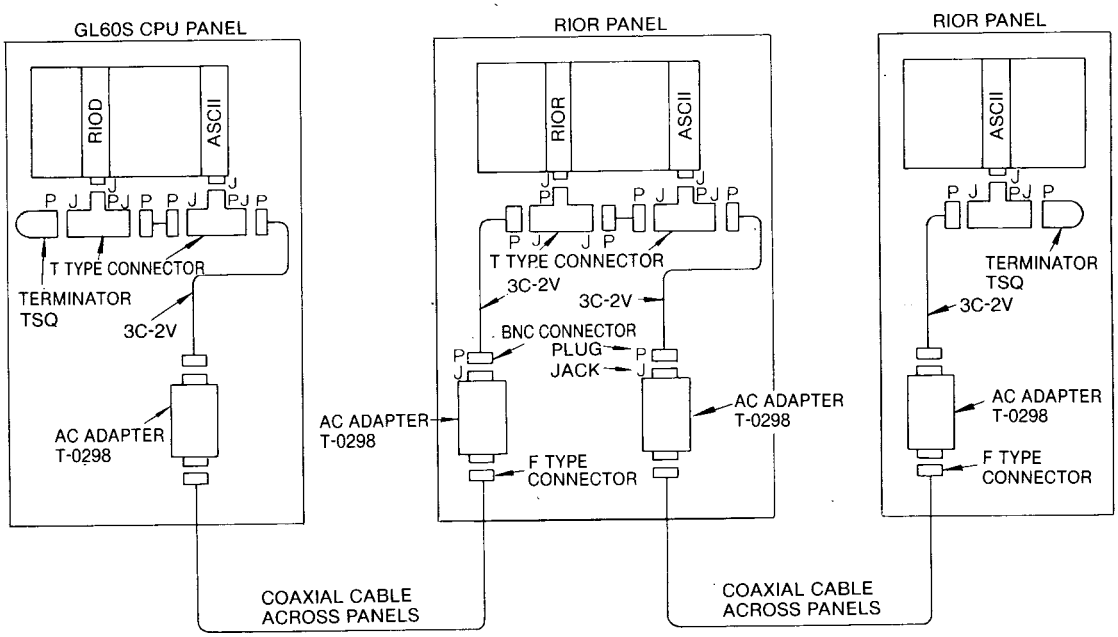


Fig. 2.8 Example of ASCII Communication Line

3 ASCII MODULE SPECIFICATIONS

Table 3.1 ASCII Module Specificaions

Items		Specifications
Type		JAMSC-IF71
Applicable PC		Memocn-SC GL60S
Number of Modules		8 Modules max connected
Memory Capacity		64 k bytes per module.
Memory Back-up		· One lithium battery · Battery life: 5 years at 25℃ · Memory contents holding time: 1 year at 25℃
Message		· 1024 messages max per module · 1024 bytes max per message
Number of Available Registers		999 registers max per message
ASCII Ports	Number of Ports	2 ports per module
	Transmission Mode	EIA RS-232C, half-duplex asynchronous
	Baud Rate	150/300/600/1200/2400/4800/9600/19200 bauds
	Data	5 to 8 bits
	Parity Check	Even parity, odd parity, disable
	Stop Bits	1 or 2 bits
	Connector	Mini 9-pin D subconnector
Indicating Lamp	READY	Lights when normal ASCII module in self diagnosis (green)
	TX 1/ER 1	Lights during transmitting data from port 1 (green)
	RX 1	Lights during receiving data to port 1 (green)
	TX 2/ER 2	Lights during transmitting data from port 2 (green)
	RX 2	Lights during receiving data to port 2 (green)
	RTX/ER3	Lights during transmitting data to remote line (green)/ communication error (red)
	RRX	Lights during receiving data from remote line (green)
	BAT ALM	Lights when battery voltage reduced (red)
Diagnostic Function		· ROM checking · RAM checking · Checksum of memory · Watchdog timer checking · Battery voltage checking
Mounting Location		On mounting bases MB60, MB21, MB70
Dimensions in mm (inches)		37.3 (1.47) W × 250 (9.84) H × 94 (3.74) D
Approx Weight		1 kg 2.2 lb

4. ASCII DEVICE CONNECTION

The ASCII module is provided with two PP modes: Connection mode and disconnection mode. Mode selection is made by a memory protect switch.

Memory Protect Switch (Toggle Switch × 1)

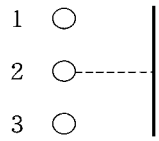


Table 4.1 Setting of Memory Protect Switch

Switch Position	Mode	
1	Memory protect ON	PP connection mode
2	Memory protect OFF	
3	ASCII operation mode	PP disconnection mode

4.1 PP CONNECTION MODE

In PP connection mode, ASCII message can be directly programmed using P150 connected to port 1 or port 2 of ASCII module. Match P150 transmission parameters to ASCII module transmission parameters. For P150, refer to Par. 7.11.1 and for ASCII module, Par. 7.9.4. Table 4.2 shows initial values for each parameter of P150 and ASCII module.

Table 4.2 Initial Parameter Values of P150 and ASCII Module

Items	P150	ASCII Module
Communication Mode	RTU	RTU
Baud Rate	9600	9600
Parity	even	even
Number of Stop Bits	1	1
Delay Count	0	0

4.2 PP DISCONNECTION MODE

When connecting ASCII devices (CRT, printer, etc) to ASCII module port 1 or port 2, and then using them, set the memory protect switch to PP disconnection mode. Use of this mode requires setting module number and transmission mode to their ports, using ASCII module DIP switch in advance.

4.2.1 Setting of Module Number and Transmission Mode

On the front of ASCII module, an 8-point DIP switch and a station address switch can be found (Fig. 4.1).

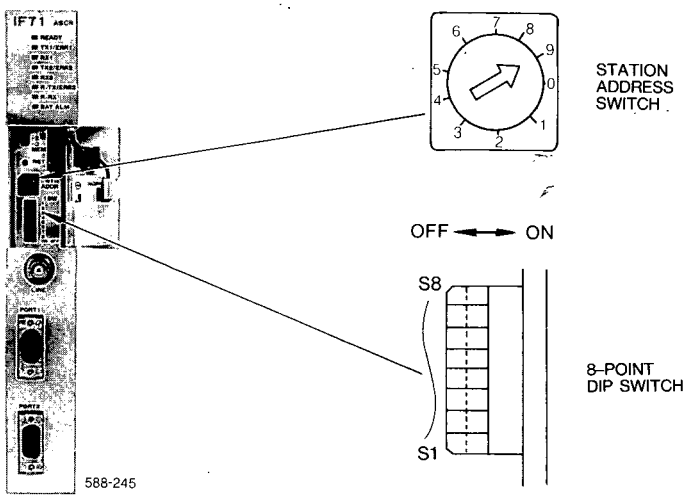


Fig. 4.1 Setting Switches for Module No. and Transmission Mode

Module number will be set by the station address switch using any one of 1 to 8. Table 4.3 lists the relationship between the DIP switch and the transmission mode.

Table 4.3 Setting of Transmission Mode of ASCII Module

Switch	Contents to be Set			
1, 2	1	2	Mode	Port 1 mode setting
	ON	ON	MEMOBUS RTU mode	
	ON	OFF	MEMOBUS ASCII mode	
	OFF	ON	ASCII device mode 1†	
	OFF	OFF	ASCII device mode 2†	
3, 4	3	4	Mode	Port 2 mode setting
	ON	ON	MEMOBUS RTU mode	
	ON	OFF	MEMOBUS ASCII mode	
	OFF	ON	ASCII device mode 1†	
	OFF	OFF	ASCII device mode 2†	
5	Not used			
6*	ON	Self-diagnostic mode		
	OFF	Normal operation mode		
7, 8	8	7	Baud Rate	To specify a transmission rate in remote line.
	ON	ON	4Mbps	
	ON	OFF	2Mbps	
	OFF	ON	1Mbps	
	OFF	OFF	0.5Mbps	

*Should always be used at OFF.
†In this mode, data received is invalid until READ command is activated.
†In this mode, data received is valid until READ command is activated.

4.2.2 Port Parameter Setting

Port parameters are set for the ASCII module by using the P150 programming panel. See Par. 7.9.4 for setting procedures. The following are set:

(1) **Baud Rate:** 150, 300, 600, 1200, 2400, 4800, 9600, or 19200 bauds.

(2) **Parity:** Odd parity, even parity, or no parity .

(3) **Number of Stop Bits:** 1 or 2 stop bits.

(4) **ASCII Device Type:** Keyboard or non-keyboard.

(5) **XON•OFF Control:** Check or no check

4.2.3 Connection Cables

(1) ASCII Device Connection Cables

The standard cable type JZMSZ-W1018 is provided to connect the ASCII module and an ASCII device. The cable length is either 5 or 15 meters. Table 4.4 lists JZMSZ-W1018 connections.

To use an ASCII device which differs from the standard cable in connection specifications, change the cable connections of the ASCII device side in accodance with connection specifications of the ASCII device.

Table 4.4 JZMSZ-W1018 Internal Connection

ASCII Module		Signal Direction	ASCII Device		Wire Color
Pin No.	Signal Name		Pin No.	Signal Name	
1	P-GND (protective ground)	←→	1	P-GND (protective ground)	Brown
2	TXD (transmitted data)	→	3	RXD (received data)	Red
3	RXD (received data)	←	2	TXD (transmitted data)	Orange
		┐	4	RTS (request to send)	
		↓	5	CTS (clear to send)	
5	CTS (clear to send)	←┼→	6	DSR (data set ready)	Green
		┘	20	DTR (data terminal ready)	
6	DSR (data set ready)	←			
9	DTR (data terminal ready)	┘			
7	S-GND (signal ground)	←→	7	S-GND (signal ground)	Black

Note: Since pin 8 at the ASCII module side is used internally, do not make any connection to the pin.

(2) Modem Connection Cables

When the distance between the ASCII module and an ASCII device exceeds 15 m, or more than one slave is used in the MEMOBUS system, modems are required. However, connection cables for ASCII devices differ from those for the MEMOBUS system.

Two types of standard cables, JZMSZ-W1007 and JZMSZ-W1008 are provided for ASCII devices. JZMSZ-W1007 is a connection cable between the ASCII module and a modem; JZMSZ-W1008 is a connection cable between an ASCII device and a modem. The length of each cable is 5 m.

Tables 4.5 and 4.6 list JZMSZ-W1007-T1 connections and JZMSZ-W1008-T1 connections. Standard cables are used for the DISCT-J1078 modems. If a commercially procured modem having connection specifications different from J1078 is used, change the cable connections of the modem side in accordance with connection specifications of the modem.

Table 4.5 JZMSZ-W1007-T1 Internal Connection

ASCII Module		Signal Direction	Modem J1078		Wire Color
Pin No.	Signal Name		Pin No.	Signal Name	
1	P-GND (protective ground)	←→	1	P-GND (protective ground)	Brown
2	TXD (transmitted data)	→	2	TXD (transmitted data)	Red
3	RXD (received data)	←	3	RXD (received data)	Orange
4	RTS (request to send)	⌐→	4	RTS (request to send)	Yellow
9	DTR (data terminal ready)	→●	20	DTR (data terminal ready)	White
5	CTS (clear to send)	←	8	CD (carrier detect)	Green
6	DSR (data set ready)	←	6	DSR (data set ready)	Blue
7	S-GND (signal ground)	←→	7	S-GND (signal ground)	Black

Table 4.6 JZMSZ-W1008-T1 Internal Connection

Modem J1078		Signal Direction	ASCII Device		Wire Color
Pin No.	Signal Name		Pin No.	Signal Name	
1	P-GND (protective ground)	←→	1	P-GND (protective ground)	
2	TXD (transmitted data)	→	2	TXD (transmitted data)	Red
3	RXD (received data)	←	3	RXD (received data)	Orange
		⌐	4	RTS (request to send)	
		⌙→	5		
4	RTS (request to send)	←⌐			
20	DTR (data terminal ready)	←●	20	DTR (data terminal ready)	Brown
6	DSR (data set ready)	→	6	DSR (data set ready)	Blue
7	S-GND (signal ground)	←→	7	S-GND (signal ground)	White

(3) Connection Cable between Modems

To connect type DISCT-J1078 modems, be sure to use a 2-core twisted cable (RG-108/U or equivalent).

5. ASCII MESSAGES

5.1 MESSAGES

Designated data processing instructions (read and write) are used for the ASCII module to transfer data with ASCII devices. The data processing instructions require "messages" to define the data I/O format. (The messages correspond to FORMAT statements in FORTRAN.) Messages are prepared and stored using the P150 programming panel. (For procedures, see Section 7.)

(1) Message Structure

Each message is assigned a number called a message number and is stored in the ASCII module memory. A message consists of a maximum of 512 words (1024 bytes). The maximum number of registers that can be used for a message is 999. The maximum number of messages that can be stored in an ASCII module is 1024. The first three words of every message are as follows:

- First word: Number of message words (4-512)
- Second word: Message number (1-1024)
- Third word: Number of registers required for the message (0-999)

Data representing the I/O format are stored in the fourth and subsequent words.

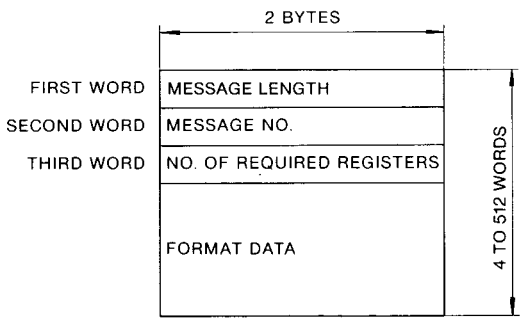


Fig. 5.1 Message Format

(2) Message Symbols

Table 5.1 lists 12 symbols used for messages.

Table 5.1 List of Message Symbols

Symbol	Meaning	m	n	Number of Required Memory Words
mIn	m × (n-digit integer) *	1-99	1-8	1
mJn	m × (n-digit integer) *	1-99	1-8	
mHn	m × (n-digit hexadecimal number)	1-99	1-4	
mOn	m × (n-digit octal number)	1-99	1-6	
mBn	m × (n-digit binary number)	1-99	1-16	
mA	m × ASCII character	1-99	—	
mX	m spaces †	1-99	—	
mC	Calendar #	—	—	
m ( )	m repetitions of symbols in ( ).	2-99	—	2
"xxx"	· ASCII device control code · 3-digit octal number (000-377) †	—	—	1
/	CR (carriage return), LF (line feed) †	—	—	
,□,	· Text symbol † · Up to 1018 characters can be entered in one text.	—	—	$1+\left[\frac{m+1}{2}\right]+n$ †

*mIn and MJn differ in write operation but are the same in read operation. That is, mIn is to print spaces in high-order digit positions less than the specified number of digits; mJn is to print 0s in high-order digit positions less than the specified number of digits.

† The symbols in □ do not require registers.

‡ $\left[\frac{m+1}{2}\right]$ is the largest integer not exceeding $\frac{m+1}{2}$

- m — Number of half-size characters
- n — Number of full-size characters

5.1 MESSAGES (Cont'd)

Calendar

Symbol	Meaning	No. of Registers	Data Format in Register
1 C	Year	1	0 0 × × Calendar year (00 - 99)
2 C	Month	1	0 0 × × (01 - 12)
3 C	Day	1	0 0 × × (01 - 31)
4 C	Day of Weak	1	0 0 × × (00 - 06)
5 C	Hour	1	0 0 × × (00 - 23)
6 C	Minute	1	0 0 × × (00 - 59)
7 C	Second	1	0 0 × × (00 - 59)
8 C	Full Count (Year to Second)	7	0 0 × × Year 0 0 × × Month 0 0 × × Day 0 0 0 × Day of Week 0 0 × × Time 0 0 × × Minute 0 0 × × Second

Note:

1. Example of output format at calendar READ
   - 1C, ":", 2C ":", 3C ":", 4C
     ↓
     88:04:23:SAT
   - 8C → 88:04:23:SAT:15:08:40
2. Number of registers does not correspond to number of m.
3. At calendar WRITE, register is not needed.

(3) Relationship between Messages and Registers

Data read by using a read instruction are stored in holding registers. Data to be output by using a write instruction should be prestored in input or holding registers.

The data format in a register is specified by the corresponding message symbol.

Table 5.2 Data Format in Register

Symbol	Data Format in Register
I1	0 0 0 I
I2	0 0 I I
I3	0 I I I
I4	I I I I
I5	0 0 0 I I I I I
I6	0 0 I I I I I I
I7	0 I I I I I I I
I8	I I I I I I I I
H1	0 0 0 H
H2	0 0 H H
H3	0 H H H
H4	H H H H
O1	0 0 0 0 0 O
O2	0 0 0 0 O O
O3	0 0 0 O O O
O4	0 0 O O O O
O5	0 O O O O O
O6	O O O O O O
B1	00000000 0000000B
B2	00000000 000000BB
B3	00000000 00000BBB
B4	00000000 0000BBBB
B5	00000000 000BBBBB
B6	00000000 00BBBBBB
B7	00000000 0BBBBBBB
B8	00000000 BBBBBBBB
B9	0000000B BBBBBBBB
B10	000000BB BBBBBBBB
B11	00000BBB BBBBBBBB
B12	0000BBBB BBBBBBBB
B13	000BBBBB BBBBBBBB
B14	00BBBBBB BBBBBBBB
B15	0BBBBBBB BBBBBBBB
B16	BBBBBBBB BBBBBBBB
mA	A_1 A_2 A_3 A_4 ⋮ Am 0 (m: odd number)
	A_1 A_2 A_3 A_4 ⋮ A_{m-1} Am (m: even number)

Note:

1. In the table, m is 1 for all symbols except "mA." In fact, as many registers as the value of m are required.
2. I and J are the same in the data format in a register.

5.2 MESSAGE EXAMPLE

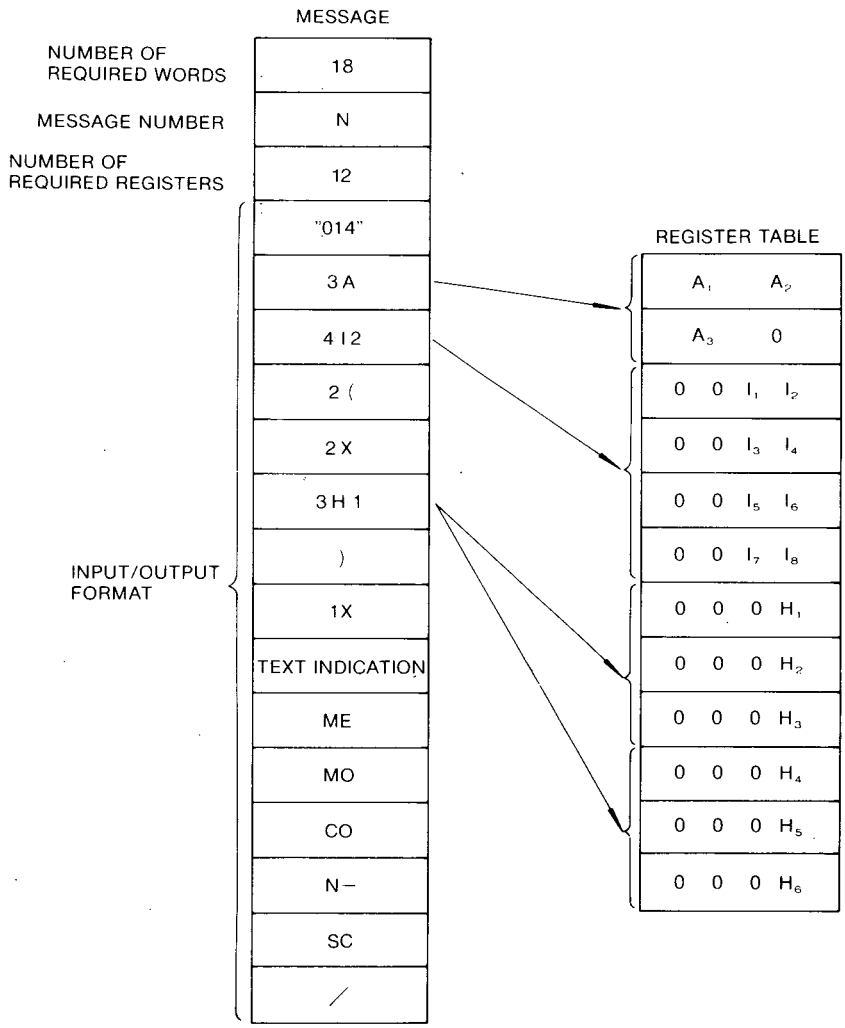
Print out the following message:

Example: "014" , 3A, 4I2, 2 (2X, 3H1), 1X, "MEMOCON-SC" , /,

When data are sent to the printer by using a write instruction, the following is printed:

A_1	A_2	A_3	I_1	I_2	I_3	I_4	I_5	I_6	I_7	I_8	b	b	H_1	H_2	H_3	b	b	H_4	H_5	H_6	b	MEMOCON-SC

Actually, the register contents are printed in place of A, I, and H. A space (blank) is substituted for b. Usually, 014 is a control code to cause the printer to perform a form feed.



Note: The message number and the first number of the register table are specified in read and write commands.

Fig. 5.2 Message Example and Register Table

6. ASCII INSTRUCTIONS

6.1 READ COMMAND

The read command is used to read data from an ASCII device, such as a keyboard or bar code reader, and store it in holding registers according to the format specified in the message.

NOTE

If a text (''), space (mX), or ASCII control code is contained in a message, it is output to an ASCII device.

6.1.1 Form

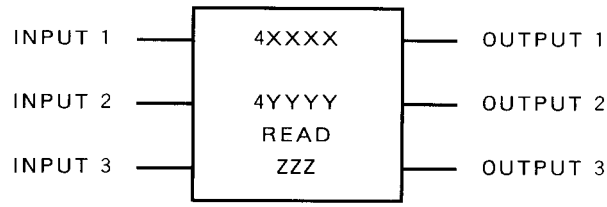


Fig. 6.1 Read Command General Form

6.1.2 Element

(1) Top Element (Source)

This is the number of the first register of seven contiguous holding registers occupied by the read command (40001-49993). Any number may be used, but the seven registers cannot be shared with another read or write command.

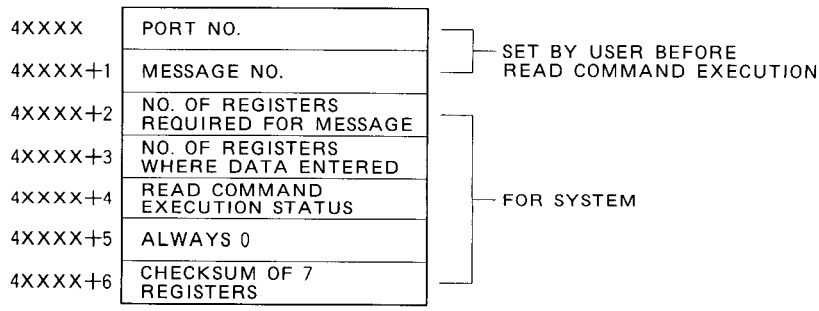


Fig. 6.2 Number of the First Register of Seven Contiguous Holding Registers

(2) Middle Element (Destination)

This is the first number of the register table in which read data is stored.

4YYYY: Must not overlap with 4XXXX to 4XXXX + 6.
4YYYY to 40000 + number of required registers < 10000
(If this inequality is not satisfied, the command is not executed.)

(3) Bottom Element (Size)

This is a value to specify the destination table size (number of registers). Specify the maximum number of registers used in the message or a larger value.

ZZZ: 1-999

6.1.3 Control

(1) Control Input

(a) Input 1: Execution command

When this input 1 is ON, with inputs 2 and 3 OFF, execution of the read command starts.

(b) Input 2: Pause command

This input signal makes the read command in execution pause. To resume the read command, turn OFF input 2 again, with input 3 OFF.

(c) Input 3: Abort command

When this input is turned on, execution of the read command is aborted.

(2) Output Signals

(a) Output 1: Executing

This output is turned on when input 1 changes from off to on and execution of the read command starts; it is turned off upon completion or stop of the operation. It is also turned off if an error occurs during read command execution.

(b) Output 2: Error

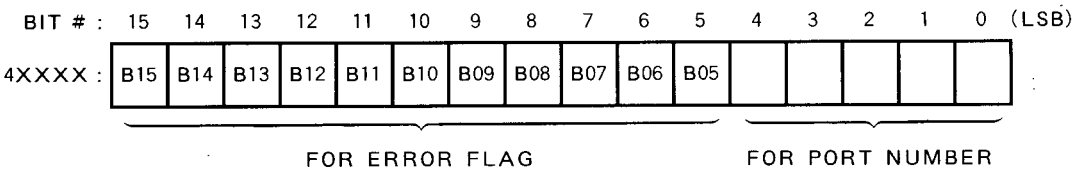
This output is turned on only for one scan if an error occurs during execution of the read command. It is also turned on only for one scan if input 3 (abort command) is turned on during execution.

(c) Output 3: Operation completion

This output is turned on only for one scan upon completion of read command operation.

<Error flag>

As an information error bit caused in execution of read command, higher-order 1 bit of 4xxxx registers used to store port number is assigned.



B15: BCC(binary check code) error during MEMOBUS mode.
The check code of receive data (CRC or LRC) is not valid.

B14: When the device is of the non-keyboard type, the input data format differs from the specified format.

Example: When the binary format is specified, 32H characters are input.

B13: A transfer error occurred in communication between the ASCII device and ASCII slave station.

Example: Parity, overrun, or framing error.

B12: Buffer overrun error in ASCII slave station.

B11: An invalid format is contained in the message.

B10: The CR (carriage return) key is depressed before all pieces of data (as many as specified in the message) have been input, and read command execution is aborted.

B09: The message specified in 4XXXX + 1 is not programmed in the ASCII slave station.

B08 The ASCII slave station having the port specified in 4XXXX is not found in remote station.

B07: Data of 17 to 31 (Decimal) are set in port number area.

B06: RIOD (remote I/O driver) with ASCII slave station to be used is not mounted on GL60S base.

B05: During ASCII message programming (with ASCII slave station stopped).

If any error above except for those of B14 to B10 is detected, stop the read command, and then stop its operation. For B10 error, stop the operation normally.

6.1.4 Data Read

(1) Keyboard Type

Read data are checked one character at a time, and if the message specification is satisfied, the character is echoed back to the ASCII device from which the data are read.

If the type or length of read data does not match the message specification, BELL code (07H) is output to the ASCII device.

NOTE

Read-in data are invalid before read command execution.

(2) Non-keyboard Type

Only the number of characters is checked and a check of one character at a time or echo-back is not made.

NOTE

In the event of an error such as communication error, clear input data in ASCII module by abort command or reset ASCII module with reset switch.

6.1.5 Read Command Example

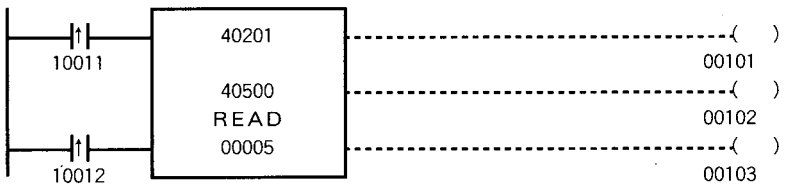


Fig. 6.3 Example of Read Command

Assume that the following message is used with the read command shown above:

/, 'A=', I5, 2X, 'B=', 12, 3X, 4A,

The port number and message number are prestored in holding registers 40201 and 40202. The following explanation applies to devices of the keyboard type:

(1) Change input relay 10011 from off to on.

If another read or write instruction is not operating on the port, coil 101 is turned on and carriage return and line feed are made, then "A=" is printed.

(2) Enter a 5-digit integer.

For example, if an integer of 17528 is entered, it is echoed back each time one character is entered, and 17528 is printed. If any character other than an integer, such as an alphabetic character, is entered, the bell or buzzer sounds and the character is not echoed back.

(3) Depress the ESC (escape) key.

The integer 17528 entered in step (2) is stored in the 40500 and 40501 holding registers (1 in 40500 and 7258 in 40501). Then. "/\" (ESC echo-back) is printed, followed by two spaces and "B=" .

(4) Enter a 2-digit integer.

For example, if an integer of 38 is entered, it is echoed back each time one character is entered, and 38 is printed. If any character other than an integer is entered, the bell or buzzer sounds and the character is not echoed back.

(5) Depress the ESC (escape) key.

The integer 38 entered in step (4) is stored in the 40502 holding register. Then, "/\" is printed, followed by three spaces.

(6) Enter four characters.

For example, if a character string of WXYZ is entered, it is echoed back each time one character is entered, and WXYZ is printed. If a non-print key (control key) is depressed, the bell or buzzer sounds and no echo-back is made.

(7) Depress the CR (carriage return) key.

The character string WXYZ entered in step (6) is stored in the 40503 and 40504 holding registers (WX in 40503 and YZ in 40504).

This completes execution of the read command. Coil 101 is turned off and coil 103 is turned on only for one scan. In this example, the following print (display) results:

```
A = 17528/\bbB = 38/\bbbWXYZ
```

Note: "b" denotes a space.

6.2 WRITE COMMAND

6.2.1 Function

The wirte command is used to output data stored in input or holding registers to an ASCII device such as a printer or CRT display in accordance with the format specified in the message.

6.2.2 Form

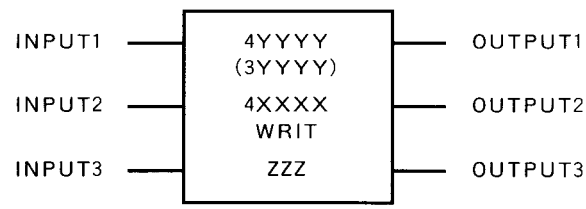


Fig. 6.4 Write Command General Form

(1) Top Element (Source)

This is the first number of the register table which stores output data.

4YYYY: YYYY + number of required registers < 10000

or

3YYYY: YYYY + number of required registers < 512

(2) Middle Element (Destination)

This is the number of the first register of seven contiguous holding registers occupied by the write command (40001-49993). Any number may be used, but the seven registers cannot be shared with another read or write command.

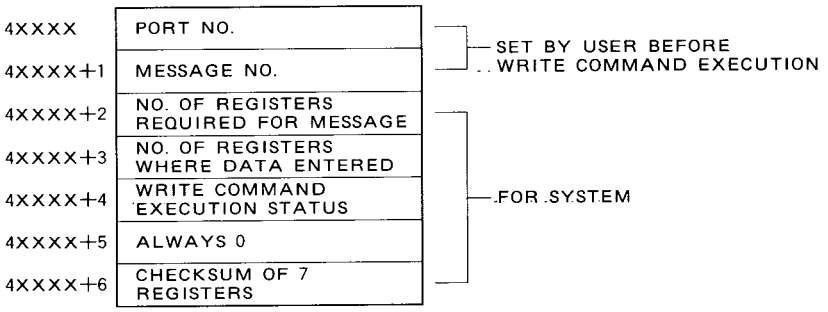


Fig. 6.5 Number of the First Register of Seven Contiguous Holding Registers

(3) Bottom Element (Size)

This is a value to specify the source table size (number of registers). Specify the maximum number of registers used in the message or a larger value.

ZZZ: 1-999

6.2.3 Control

(1) Control Input

(a) Input 1: Execution command

When this input 1 is ON, with inputs 2 and 3 OFF, execution of the write command starts.

(b) Input 2: Pause command

This input signal makes the write command in execution pause. To resume the write command, turn OFF input 2 again, with input 3 OFF.

(c) Input 3: Abort command

When this input is ON, execution of the write command is aborted.

(2) Output Signals

(a) Output 1: Executing

This output is turned on when input 1 changes from off to on and execution of the write command starts; it is turned off upon completion or stop of the operation. It is also turned off if an error occurs during write command execution.

(b) Output 2: Error

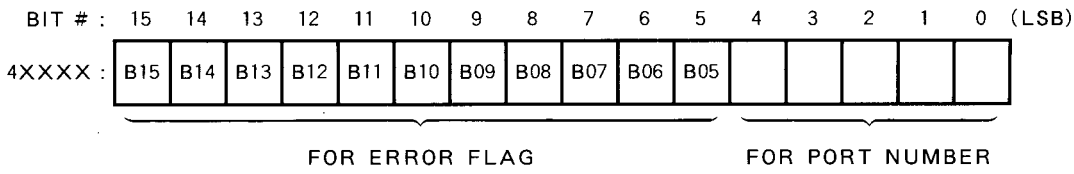
This output is turned on only for one scan if an error occurs during execution of the write command. It is also turned on only for one scan if input 3 (abort command) is turned on during execution.

(c) Output 3: Operation completion

This output is turned on only for one scan upon completion of write command operation.

<Error flag>

As an information error bit caused in execution of write command, higher-order 11 bits of 4XXXX registers used to store port number is assigned.



B15, B14: For future expansion

B13: A transfer error occurred in communication between the ASCII device and ASCII slave station.

Example: Parity, overrun, or framing error

B12: Buffer overrun error in ASCII slave station

B11: An invalid format is contained in the message.

B10: RIOD (remote I/O driver) is not mounted on GL60S base.

B09: The message specified in 4XXXX + 1 is not programmed in the ASCII slave station.

B08: The ASCII slave station having the port specified in 4XXXX is not found in remote statation.

B07: Data of 17 to 31 (Decimal) are set in port number area.

B06: RIOD (remote I/O driver) with ASCII slave station to be used is not mounted on GL60S base.

B05: During ASCII message programming (with ASCII slave station stopped).

If any error above is detected, command in use is aborted, and then input 2 is turned ON for 1 scan, even in abort command, but error bit is not set.

6.2.4 Data Output

Data to be output to an ASCII device by using a write command must be prestored in the register table specified as the source. The data formats must match the formats specified in the message used by the write command and arranged in the order as described in the messsage.

NOTE

For the integer format (mIn or mJn), the number of digits is checked when data are output (during write command execution). If the number of digits of the integer is greater than the specified number of digits, n, an asterisk (*) is printed or displayed on n character positions.

If the write command source and read command destination are set to the same number, data read by using the read command can be output by using the write command.

6.2.5 Write Command Example

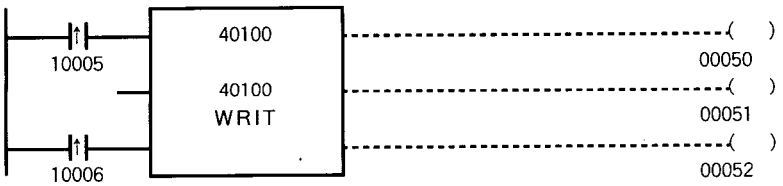


Fig. 6.6 Example of Write Command

Assume that the following is printed out by using the write command shown above:

```
b b b b b P R O D U T I O N b R E P O R T
b b b b b D A T E : b □ □ b □ □ b T I M E : b □ □ b □ □
b b b b b M A C H I N E b N O . □ □ □ □ □
```

b denotes a space and □ denotes a digit of an integer.

A number of messages are possible for this printing.

For example:

Example 1

```
/, 5X, 'PRODUCTIONbREPORT', /,
5X, 'DATE:b', I2, 1X, I2, 'bTIME:b',
I2, 1X, I2, /, 5X, 'MACHINEbNO.', I5, /,
```

(43 words)

Example 2

```
/, 5X, 'PRODUCTIONbREPORT', /,
4X, 2(1X, 4A, ':b', I2, 1X, I2), /,
5X, 'MACHINEbNO.', I5, /,
```

(37 words)

The contents and length of the register table (source) starting at holding register 40100 vary, depending on which message is used.

Assuming that March 12, 10:46, and machine number 42561 are to be printed, the register tables for examples 1 and 2 must be set as shown below:

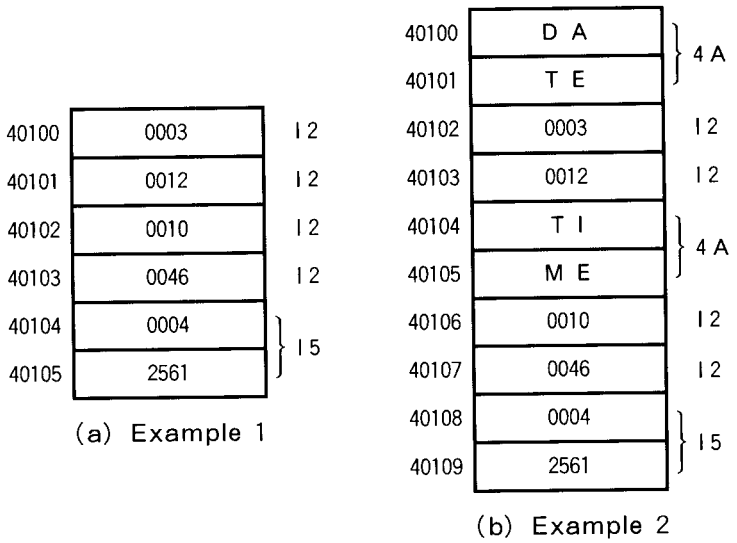


Fig. 6.7 Examples of Register Tables

In example 2, four extra holding registers are required as compared with example 1; whereas, in example 1, six extra words in the message are required as compared with example 2 (i.e. example 1: 43 words; example 2: 37 words). Thus, if the message in example 2 is used, two words can be saved. Generally, memory words can be saved by repeating symbol "m ( )" in a message.

In the example, the port number and message number are stored in the 40310 and 40311 holding registers. Input relay 10005 is changed from off to on. If another read or write command is not operating on the port, coil 50 is turned on and the following is printed:

```
bbbbbPRODUCTIONbREPORT
bbbbbDATE:b03b12bTIME:b10b46
bbbbbMACHINEbNO.42561
```

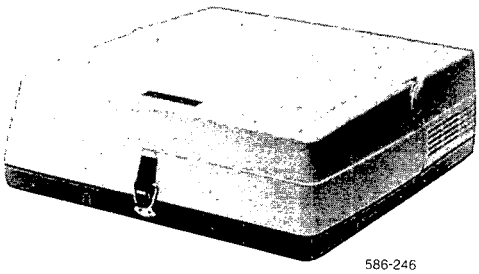
("b" : space)

After printing, coil 50 is turned off and coil 52 is turned on only for one scan.

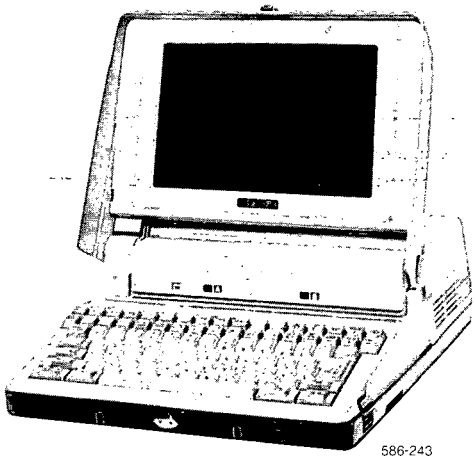
7. USE OF P150 ASCII PROGRAMMER

All the descriptions in this section apply to GL60S.

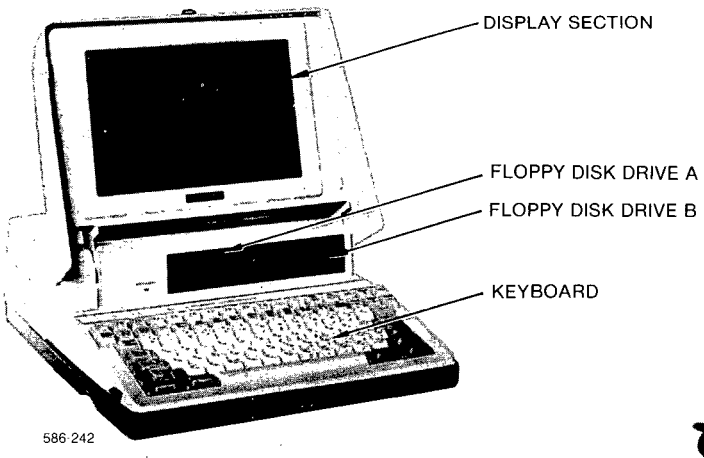
7.1 P150 CONSTRUCTION



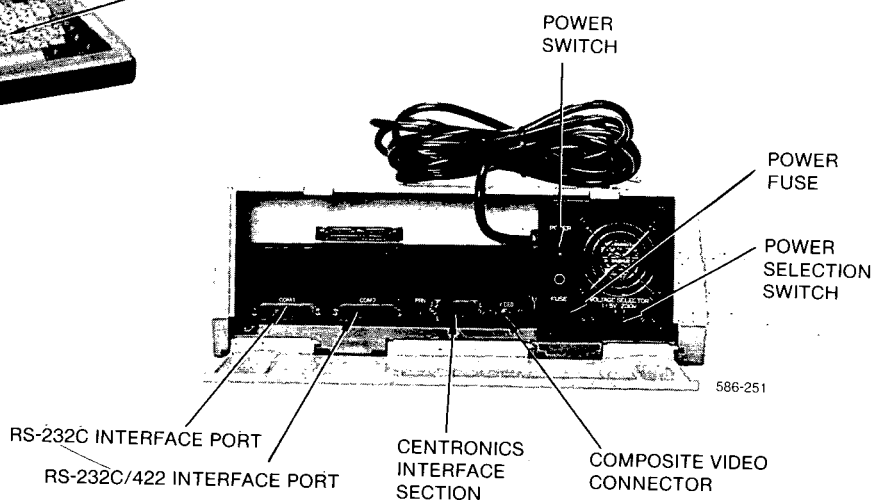
(a) With Display Section Closed



(b) With Display Section Open



(c) Front View



(d) Rear View

Fig. 7.1 P150 Construction

7.2 DISPLAY SCREEN

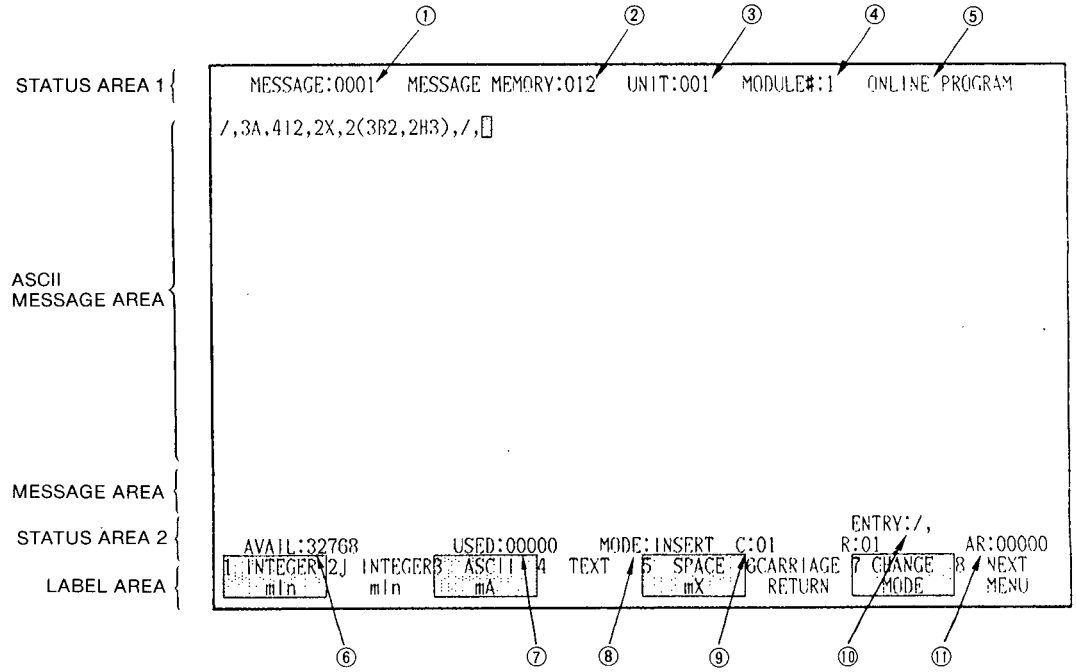


Fig. 7.2 Display Screen

(1) ASCII MESSAGE AREA

Display area for editing the data conversion method messages for data to be processed by the ASCII module.

(2) MESSAGE AREA

Various messages for giving instructions to the operator and to indicate the operating state of P150, and verious error messages are displayed here.

(3) LABEL AREA

The functions of the variable function keys [F1] through [F8] at the top of the keyboard are displayed here.

(4) STATUS AREA

This area displays the following 11 types of data

1 MESSAGE: □□□□□

The No. of the ASCII message currently under editing process is displayed.

2 MESSAGE MEMORY: □□□

The number of memory words required for the ASCII message currently under editing process is shown.

7.2 DISPLAY SCREEN (Cont'd)

3 UNIT: □□□

The unit No. of the connected GL60S is shown here.

4 MODULE#: □

The module No. of the connected ASCII module is shown here.

5 □□□□ □□□□ MODE

The operation mode is displayed here:

- ONLINE PROGRAM
- ONLINE MONITOR
- OFFLINE PROGRAM
- OFFLINE MONITOR

6 AVAIL: □□□□□

The number of remaining message memory words which can be used with the ASCII module in use.

7 USED: □□□□□

The number of message memory words being used by the ASCII module in use.

8 MODE: □□□□

Each time (CHANGE MODE) is depressed, the display of REPLACE and INSERT appear alternately. For replacing set symbols in the message, select the REPLACE mode, and for inserting, select the INSERT mode.

9 C: □□ R: □□

The line (C) and column (R) of the cursor position in the displayed ASCII message area are indicated.

10 ENTRY:

In message creation, currently-stored message symbol is shown here.

11 AR: □□□□□

The contents of the assembly register (AR) storing the values set by the keyboard are displayed.

7.3 KEYBOARD

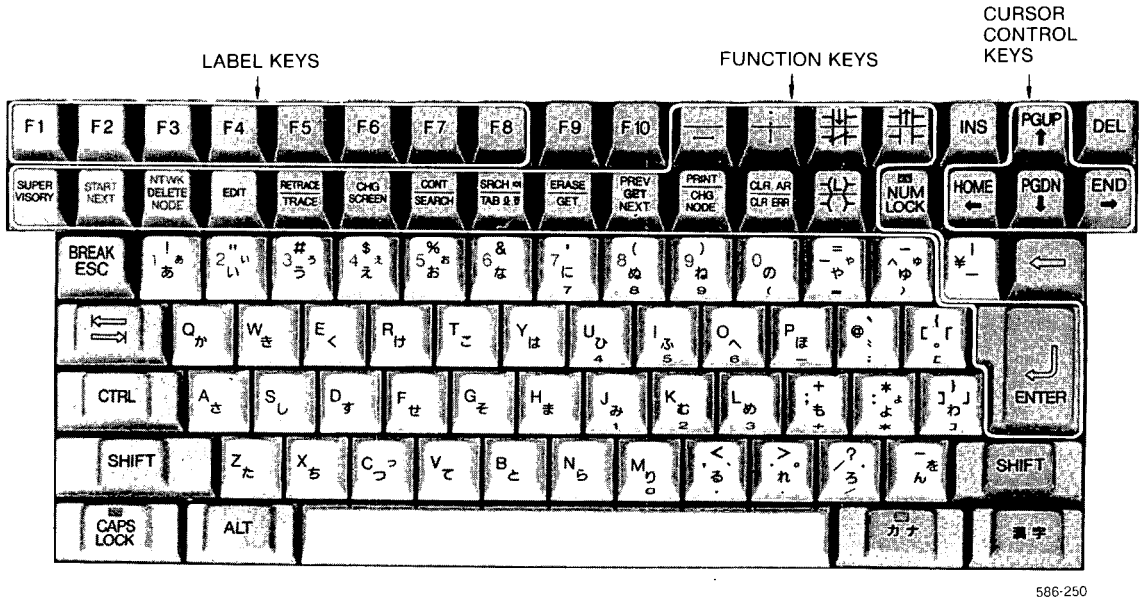


Fig. 7.3 Keyboard Layout

(1) CURSOR CONTROL KEYS

PGUP ↑	The cursor is moved up by one line. Keeping this key depressed the cursor continues to move upward.
PGDN ↓	The cursor is moved down by one line. Keeping this key depressed the cursor continues to move downward.
HOME ←	The cursor is moved to the left by one column. Keeping this key depressed the cursor continues to move.
E N D →	The cursor is moved to the right by one column. Keeping this key depressed the cursor continues to move.

(2) LABEL KEYS

The functions of these eight keys F1 through F8 are indicated by the labels in the label area. F9 and F10 are not used.

7.3 KEYBOARD (Cont'd)

(3) FUNCTION KEYS

	SUPER VISORY	Derpessing this key after an ATTACH operation always calls up the supervisory display.
SHIFT	SUPER VISORY	When these two keys are depressed simultaneously, the initial display is always displayed.
	NTWK DELETE NODE	This key is used during ASCII message editing to delete message symbols.
	EDIT	This key is used to start and end the ASCII message editing mode.
	CLR AR / CLR ERR	When this key is depressed, the error message in the message area disappears. When an error message is displayed, depress this key before executing the correct procedure.
SHIFT	CLR AR / CLR ERR	Depressing these two keys simultaneously changes the contents of the assembly register (AR) to 0.
SHIFT	PRINT / CHGNODE	When these two keys are depressed simultaneously the display is printed as a hard copy. Connect a specified printer to the serial port.

The function keys other than the above are not used with this ASCII programmer.

(4) ASCII KEYS

These keys are used to input numerals, alphabet, codes and other ASCII characters, when inputting numerical data, file name, etc. These keys are operational while the カナ key is unlocked. While the カナ key is locked, KATAKANA is input.

(5) SPECIAL KEYS

CAPS LOCK — Capital Lock Key

When this key is depressed and locked, all the alphabet keying afterward is made in capital letters. Depressing it again unlocks it.

カナ — Kana Key

When this key is depressed and locked, all the alphabet keying afterward are converted into KANA. Depressing it again unlocks it.

SHIFT — Shift Key

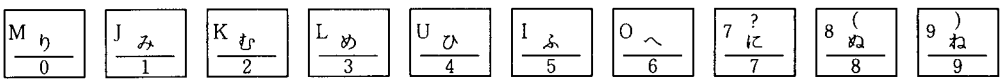
This key is depressed when the characters in the shift positions of all the keys are to be input. The two shift keys have identical function.

⇦ — Back Space Key

This key is used to correct an input character.

NUM LOCK

When this key is depressed and locked, all the keys shown below serve as digit keys.

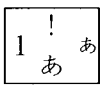


Also other keys carrying codes ("(" and "—") are also made to input these codes. Note that while this key is locked, the shift key is disabled.

7.3 KEYBOARD (Cont'd)

NOTE

(1) Example of Keying

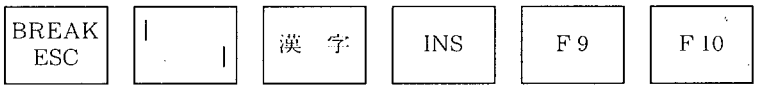


To input "1" at the middle left, simply depress this key. To input "!" at the top, depress this key while depressing SHIFT.

To input "ア" at the bottom. depress this key while depressing カナ.

To input "ァ" at the middle right, after depressing カナ, depress this key while depressing SHIFT.

(2) Keys not to be Used



(3) HIRAGANA and KATAKANA

Although the keys are labeled with HIRAGANA, actually KATAKANA is input. No HIRAGANA can be input.

7.4 P150 SPECIFICATIONS

7.4.1 Basic Specifications

Table 7.1 Basic Specifications

Item	Specifications
Power Supply*	85 to 132 VAC/195 to 265 VAC (Selection), single phase, at 47.5 to 63 Hz
Consumed Power*	120 VA
Ambient Temperature†	+5 to + 40℃
Storage Temperature†	−20 to + 60℃
Humidity*	20 to 80% RH (non-condensing)
Atmosphere*	No inflammable or corrosive gases or no excessive dust
Grounding*	Chassis grounding line is connected to mainframe grounding line via grounding cable of communication module.
Dielectric Strength†	1500 VAC for 1 minute
Insulation Resistance†	50 MΩ min at 500 VDC

*Data measured with disk inserted in P150.
†Data measured with no disk inserted in P150.

7.4.2 Performance Specifications

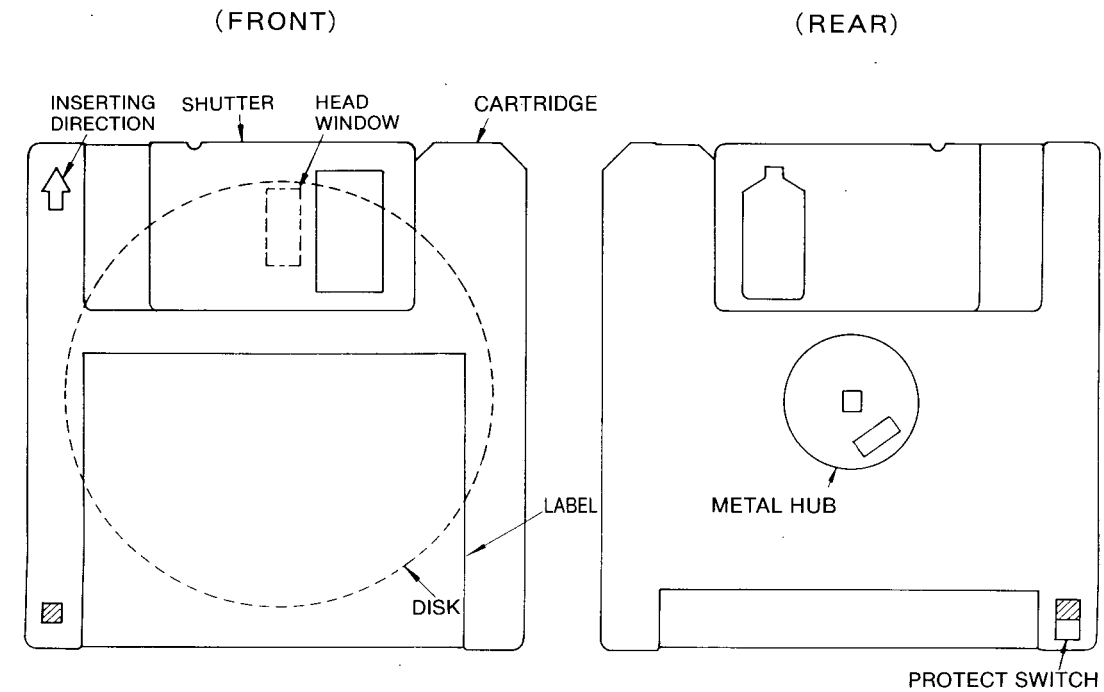
Table 7.2 Performance Specifications

Item		Specifications
Type		DISCT-P150-10
CPU		IAPX-186, 8 M Hz
ROM		16 k bytes (For bootstrap and diagnostic of hardware)
Display Screen		Plazma display, orange, size 230 × 144 mm
Display Capability	Text Display	ANK* : 25 lines × 80 words
	Dot Matrix	ANK* : 8 × 16 dots (25 lines)
	Character Attribute	Reverse, blink, under line, blind
	Graphic Display	640 × 400 dots
Keyboard		94 keys, sculptured type
Floppy Disk Drive		Built-in two 3.5-inch floppy disk (double density)
Serial Interface		Complying with RS-232C or RS-232C/422
Parallel Interface		Complying with specifications of Centronics Data Computer Corp.
Composite Video Signal Interface		For connection of external CRT
Calendered Watch		Battery back-up
OS†		Standard: MS-DOS‡ V2.11
Dimensions in mm (inches)		348(13.7)W × 121(4.8)H × 435(17.1)D
Approx Weight		9 kg 19.9 lb

*ANK: Generic name of alphabetic character, special character/symbol and KATAKANA.
†Operating System
‡MS-DOS is a registered trade mark of Microsoft Corp.

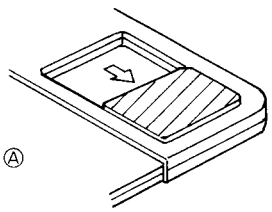
7.4.3 Floppy Disk Drive Specifications

(1) Floppy Disk Part Names



WRITE POSITION OF PROTECT SWITCH

Write Disable



Write Enable

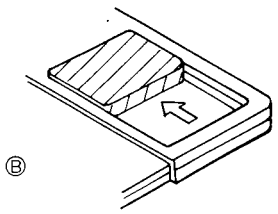


Fig. 7.4 Floppy Disk Part Names

(2) Precautions When Handling Floppy Disks

- Do not touch the disk surface when opening the shutter.
- Do not bring the disk close to motors, transformers or other magnetized objects.
- Do not contaminate the disk with alcohol, thinner, beverages, etc.
- Do not place heavy objects on the disk.
- Do not bend or fold the disk.
- Do not expose the disk to direct sunlight or heat.
- Be sure the disk is fully inserted.
- To protect the files (avoiding damage and magnetization), remove the disk from the drive after use and store it in the case in the specified storage area.

Table 7.3 Models of Floppy Disk for P150

Model	Name	Function and Application
F60S-E001	GL60S programmer	GL60S I/O allocation; program storing, altering, monitoring, loading, saving, verifying, etc.
F60S-E002	GL60S ladder lister	Printing out of ladder diagram and program documentation for GL60S by using printer.
F150-000	Blank disk	Blank disk for saving GL60S program, formated (initialized).
F60S-E003	ASCII programmer	ASCII message programmed to ASCII module; storing, altering, monitoring, etc.

(3) Opening P150

1. Release lock Ⓐ.
2. Fully push the release latches of part Ⓑ to disengage the display section locks.
3. Lift open the display section until it locks into position with part Ⓒ.

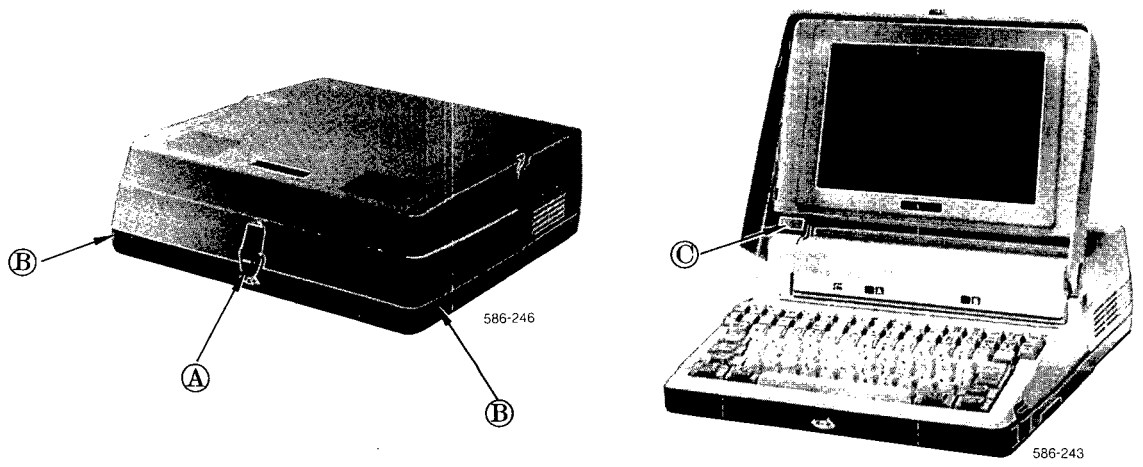
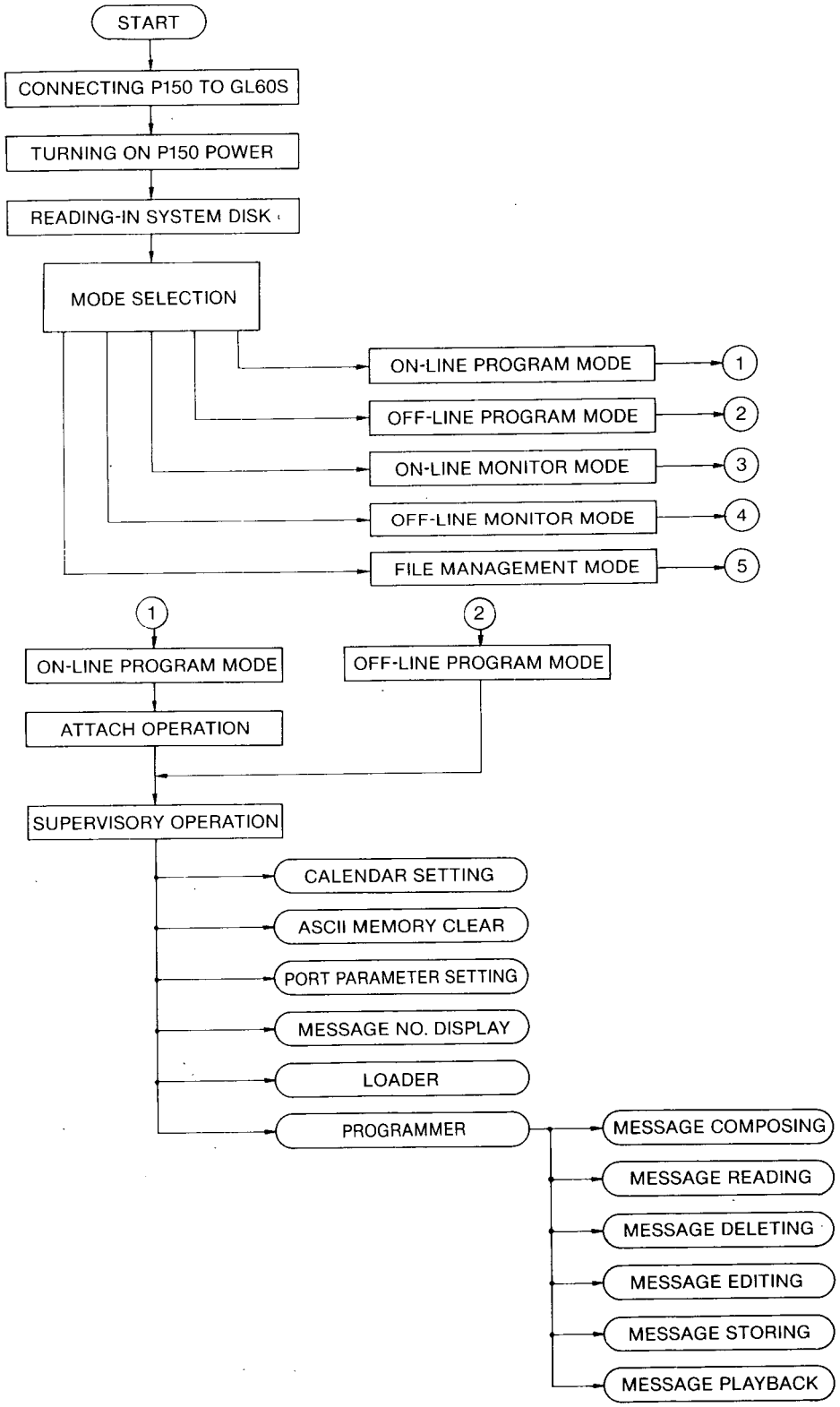
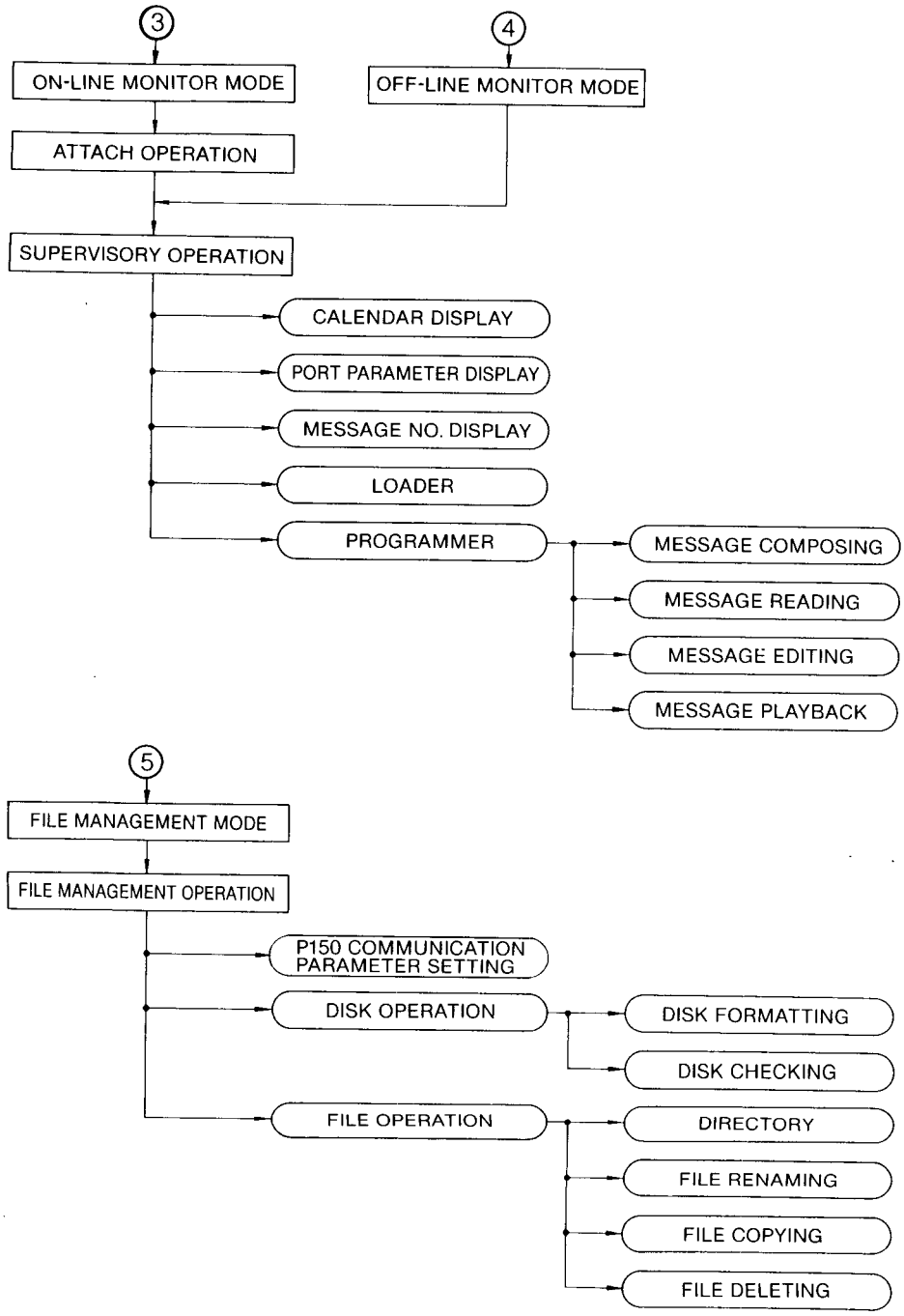


Fig. 7.5 Opening P150 Display Section

7.5 ASCII PROGRAMMING TREE




③
ON-LINE MONITOR MODE
④
OFF-LINE MONITOR MODE
ATTACH OPERATION
SUPERVISORY OPERATION
CALENDAR DISPLAY
PORT PARAMETER DISPLAY
MESSAGE NO. DISPLAY
LOADER
PROGRAMMER
MESSAGE COMPOSING
MESSAGE READING
MESSAGE EDITING
MESSAGE PLAYBACK
⑤
FILE MANAGEMENT MODE
FILE MANAGEMENT OPERATION
P150 COMMUNICATION PARAMETER SETTING
DISK OPERATION
DISK FORMATTING
DISK CHECKING
FILE OPERATION
DIRECTORY
FILE RENAMING
FILE COPYING
FILE DELETING

7.6 PREPARATION

There are two ways of connection for P150 programming using ASCII modules:

- P150 connected to ASCII module via GL60S,
- P150 connected to ASCII module directly.

7.6.1 P150 Connected to ASCII Module via GL60S

P150 is connected to ASCII module via any one of three types of modules mounted on GL60S mounting base: I/O processor (IOP) module, expanding communication (COMM) module, or remote I/O receiver (RIOR) module.

Connected ports — P150 PORT 1 (COM 1) and PORT 1 or PORT 2 of IOP,
P150 PORT 1 (COM 1) and PORT 3 or PORT 4 of COMM,
P150 PORT 1 (COM 1) and P.P. PORT of RIOR.

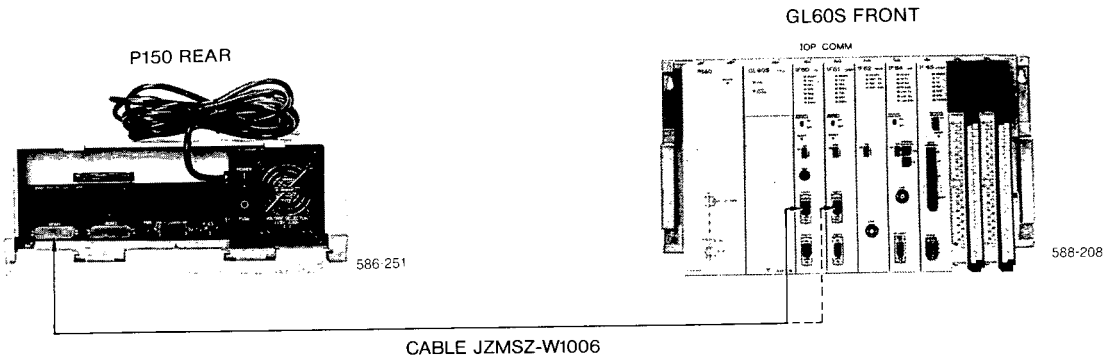


Fig. 7.6 Connection between P150 and IOP or COMM

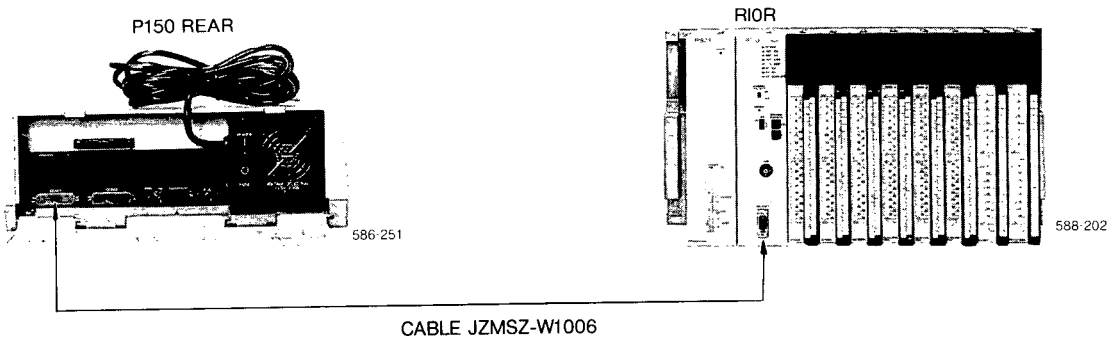


Fig. 7.7 Connection between P150 and RIOR

7.6.2 P150 Connected to ASCII Module directly

ASCII module PORT 1 or 2 must be connected to PORT 1 (COM 1) of P150.

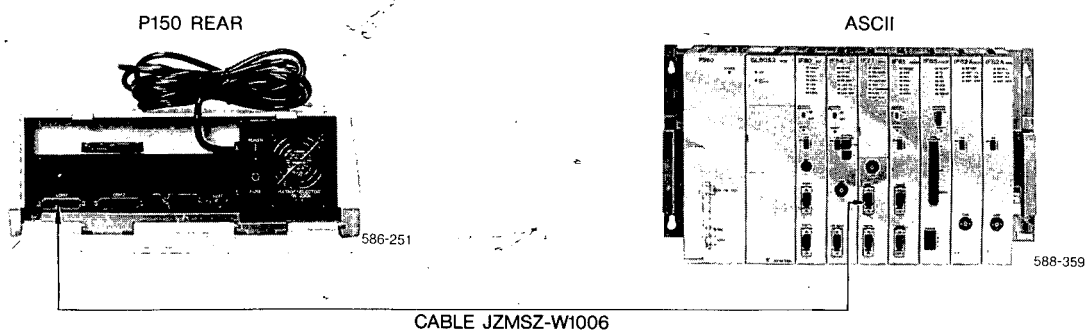
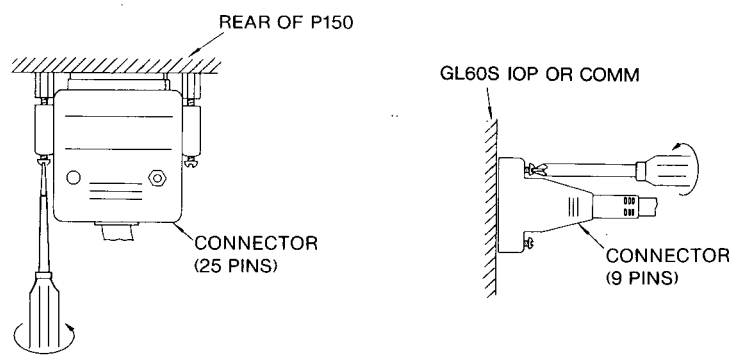


Fig. 7.8 Connection between P150 and ASCII Module

POINT

- Be sure to turn off the power supply to P150 before connecting or disconnecting the cable.
- If cable disconnection is required, be sure to remove the disk from P150, then turn off the power to P150 in the initial display. The cable disconnection is available.



Note: Secure the connector with setscrew so that cable cannot be disconnected.

Fig. 7.9 Connection of P150 and GL60S

7.6.3 Turning on P150 Power

1. Turn on GL60S power.

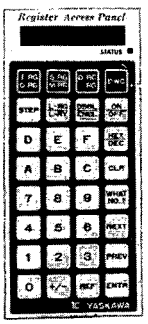
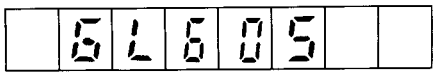


Fig. 7.10 GL60S RAP Display

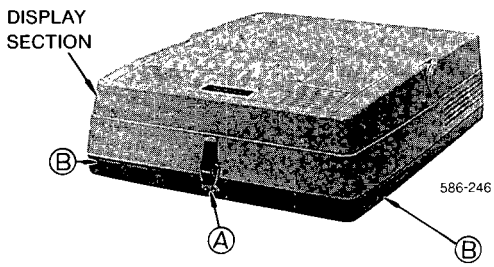
- "GL60S" is displayed on the Register Access Panel (RAP).



- After 5 to 10 seconds, RUN indicator lights.

2. Set the P150 as follows:

(1) Release lock Ⓐ .
(2) Fully push the release latches of part Ⓑ to disengage the display section locks.
(3) Lift open the display section until it locks into position with part Ⓒ .



3. Turn on P150 power.

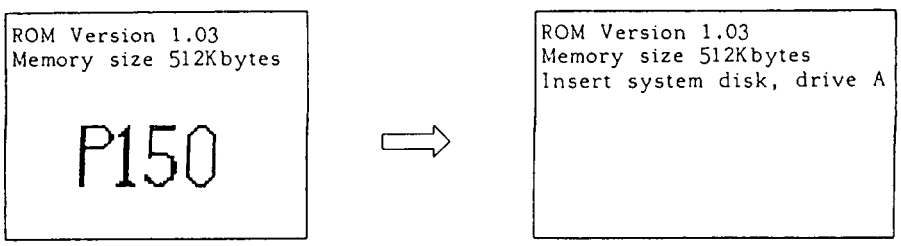
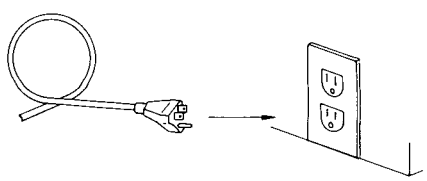


Fig. 7.11 Display Screen

IMPORTANT

1. Be sure to plug in the power cable to a 100VAC outlet provided with a grounding terminal.
2. After prolonged storage, when P150 is turned on, the display remains blank for several minutes. This is normal with a plasma display.



7.6.4 Reading-in System Disk

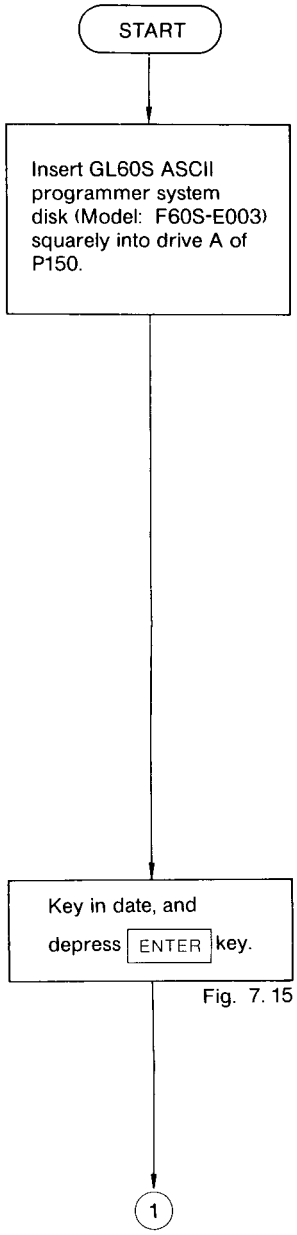


Fig. 7.15

POINT

- Insert the disk with the label side up.

```
        Loading system . . .
```

Fig. 7.12

```
Microsoft MS-DOS version 2.11
Copyright 1981,82,83 Microsoft corp.

System Release A1.04
Command v. 2.11
```

Fig. 7.13

```
Microsoft MS-DOS version 2.11
Copyright 1981,82,83 Microsoft corp.

System Release A1.04
Command v. 2.11

A>echo off

---------- GL60S ASCII PROGRAMMER-----

Current date is Fri  6-17-1988
Enter new date:
```

Fig. 7.14

```
Microsoft MS-DOS version 2.11
Copyright 1981,82,83 Microsoft corp.

System Release A1.04
Command v. 2.11

A>echo off

---------- GL60S ASCII PROGRAMMER-----

Current date is Fri  6-17-1988
Enter new date: 6-18-1988
Current time is 13:24:34.00
Enter new time:
```

Fig. 7.15

POINT

- For example, to enter October 19, 1988, key in 10-19-1988 [ENTER], 10-19-88 [ENTER], or 10/19/88 [ENTER].
- If the same data has already been entered, simply depress [ENTER] key.

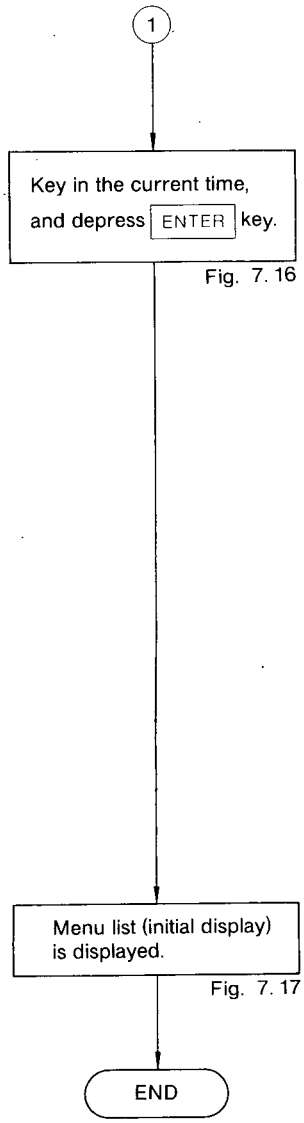


Fig. 7.16

```
Microsoft MS-DOS version 2.11
Copyright 1981,82,83 Microsoft corp.

System Release A1.04
Command v. 2.11
A>echo off

---------- GL60S ASCII PROGRAMMER-----

Current date is Fri  6-17-1988
Enter new date: 6-18-1988
Current time is 13:24:34.00
Enter new time: 13:13:13

----------      SYSTEM READING      ----------
```

Fig. 7.16

POINT

- Key in the time in the 24-hour system. For example, for 3:00:00 p.m, key in 15:00:00 and depress [ENTER] key.
- If the correct time already has been input, simply depress [ENTER] key.

Fig. 7.17

```
SYSTEM DISK VERSION : 1.0
   MENU  LIST
  1. PROGRAM MODE
  2. MONITOR MODE
  3. FILE MANAGEMENT MODE


      INPUT MENU NO.

1        2    3        4    5        6    7 CONFIRM 8    AR:00000
```

Fig. 7.17

NOTE

(1) Before inserting the system disk, make sure it is the GL60S ASCII programmer.

(2) To restart the system, start from the power supply switching operation.

(3) If power OFF is required, first remove disk from P150, then turn the power off.

7.6.5 Port Parameter Setting

(1) GL60S Port Parameter Setting

(a) For IOP/COMM module

- The procedure for setting the transmission parameters for exchange communications with host computer, P150, etc. by connecting the GL60S IOP and/or COMM is described here.
- The GL60S IOP and COMM modules are initialized at the factory before shipment to allow both PORT 1, PORT 2, PORT 3 and PORT 4 to be connected unconditionally with P150, making setting correction unnecessary. However, be sure to check for correct setting.
- Without depressing [ENTER] key, the contents cannot be changed.

Table 7.4 Setting Item of GL60S Port Parameters by RAP

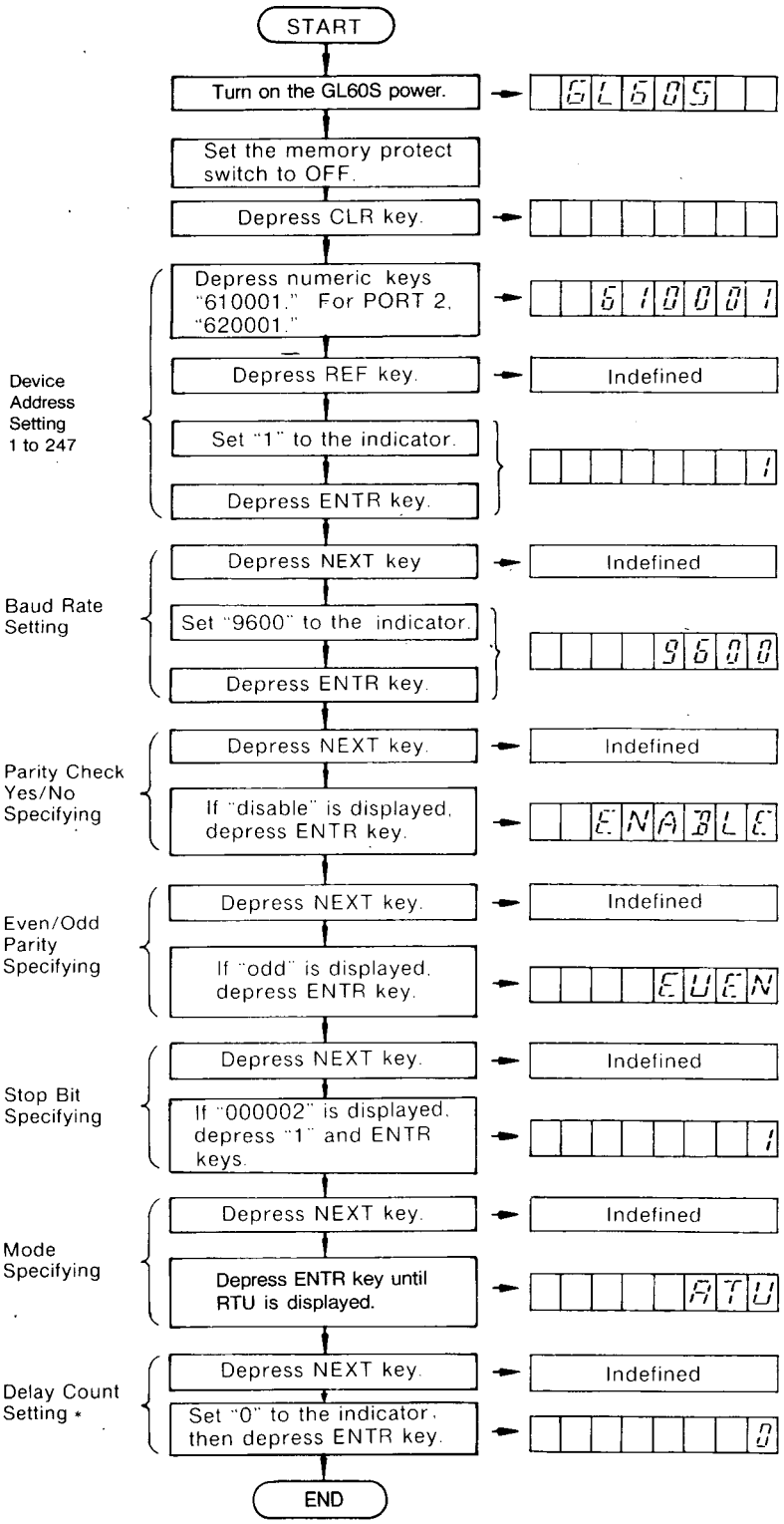
Items	Description	Indication	Initial Setting
6×0001	Device address	OO1	1
6×0002	Baud rate	DO 9600	9600
6×0003	Parity check enable	PARITY ON	Yes
	Parity check disable	N PARITY	
6×0004	Even parity	EVEN	Even
	Odd parity	ODD	
6×0005	1-stop bit	1	1
	2-stop bit	2	
6×0006	RTU mode (8-bit data)	RTU	RTU
	ASCII mode (7-bit data)	ASCII	
6×0007	Delay count (in unit of 10ms)	000	0

Note:

1. Any one of port numbers 1 to 4 is put in the "×" position which is the second digit (from the left) of a six-digit number in the items.
2. By inputting the item, the indicator displays it. If the input is in error, depress [CLR] key, then input again.
3. After the item is input, depress [REF] key to display the content of item on the indicator. Then the content of next item is displayed after depressing [NEXT] key.
4. When changing the content set a new content, then depress [ENTR] key.

7.6.5 Port Parameter Setting (Cont'd)

Example of GL60S Communication Parameter Setting for Connecting to P150 (For No Initial Setting)



*This function may be used dependent upon the receiving ability of the peripherals by setting a delayed time between the received communication signal and the response of the GL60S. Generally, "0" is set as the delay count.

Note: For PORTS 3 and 4, depress "630001" and "640001", respectively.

(b) For RIOR module

Parameters of remote PP port of RIOR module have been fixed. When communication across RIOR and P150 is required, synchronize P150 transmission parameters with those of RIOR.

Table 7.5 Transmission Parameters of Remote PP Port of RIOR Module

Device Address	1
Baud Rate	9600
Parity	Even at enable
Stop Bit	1
Communication Mode	RTU
Delay Count	0

(c) For ASCII module

- When direct ASCII programming (direct communication across P150 and ASCII module) is needed, set port parameters in accordance with Par. 4.1, "CONNECTION MODE."
- Port parameters across P150 and ASCII module must be set with P150 connected to ASCII module. For detailed information, refer to Par. 7.9.4, "Port Parameters."

Table 7.6 shows initial values of port parameters in ASCII module PP connection mode.

Table 7.6 Initial Values of Port Parameters

Device Address	–
Communication Mode	RTU
Baud Rate	9600
Parity	Even at enable
Stop Bit	1
Delay Count	0

(2) P150 Port Parameter Setting

- For P150 port parameter setting, refer to Par. 7.11.1 on page 91.
- P150 port 1 has been pre-set at the factory before shipping to connect with GL60S IOP module, COMM module, RIOR module or ASCII module with no setting required on site. However, be sure to check the set values.

7.7 MODE SELECTION

Program Mode: This mode is selected to set port parameters, store or change ASCII messages, stop, start, or clear the memory of ASCII module. All the program operations, including operations in the monitor mode are possible.

Monitor Mode: This mode is selected to display port parameters and ASCII messages. To prevent memory destruction by operation error, the ASCII module memory contents cannot be changed.

File Management Mode: For checking disks, displaying file name directory, deleting files, or for setting communication parameters. All the operations in this mode can be executed by P150 alone.

Operation in program mode or monitor mode is available in either, ON-line or OFF-line. Select any ON-line or OFF-line mode.

ON-line mode: Selected to read out memory contents of ASCII module or write in. Connection of P150 and ASCII module is required.

OFF-line mode: P150 is provided with memory to allow storage of ASCII module data. It results in operation of P150 alone in which ASCII message can be read-out from or written-in to P150.

Select the operation mode with the P150 initial display. Then, set the memory protect switch of GL60S according to the selected operation mode as follows:

Table 7.7 Setting of Memory Protect Switch

Operation Mode	Memory Protect Switch
ON-line Program	OFF
OFF-line Program	—
On-line Monitor	ON or OFF
OFF-line Monitor	—
File Management	—

Note: P150 operation in ON-line mode is the same as that in OFF-line mode except for a difference in access memory type.

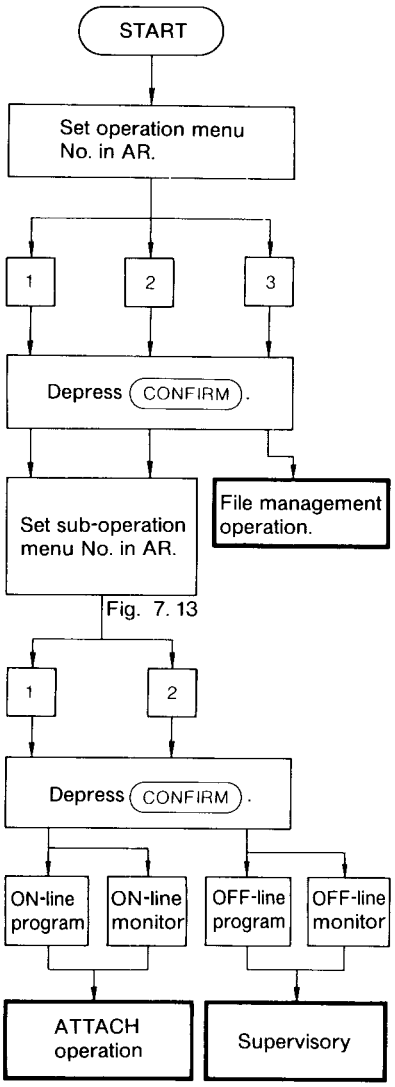


Fig. 7.13

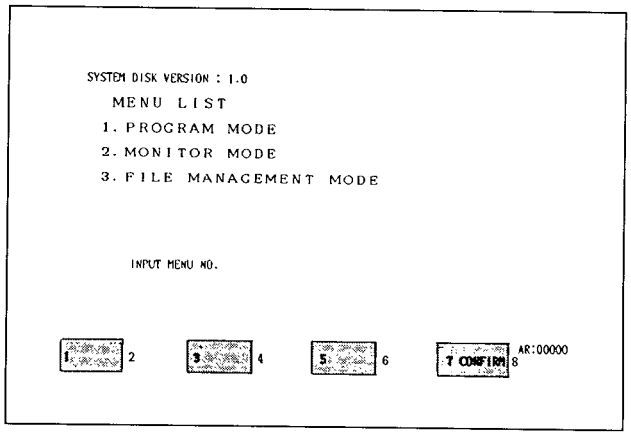


Fig. 7.12 Initial Display (Menu List)

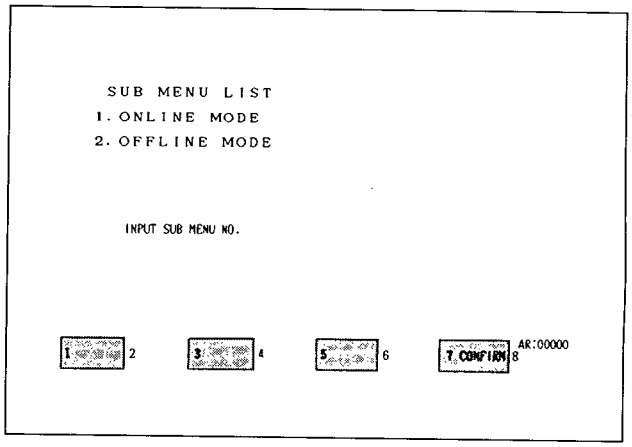


Fig. 7.13 Sub Menu List

NOTE

(1) To clear AR, depress CLR AR / CLR ERR while depressing SHIFT.

(2) To change the mode after the ATTACH operation, return to the initial display (Fig. 7.12), and select the operation mode in the operation menu, again. To do this, return to the initial display by depressing SUPER VISORY and then depressing INITIAL DISPLAY, or by depressing SUPER VISORY and SHIFT, simultaneously.

7.7 MODE SELECTION (Cont'd)

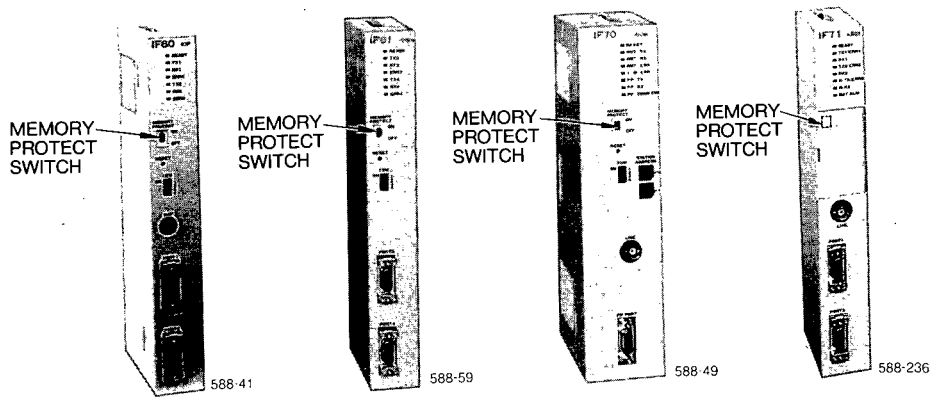


Fig. 7.14 Memory Protect Switches on GL60S Communication Modules

IMPORTANT

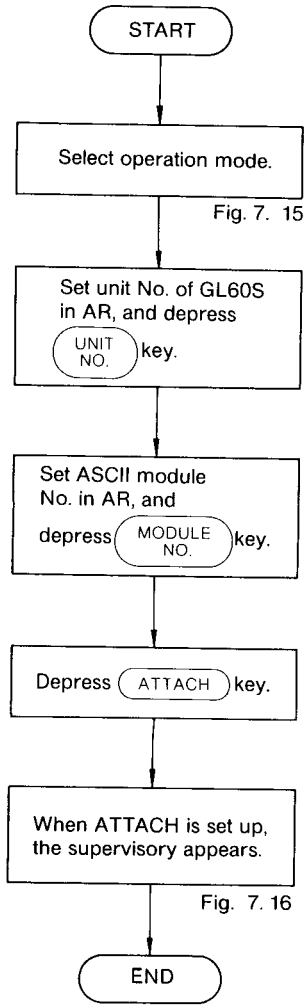
- Even while the GL60S protect switch is ON, the program mode can be selected. However, in this case, memory content changes such as ASCII message storing and altering, cannot be made.
- All the OFF-line mode and the file management mode operations can be executed with the P150 alone.

7.8 ATTACH OPERATION

"ATTACH" means as follows:

After reading in a system disk in P150, connect P150 to GL60S by software. Interaction becomes possible only through the ATTACH operation.

The ATTACH operation is required for the ON-line mode. It is not required for the OFF-line mode or the file management mode.



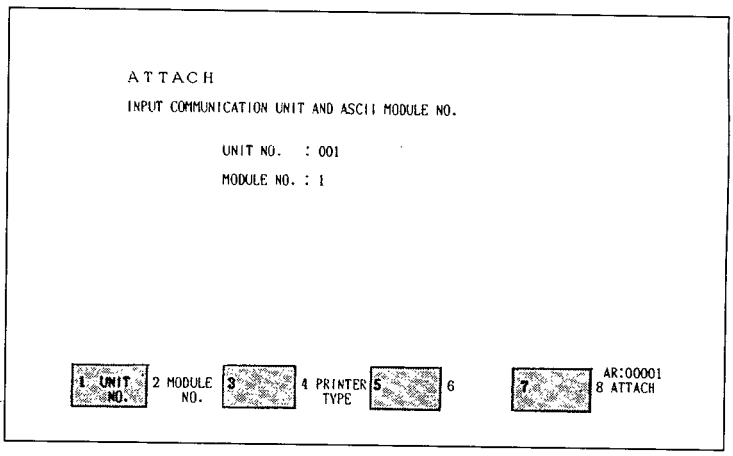


Fig. 7.15 ATTACH Display

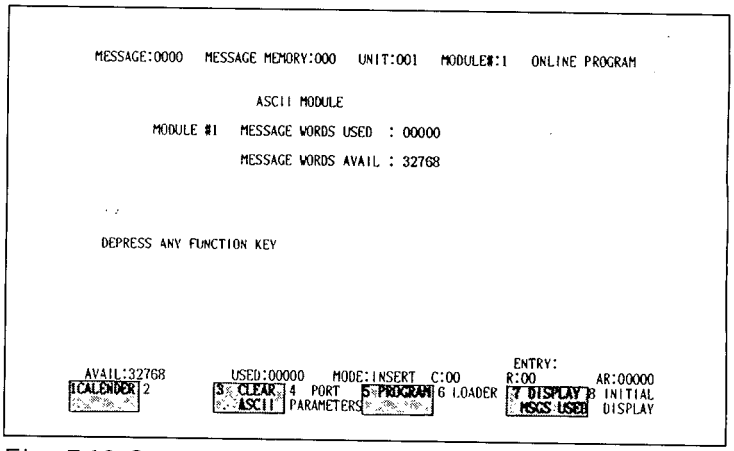


Fig. 7.16 Supervisory Display

NOTE

1. When ATTACH operation is executed, it need not be repeated unless the state before ATTACH (initial display) is re-initialized.
2. The range of unit Nos. is 1 to 247 and module Nos. 1 to 8.

7.8 ATTACH OPERATION (Cont'd)

3. When (PRINTER TYPE) in the ATTACH display (Fig. 7.15) is depressed, the label display changes to that shown in Fig. 7.17 below.

   · Depressing (NO FORM FEED) brings back the ATTACH display (Fig. 7.15), and sends the line feed code (LF) short of one page to the printer without using form feed codes (FF) when changing pages by the printer.

   · When (FORM FEED) is depressed, the ATTACH display (Fig. 7.15) is displayed again, and form feed code (FF) is sent to the printer when the printer changes pages.

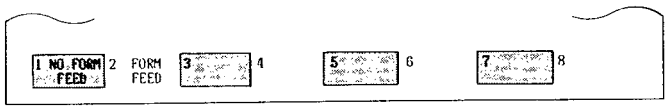


Fig. 7.17

4. While the ASCII module is inactive, the STOP STATUS is read, and its code is displayed in the message area.

   "MODULE STATUS #1:XX"

7.9 SUPERVISORY OPERATION

Depressing [SUPER VISORY] key after ATTACH activation produces the display shown in Fig. 7.18, enabling the SUPERVISORY operations indicated in the lable area.

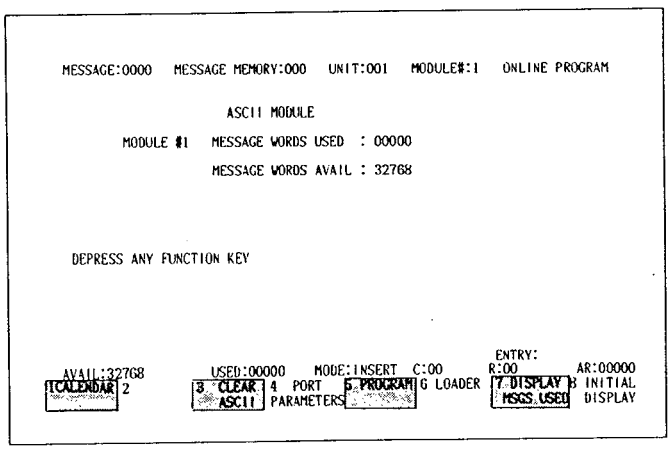


Fig. 7.18 Supervisory Display

NOTE

· When (INITIAL DISPLAY) key is depressed, or [SHIFT] and [SUPER VISORY] keys are depressed simultaneously, the initial display (Fig. 7.12) appears.

7.9.1 Clearing ASCII Module Memory

Clear the ASCII messages stored in the ASCII module.

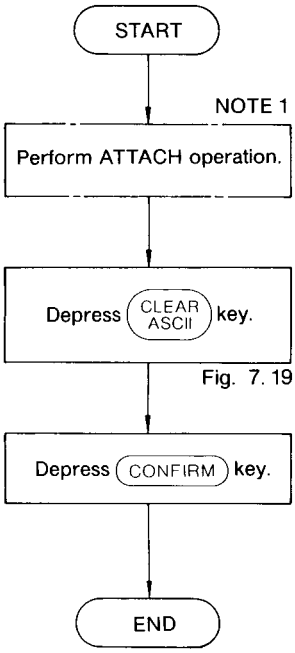


Fig. 7.19

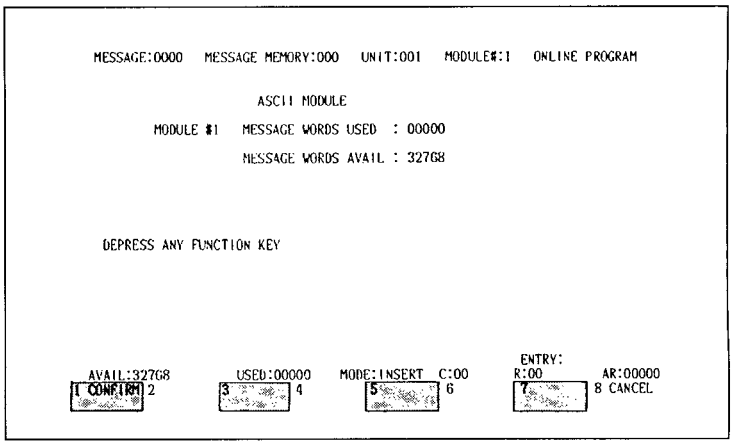


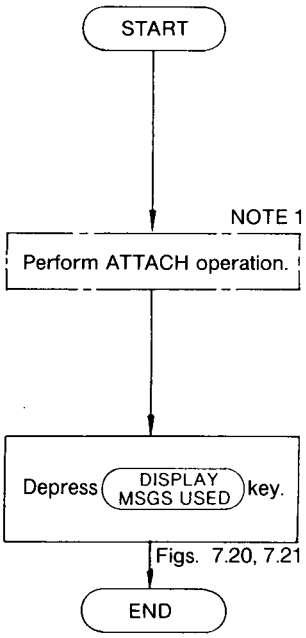
Fig. 7.19

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. In OFF-line mode, clear ASCII message area occupied in P150.
3. In the MONITOR mode, (CLEAR ASCII) is not displayed.
4. In Fig. 7.19, the following messages will be displayed in the message area:
   "ASCII MODULE MEMORY CLEAR REQUESTED"
5. When (CANCEL) is depressed instead of (CONFIRM), nothing is executed, and the supervisory display (Fig. 7.18) is called up again.

7.9.2 Message No. Display

Make the numbers of the messages stored in the ASCII module displayed as follows:



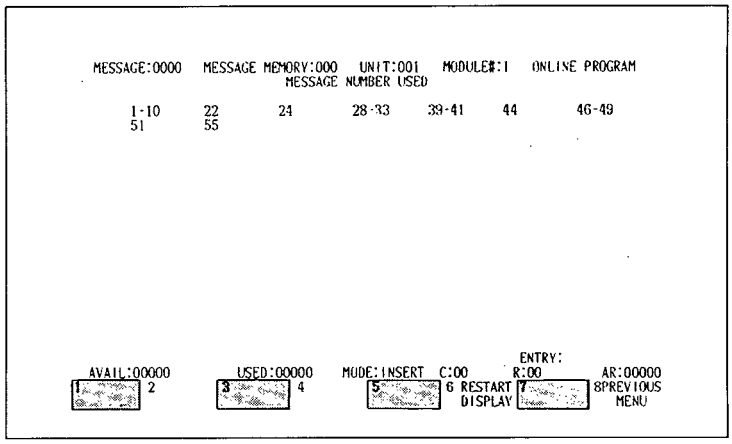


Fig. 7.20 Message No. Display (1)

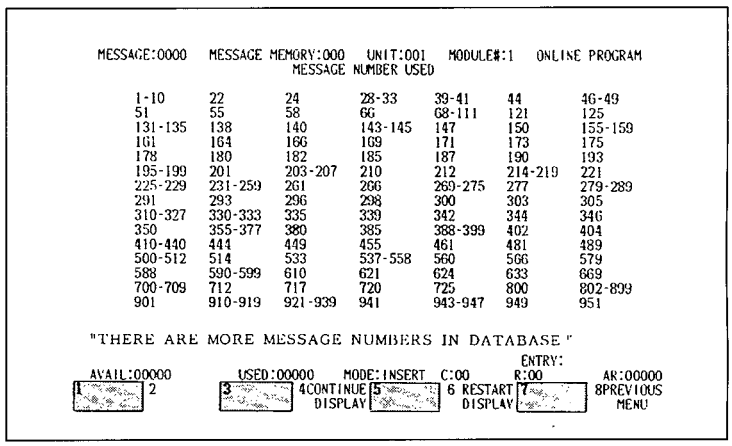


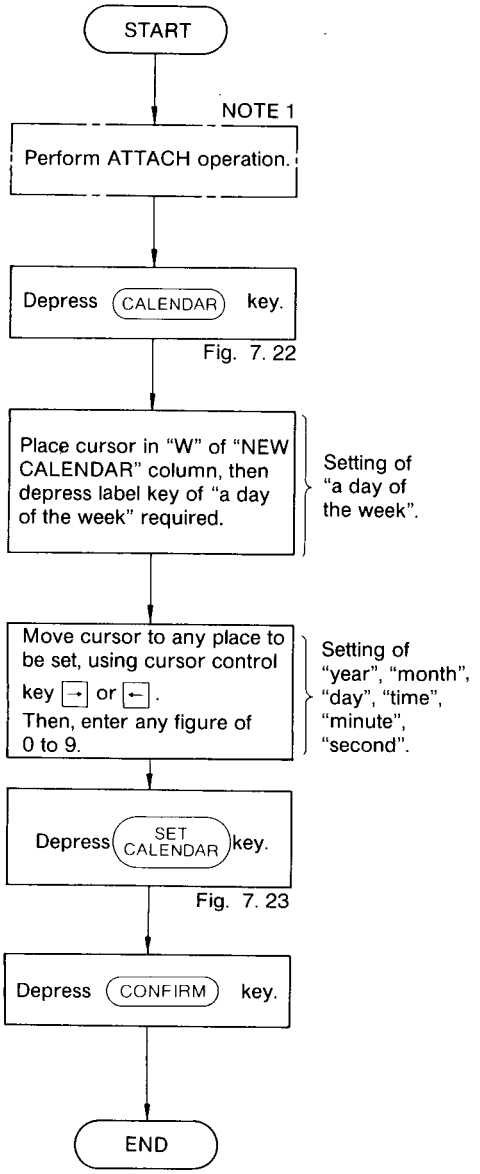
Fig. 7.21 Message No. Display (2)

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. For OFF-line mode, message No. stored in P150 is displayed.
3. When (DISPLAY MSGS USED) is depressed in the supervisory display (Fig. 7.18), "READING USED MESSAGE NUMBERS" is displayed.
4. When all the message Nos. can be shown in one display, the dispaly appears as that shown in Fig. 7.20 Message No. Display (1). When they cannot be shown in one display, the display appears as that shown in Fig. 7.21 Message No. Display (2).
5. Depressing (CONTINUE DISPLAY) while Message No. Display (2) (Fig. 7.21) is being displayed, replaces the displayed message Nos. with the subsequent message Nos.
6. Depressing (RESTART DISPLAY) displays the message Nos. again from the one immediately preceeding.
7. Depressing (PREVIOUS MENU) calls up the supervisory display (Fig. 7.18) again.

7.9.3 Calendar Setting

Setting and altering ASCII module calendar are available for displaying the calendar on P150.



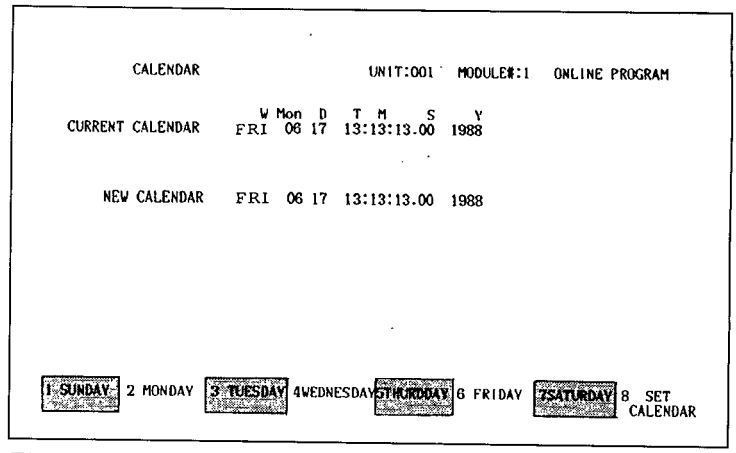


Fig. 7.22 Calendar Display

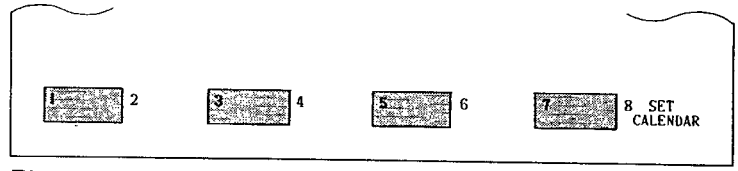


Fig. 7.23

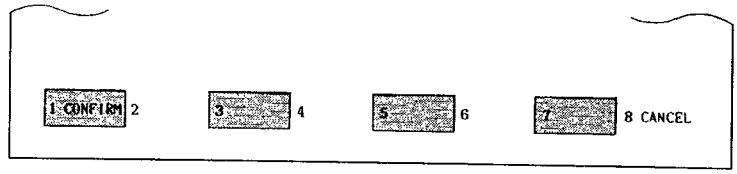


Fig. 7.24

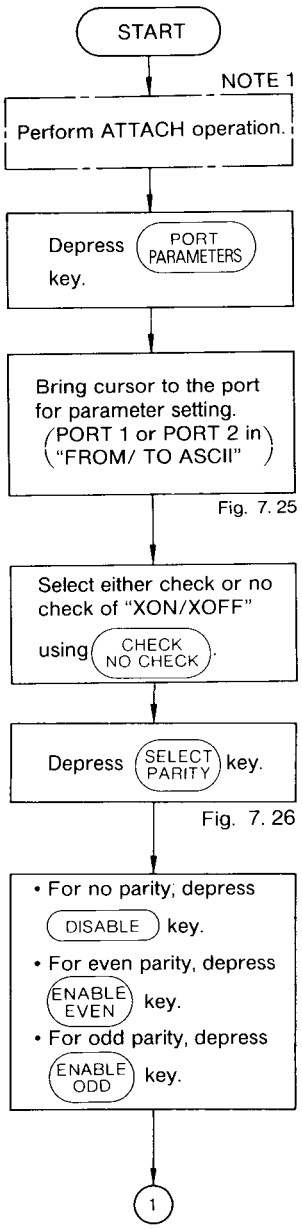
NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. The displayed calendar source varies in accordance with type of mode:
   - ASCII module calendar in ON-line mode,
   - MS-DOS calendar in OFF-line mode.
3. Label display varies in accordance with position of cursor:
   - Cursor in "W" – Label display in Fig. 7.22
   - Cursor in "Y", "Mon", "D", "T", "M", or "S" – Lable display in Fig. 7.23
4. If (CANCEL) key is depressed instead of (CONFIRM) key, nothing is executed, and the supervisory display (Fig. 7.18) is called up again.

7.9.4 ASCII Port Parameter Setting

The ASCII module has two ASCII ports (PORT 1 and PORT 2), through which GL60S exchanges data with ASCII devices (or MEMOBUS slaves) or P150 is connected for ASCII message programming. To do this, the ASCII ports and the ASCII devices or P150 must be matched in regard to parameters.

1 For ASCII Devices



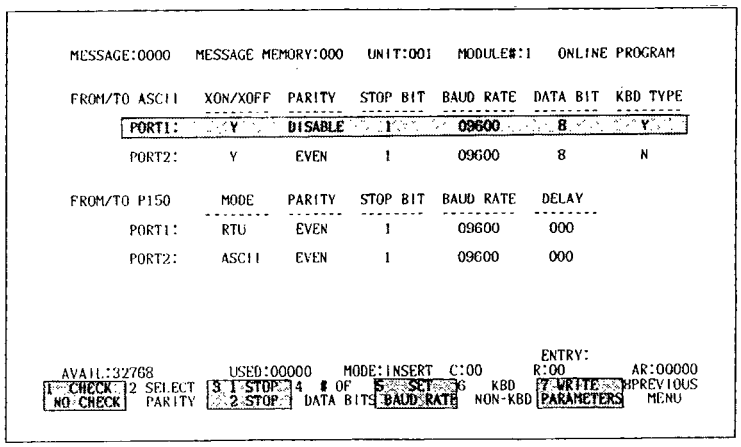


Fig. 7.25

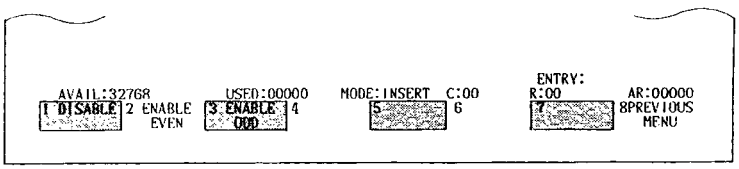
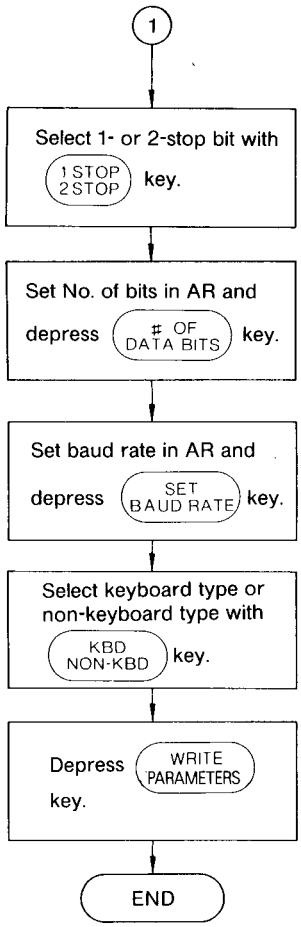


Fig. 7.26



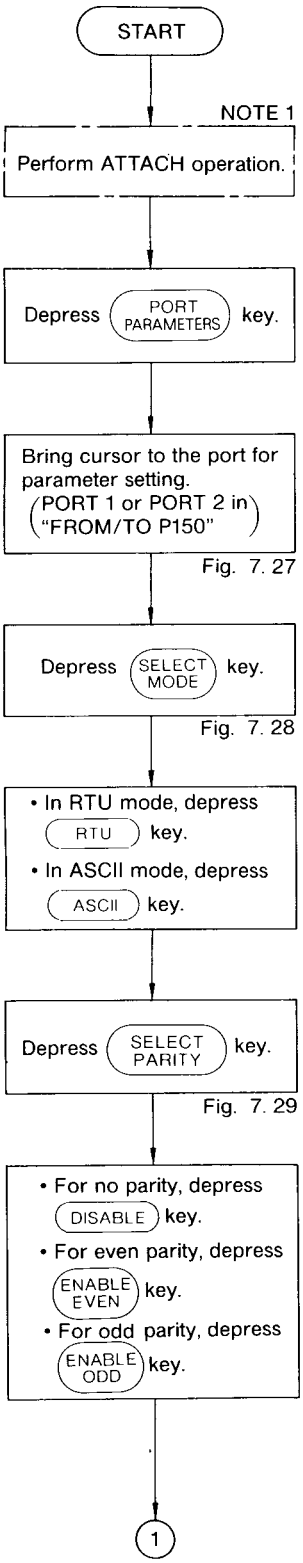
NOTE

1. When ATTACH operation has already been executed, this process is not necessary.
2. Range of set parameters:

Items	Range of Set Parameters	Initial Value
X ON/X OFF	Check or no check	No check
Parity	Disable, even, odd	Even
Stop Bits	1 or 2 bits	1
Data	5 to 8 bits	8
Baud Rate	150, 300, 600, 1200, 2400, 4800, 9600, 19200	9600
Keyboard	With/without keyboard	Without keyboard

3. Each time (CHECK NO CHECK), (1 STOP 2 STOP) and (KBD NON-KBD) keys are depressed, the arrows (↑ ↑, ↓ ↓) are alternately displayed.
4. The set parameters are stored in memory simply by depressing (WRITE PARAMETERS) key.

[2] For P150



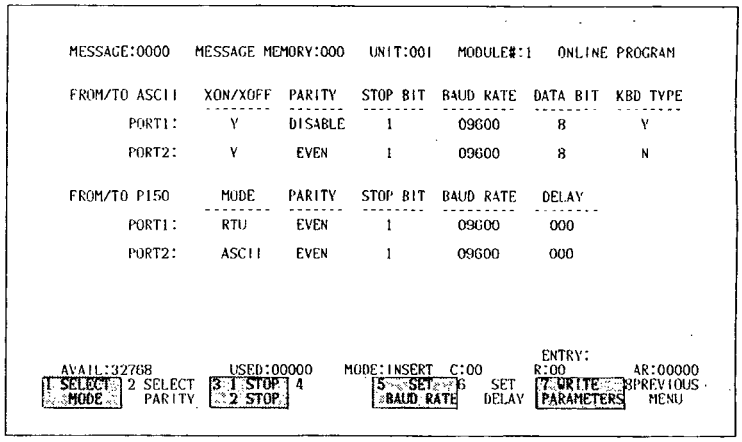


Fig. 7.27

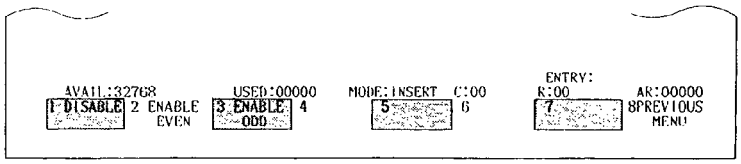


Fig. 7.28

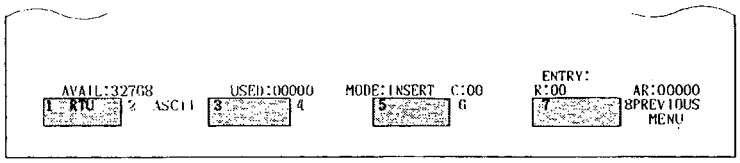
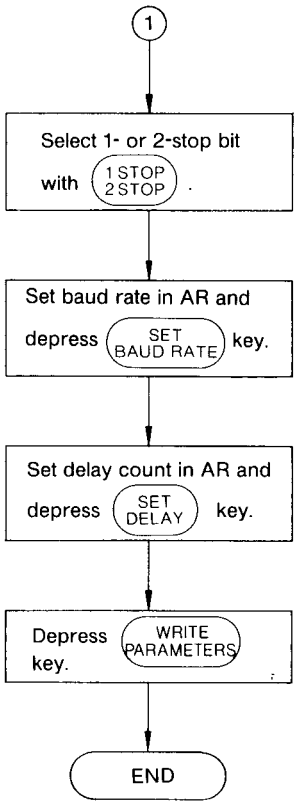


Fig. 7.29



NOTE

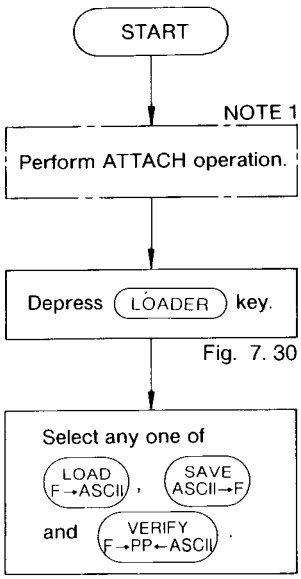
1. When ATTACH operation has already been executed, this process is not necessary.
2. Range of set parameters:

Items	Range of Set Parameters	Initial Value
Mode	RTU (8 bits) or ASCII (7 bits)	RTU
Parity	Disable, even, odd	Even
Stop Bits	1 or 2	1
Baud Rate	150, 300, 600, 1200, 2400, 4800, 9600, 19200	9600
Delay Count	0 to 255 (in unit of 10ms)	0

3. Each time (1 STOP 2 STOP) is depressed, the arrows (↑ ↑, ↓ ↓) are alternately displayed.
4. The set parameters are stored in memory by only depressing (WRITE PARAMETERS) key.
5. Depressing (PREVIOUS MENU) key calls up the supervisory display (Fig. 7.18) again.

7.9.5 Disk Loading

Load (write), save (read) and verify (compare) messages in the ASCII module as follows: Have a data disk prepared for use.



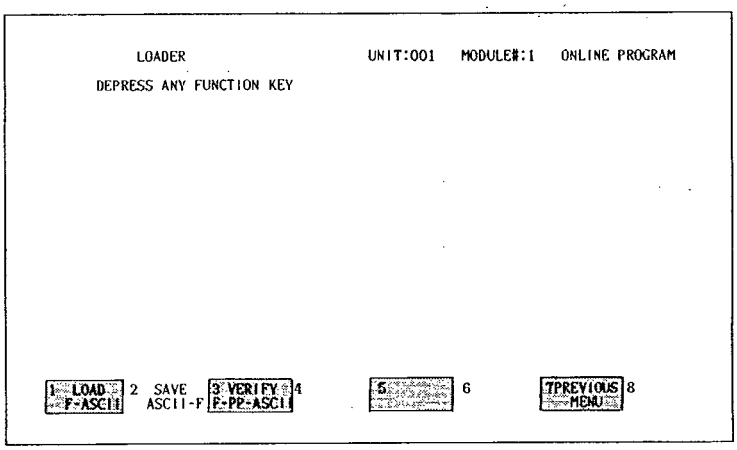


Fig. 7.30

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. In OFF-line mode, load, save and verify messages in memory occupied in P150.

IMPORTANT

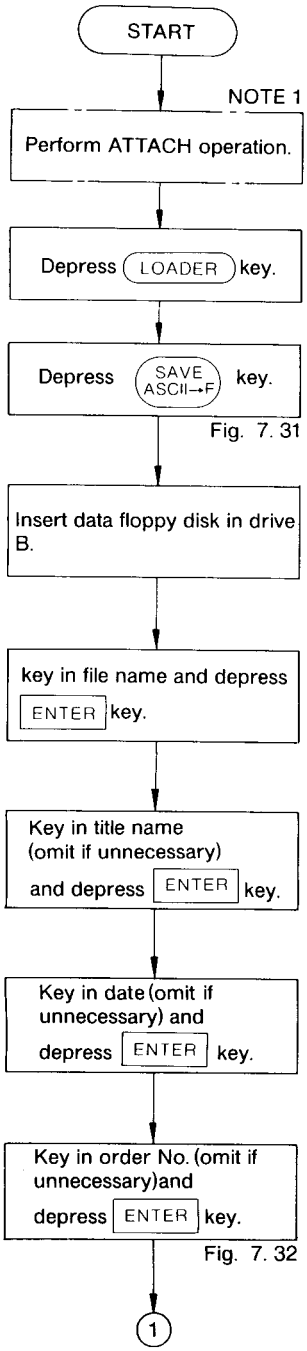
The data disk cannot be used unless formatted (made usable with P150). For initialization, refer to the disk initialization under Par. 5.2 "DISK OPERATION." Blank disks (Model: F150-000) are delivered in the initialized state.

(1) Save Operation

The contents of the ASCII module memory are saved in the data disk by this operation. After storing messages in the memory, save them in disks for restoring messages in the event they are destroyed.

POINT

- Prepare the data disk for writing in advance.



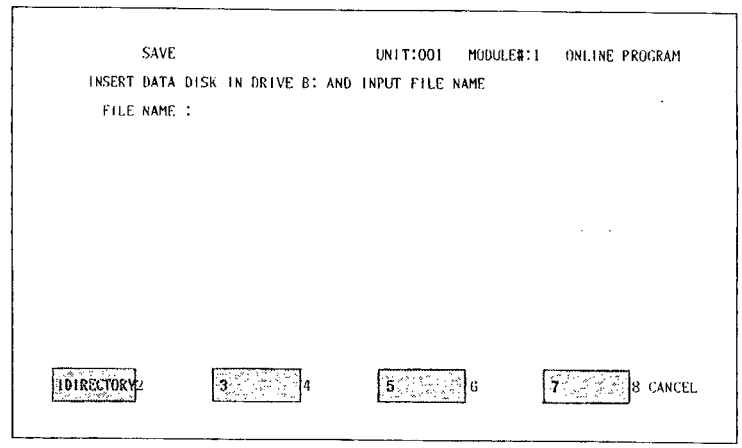


Fig. 7.31

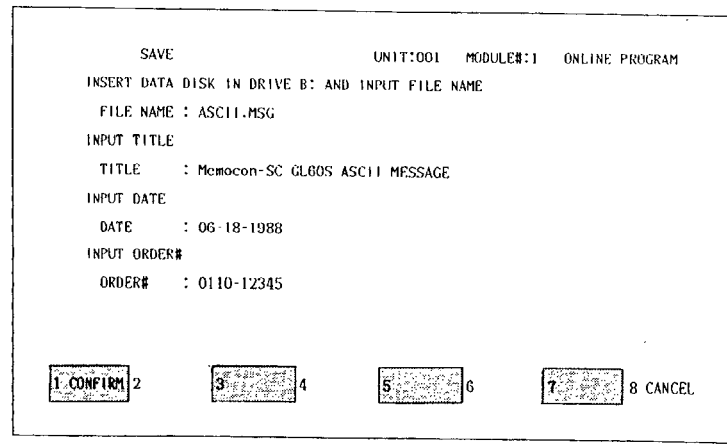


Fig. 7.32

NOTE

- File names are up to 8 ANKs, and the escape characters are up to 3.

TEST · 60S

File Name Escape character

- Titles are up to 52 ANKs.

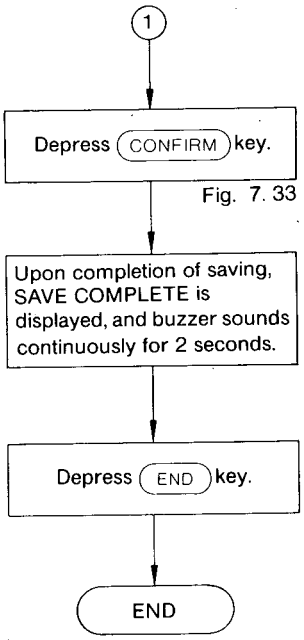


Fig. 7.33

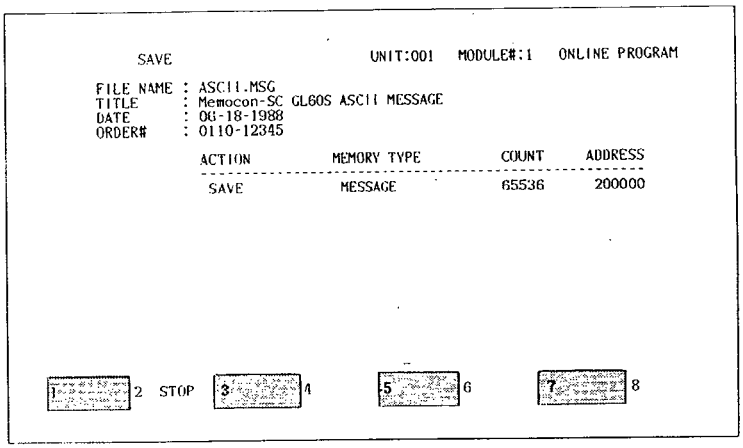
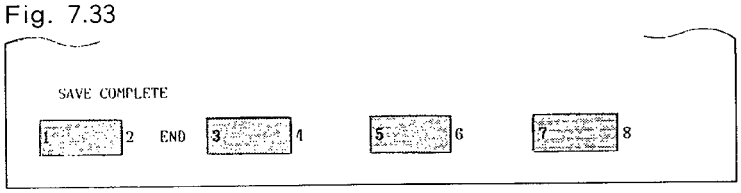


Fig. 7.34



NOTE

1. When ATTACH operation has already been completed, this step can be skipped.

2. Depressing (DIRECTORY) in Fig. 7.31 displays file names as shown in Fig. 7.35. In file name column, cursor appears. For file selection, place the cursor in the file desired and depress (ENTER) key. Fig. 7.36 shows file name input.

3. Depressing (CANCEL) in Fig. 7.32 calls up the display of Fig. 7.30 again with no execution.

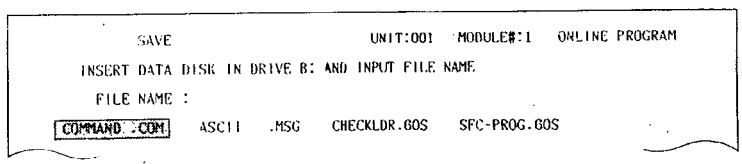


Fig. 7.35

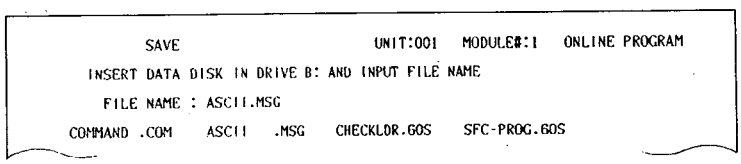


Fig. 7.36

4. To stop the saving process under execution, depress (STOP) shown in Fig. 7.33. Then, the lable display as shown in Fig. 7.37 is called up. Depress (PROCEED) to continue saving, and depress (ABORT) to call up the display as shown in Fig. 7.30 again.

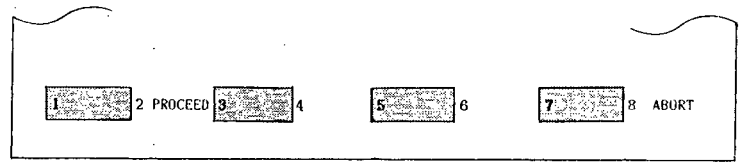
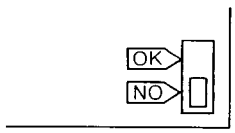


Fig. 7.37

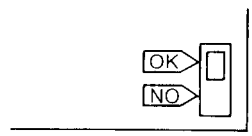
5. In OFF-line mode, save the message stored in P150 memory to disk. After saving, select ON-line mode and store the message in ASCII module by giving load operation to ASCII module connected to P150.

(IMPORTANT)

Prepare the data disk for writing in advance.



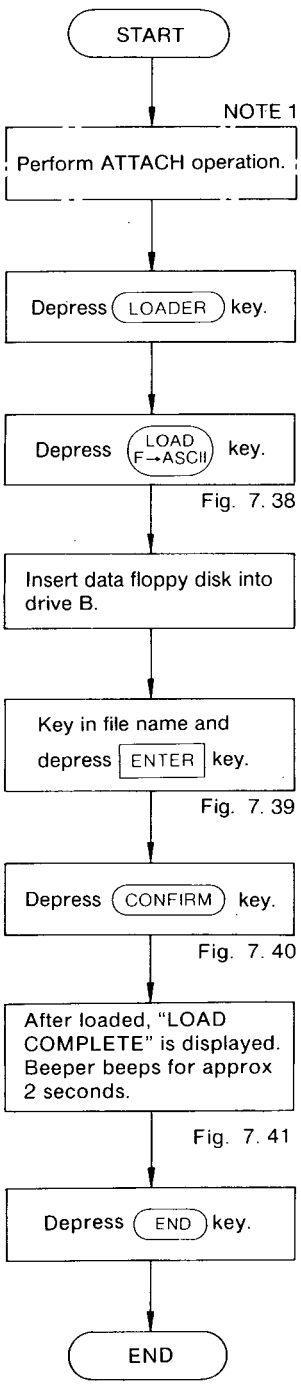
(a) Write Disable



(b) Write Enable

(2) Load Operation

To write the messages saved on the disk into the ASCII module, operate as follows: This operation is used to transfer messages to other ASCII modules for utilization or to restore destroyed messages.



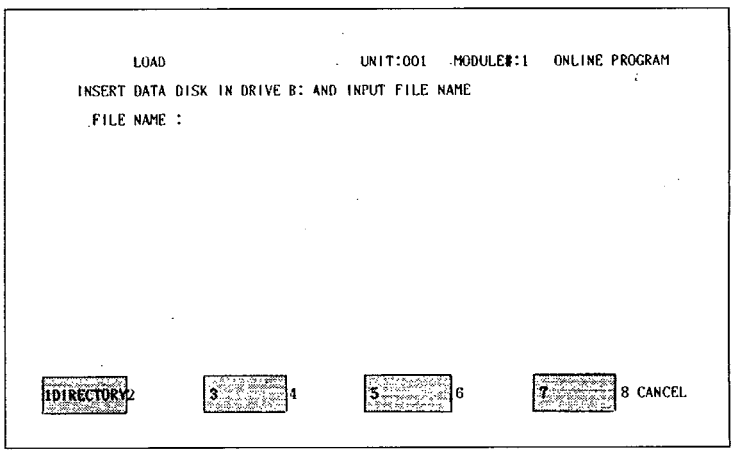


Fig. 7.38

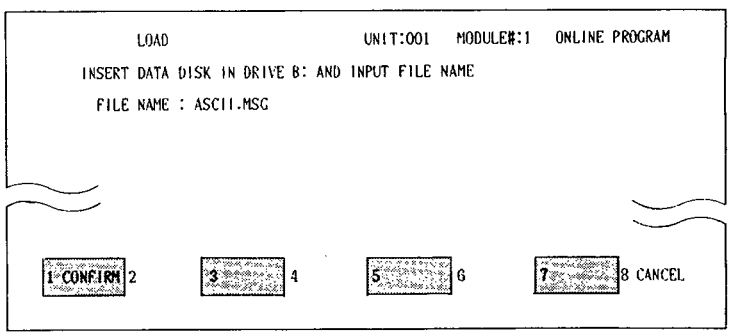


Fig. 7.39

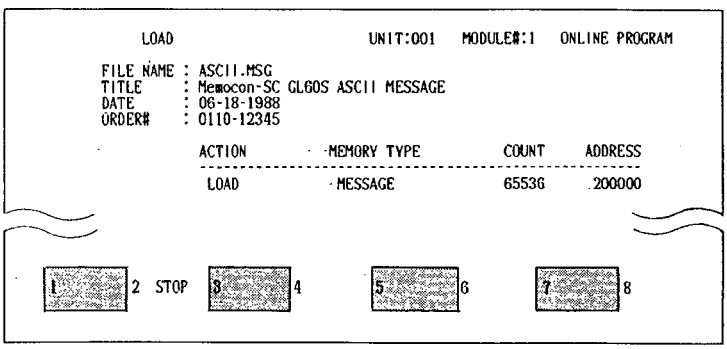


Fig. 7.40

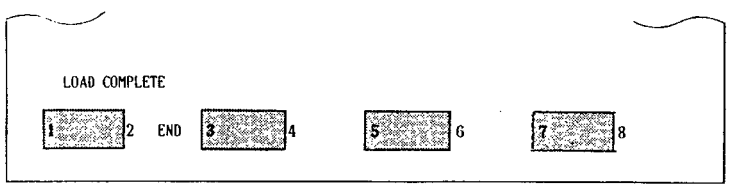


Fig. 7.41

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.

2. Depressing (DIRECTORY) in Fig. 7.38 displays file names as shown in Fig. 7.42. In file name column, cursor appears. For file selection, place the cursor in the file desired and depress (ENTER) key. Fig. 7.43 shows file name input.

3. Depressing (CANCEL) in Fig. 7.39 calls up the display of Fig. 7.30 again with no execution.

4. To stop the saving process under execution, depress (STOP) shown in Fig. 7.40. Then, the label display as shown in Fig. 7.44 is called up. Depress (PROCEED) to continue saving, and depress (ABORT) to call up the display as shown in Fig. 7.30 again.

5. In OFF-line mode, load the message to P150 memory. This is convenient for loading altered messages to another ASCII module.

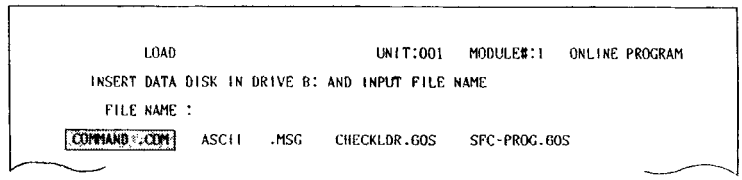


Fig. 7.42

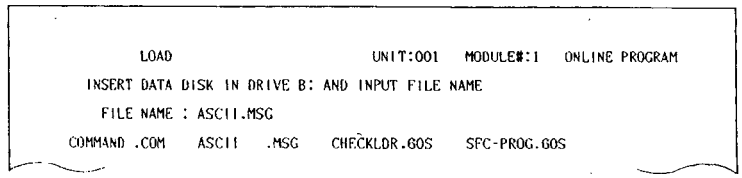


Fig. 7.43

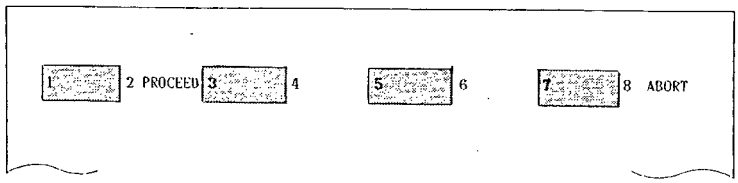
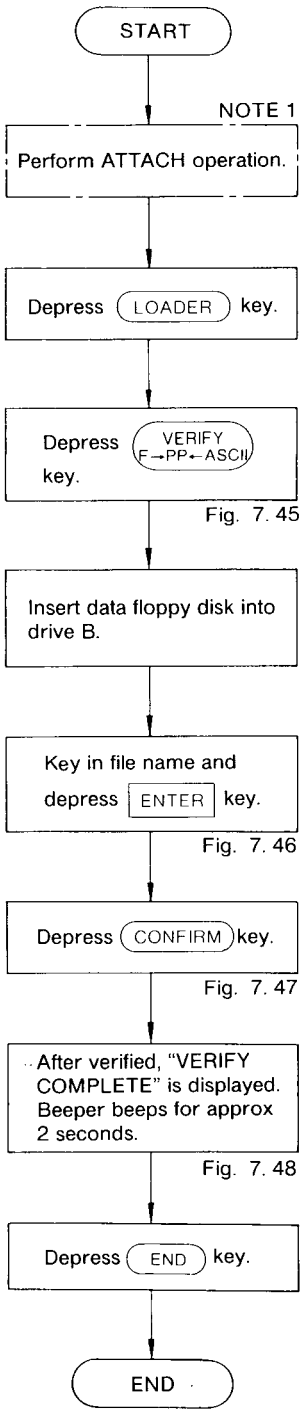


Fig. 7.44

(3) Verify Operation

This operation is for verifying the floppy disk contents with the ASCII module memory contents.



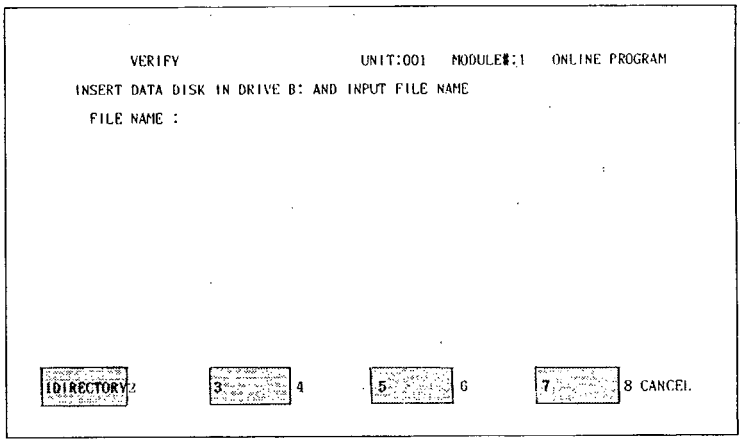


Fig. 7.45

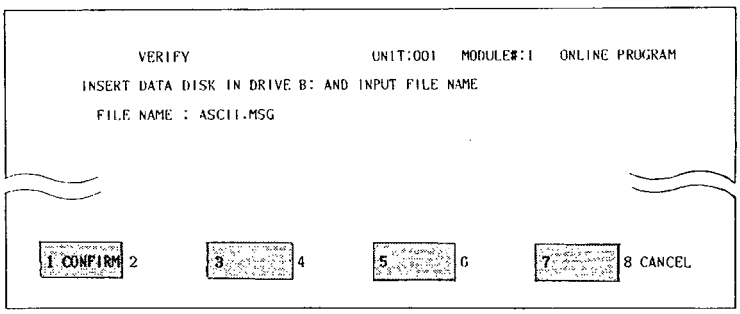


Fig. 7.46

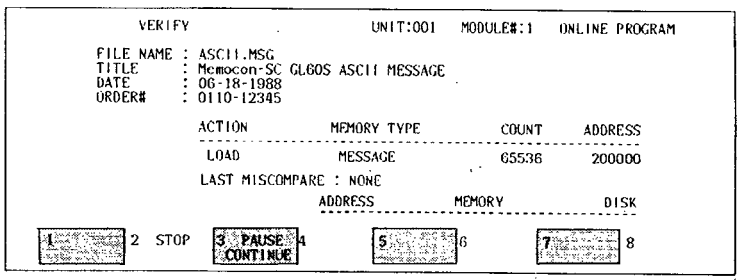


Fig. 7.47

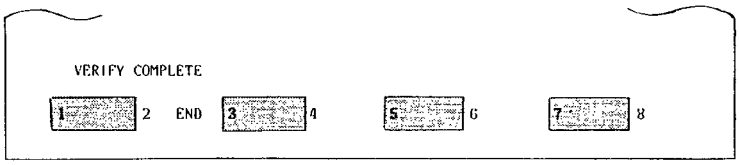


Fig. 7.48

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.

2. Depressing (DIRECTORY) in Fig. 7.45 makes file names displayed as shown in Fig. 7.49. In file name column, cursor appears. For file selection, place the cursor in the file desired and depress (ENTER) key. Fig. 7.50 shows file name input.

3. Depressing (CANCEL) in Fig. 7.46 calls up the display as shown in Fig. 7.30 again with no execution.

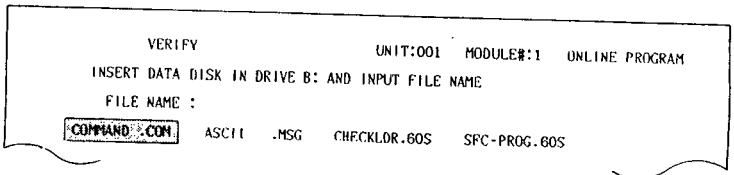


Fig. 7.49

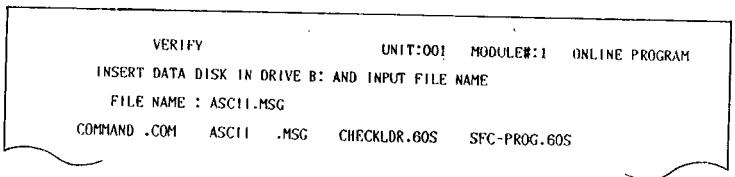


Fig. 7.50

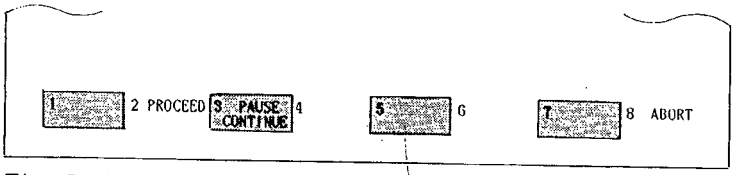


Fig. 7.51

4. If non-confirmity is found by the verify process, the label shown in Fig. 7.51 is displayed, and the buzzer sounds intermittently for 5 seconds. Depress (PROCEED) to continue comparing, and depress (ABORT) to call up the display show in Fig. 7.30 again. If (↑PAUSE↑ CONTINUE) is depressed to change it to (PAUSE ↓CONTINUE↓), the verify continues to the end without stopping even non-conformity is found. In this case, "××××× MISCOMPARE: VERIFY COMPLETE" will be displayed in the message area.

5. In OFF-line mode, verify P150 memory data with data disk file inserted in drive B.

7.10 ASCII MESSAGE PROGRAMMING, MONITORING

Depressing (PROGRAM) in the supervisory display (Fig. 7.18) calls up the TEXT display (Fig. 7.52) to enable the text processes displayed in the label area.

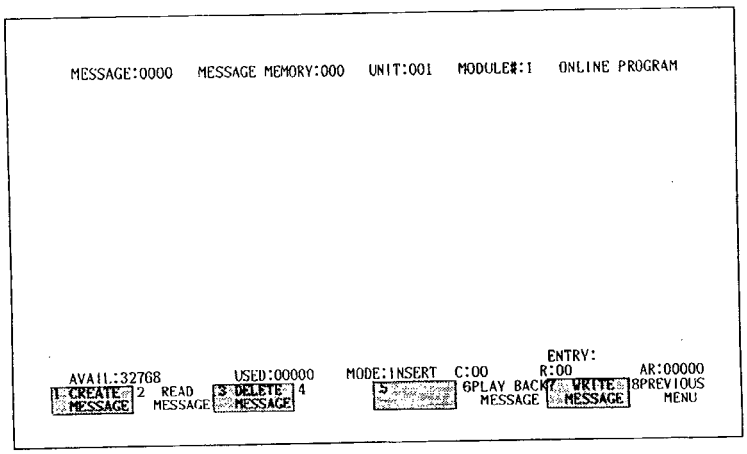


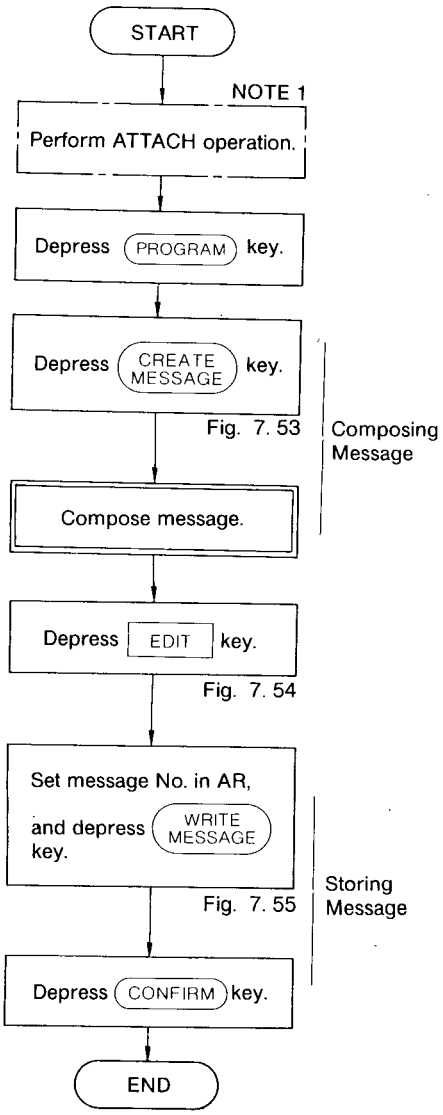
Fig. 7.52 Text Display

NOTE

1. In the monitor mode, labels (DELETE MESSAGE) and (WRITE MESSAGE) are not displayed.
2. Depressing (PREVIOUS MENU) key calls up the supervisory display (Fig. 7.18) again.

7.10.1 Message Composing, Storing

A message is composed on the screen, and stored in the ASCII module.



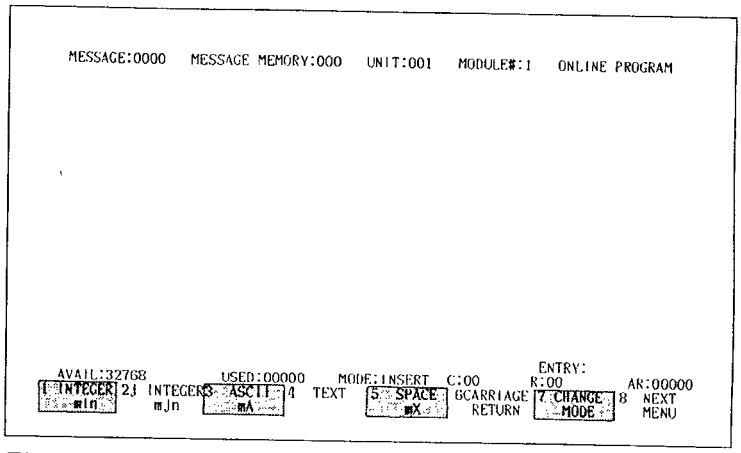


Fig. 7.53

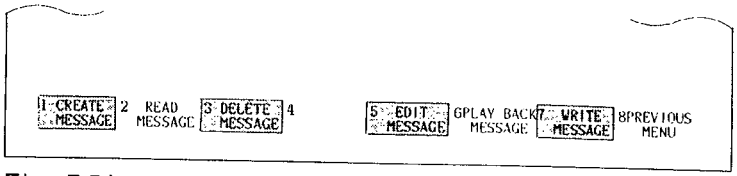


Fig. 7.54

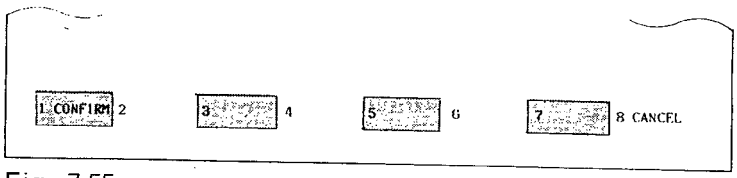


Fig. 7.55

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. Depressing NEXT MENU in Fig. 7.53 calls up the display as shown in Fig. 7.56.

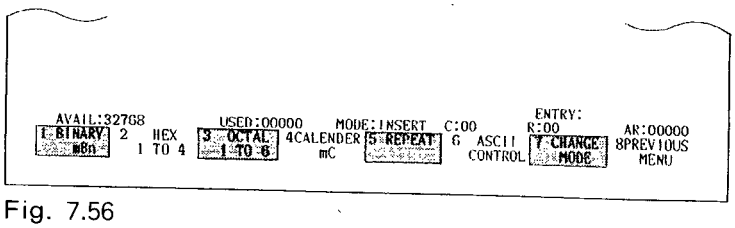
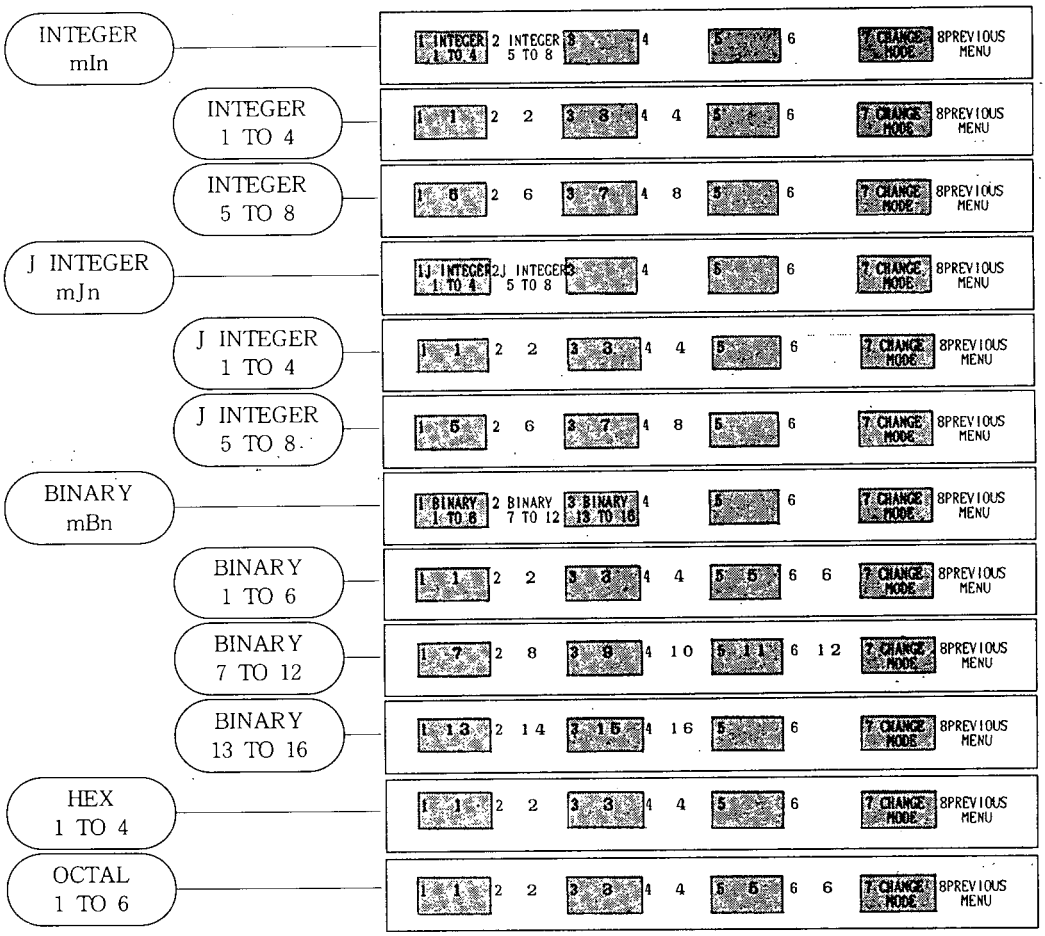


Fig. 7.56

7.10.1 Message Composing, Storing (Cont'd)

3. Message composing label and message symbol storing

(a) When mIn, mJn, mBn, mHn, mOn:



Set m (1 through 99) in AR, and depress the key corresponding to n (number of columns) among the labels shown above. This set message symbol is displayed at the cursor position and at the "ENTRY:" position, and the cursor moves to the next position.

(b) When mA, mX, and /

Set m (1 through 99) in AR, and depress (ASCII mA) key and (SPACE mX) key.

When "/", AR setting is not required, and (CARRIAGE RETURN) key is to be depressed. The set message symbol is displayed at the cursor position, and at the position of "ENTRY:", and the cursor moves to the next position.

(c) "XXX"

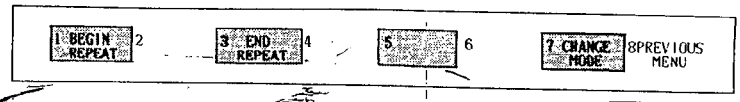
Set a 3-digit octal number XXX (000 - 377) in AR, and depress (ASCII CONTROL) key. Then, that number is displayed at the cursor position and at the "ENTRY:" position, and the cursor moves to the next position.

(d) mC

Set m (1 to 8) in AR, and depress (CALENDAR mC) key. Message symbol is displayed at cursor position and in "ENTRY:" column. Then the cursor moves to the next position.

(e) m( )

Depress (REPEAT) key. →



- Set the number of repetition m (2 - 99) in AR, and depress (BEGIN REPEAT) key.
- To end the repeating function, depress (END REPEAT) key.

AR setting is not required.

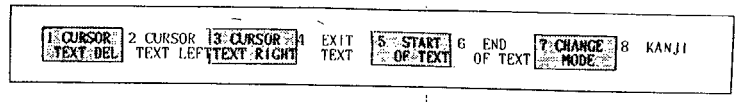
In these cases, message symbol is displayed at cursor position and in "ENTRY:" column. Then the cursor moves to the next position.

NOTE

One repeating function cannot be nested in another repeating function.

(f) Text

- This is used to compose a text. A text may be output to the ASCII unit with either the READ or WRITE instruction.
- Derpessing (TEXT) key calls up the following label display.



(CURSOR TEXT DEL) : For deleting one character in the text, bring the cursor to the position of that character, and depress this lable.

(CURSOR TEXT LEFT) : For moving the cursor leftward within the text.

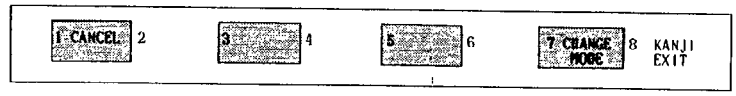
(CURSOR TEXT RIGHT) : For moving the cursor rightward within the text.

(EXIT TEXT) : Depress this lable to end text keying.

(START OF TEXT) : This label brings the cursor to the beginning character (head) of the text.

(END OF TEXT) : This label brings the cursor to the last character (end) of the text.

(KANJI) : This label is used for Japanese Kanji (Chinese characters) input.

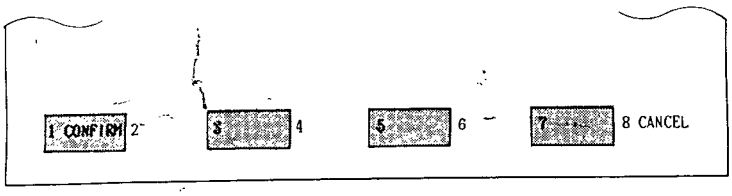


7.10.1 Message Composing, Storing (Cont'd)

(4) Set all the message symbols required by processes (a) through (f) of (3), above. When a wrong symbol is set, delete the wrong setting by bringing the cursor to it and depressing [NTWK DELETE NODE], and make the correct setting again.

(5) Depressing (EDIT) key calls up the text display (Fig. 7.52) again. However, the message remains displayed in the ASCII message area.

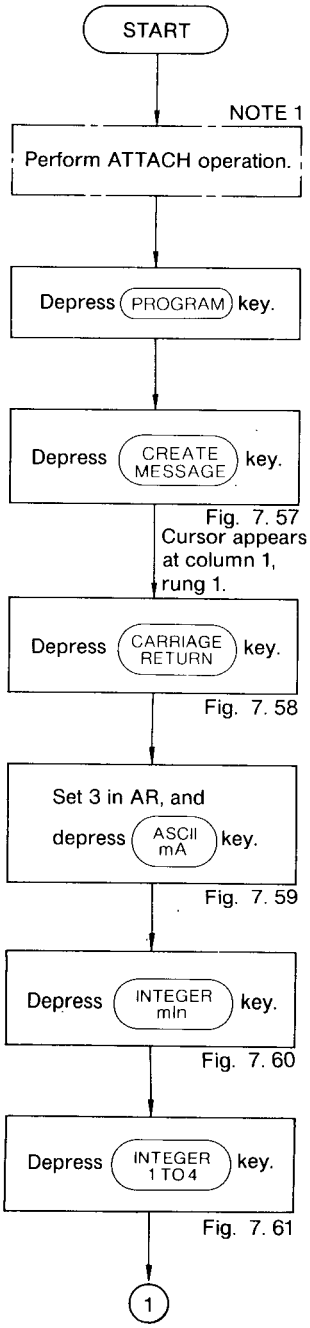
(6) Depressing (WRITE MESSAGE) key after setting the message No. in AR causes the following labels to be displayed.



Depressing (CONFIRM) key causes the displayed message to be stored in the ASCII module memory. Depressing (CANCEL) key merely calls up the text display (Fig. 7.52) again.

EXAMPLE 1

/, 3A, 4I2, 2X, 2 (3B2, 2H3), /,



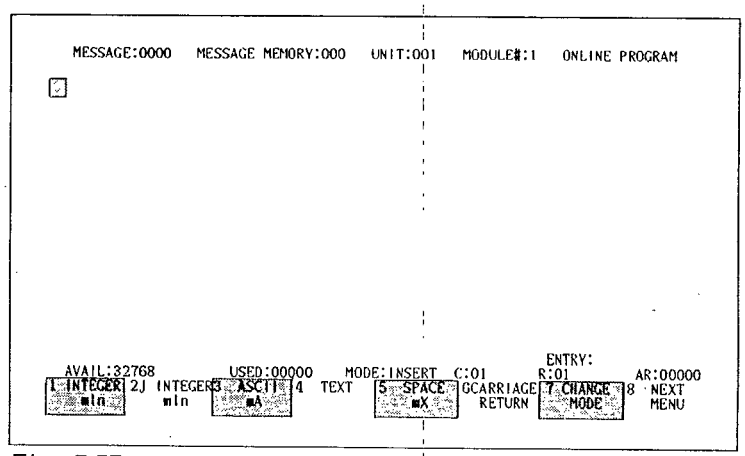


Fig. 7.57

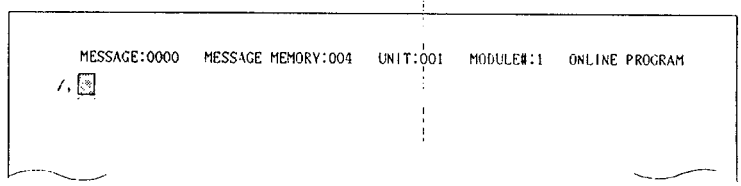


Fig. 7.58

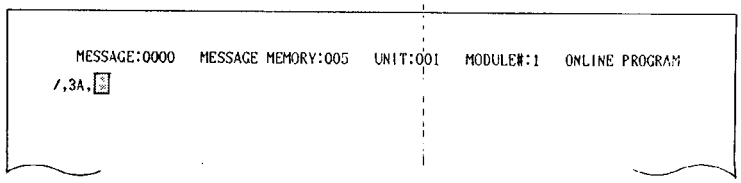


Fig. 7.59

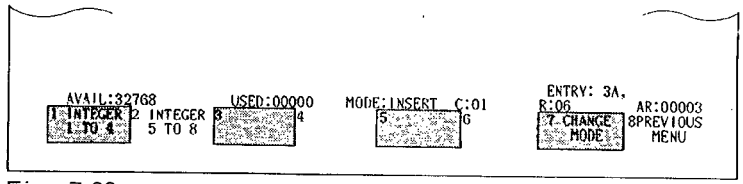


Fig. 7.60

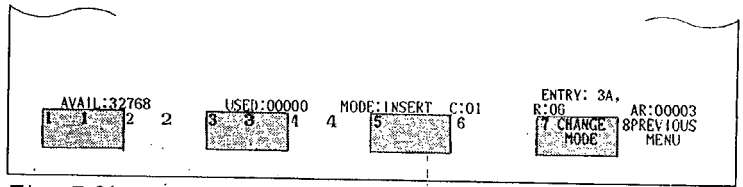
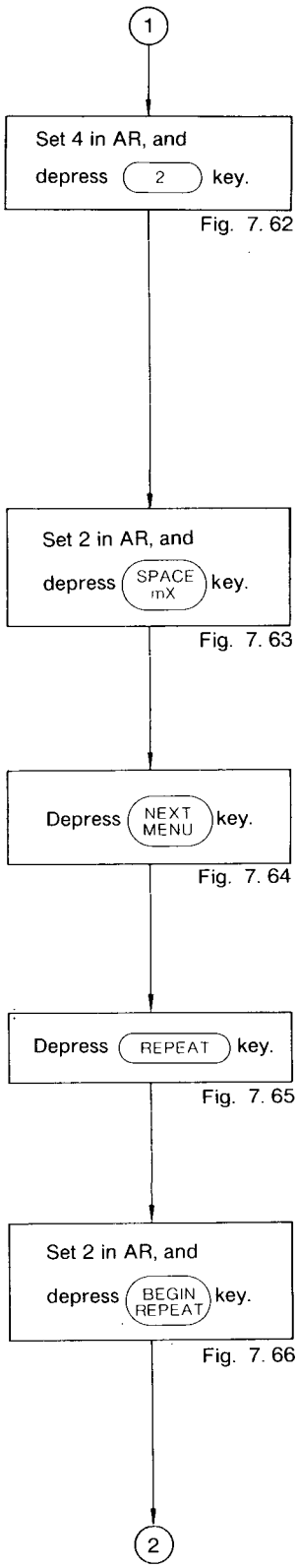


Fig. 7.61



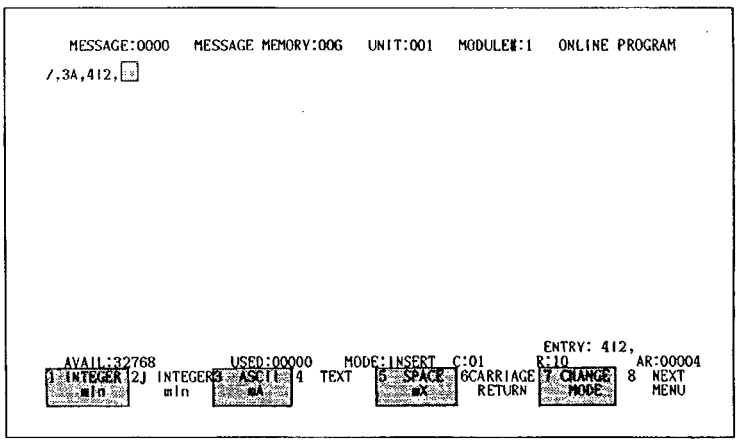


Fig. 7.62

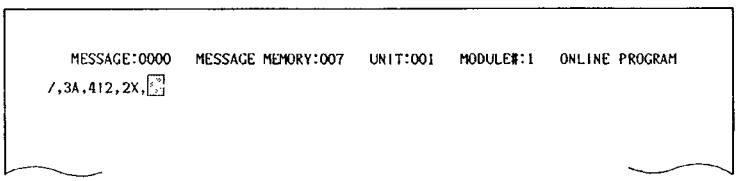


Fig. 7.63

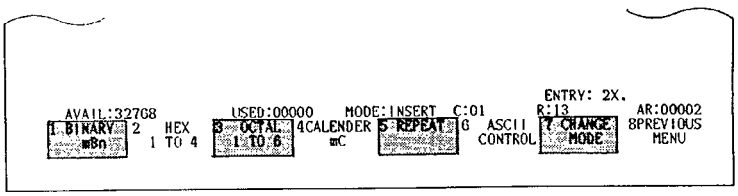


Fig. 7.64

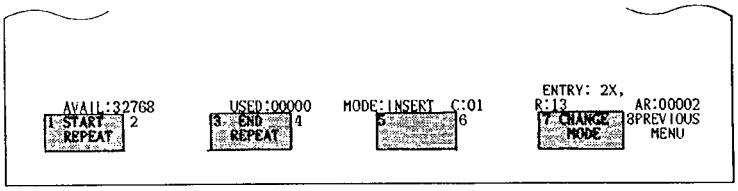


Fig. 7.65

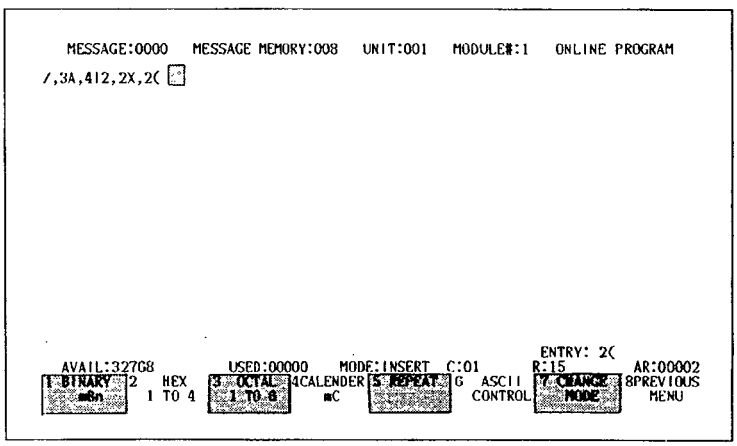


Fig. 7.66

(2)

Depress (BINARY mBn) key.

Fig. 7.67

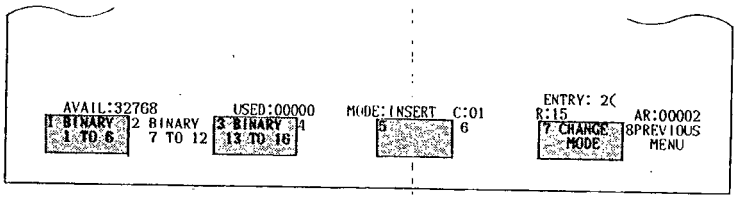


Fig. 7.67

Depress (BINARY 1TO6) key.

Fig. 7.68

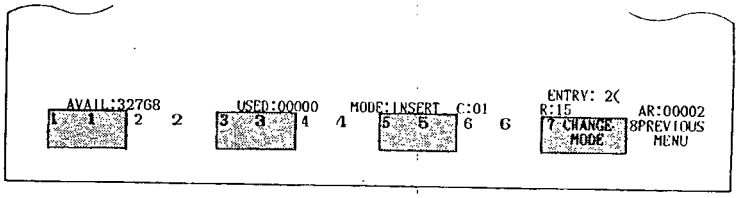


Fig. 7.68

Set 3 in AR, and depress (2) key.

Fig. 7.69

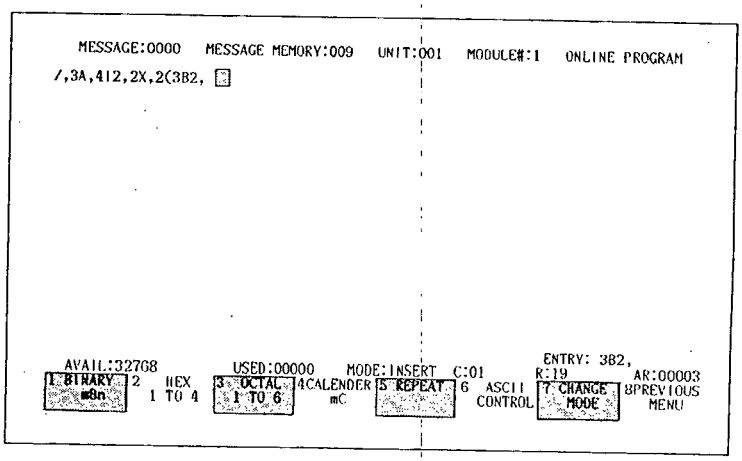


Fig. 7.69

Depress (HEX 1TO4) key.

Fig. 7.70

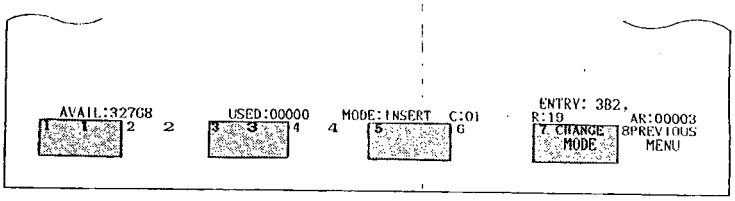


Fig. 7.70

Set 2 in AR, and depress (3) key.

Fig. 7.71

(2)

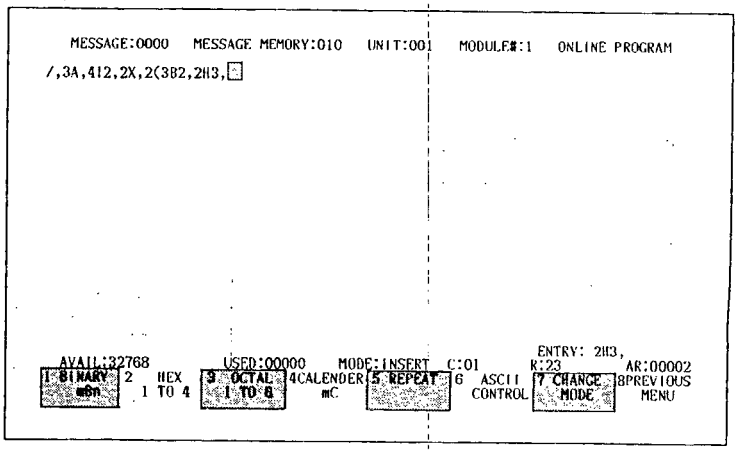


Fig. 7.71

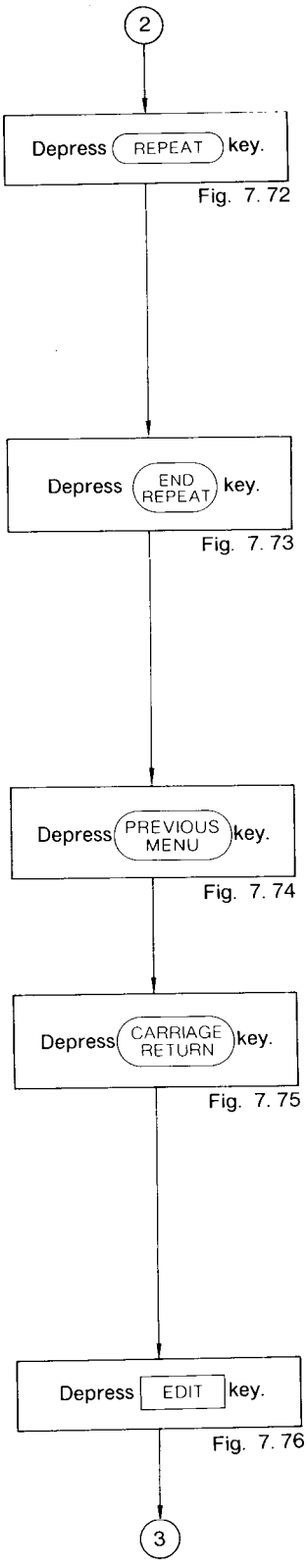


Fig. 7.72

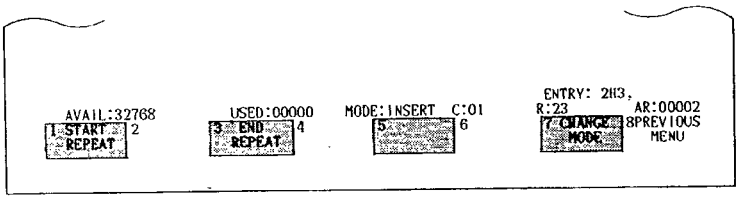


Fig. 7.72

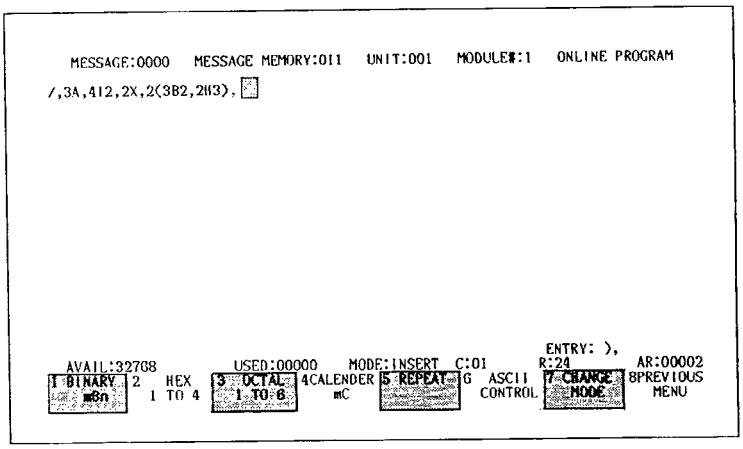


Fig. 7.73

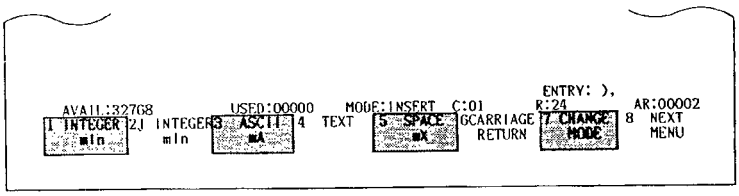


Fig. 7.74

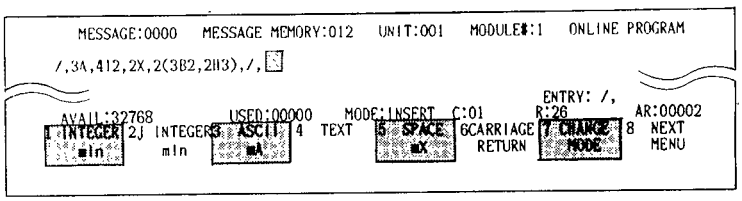


Fig. 7.75

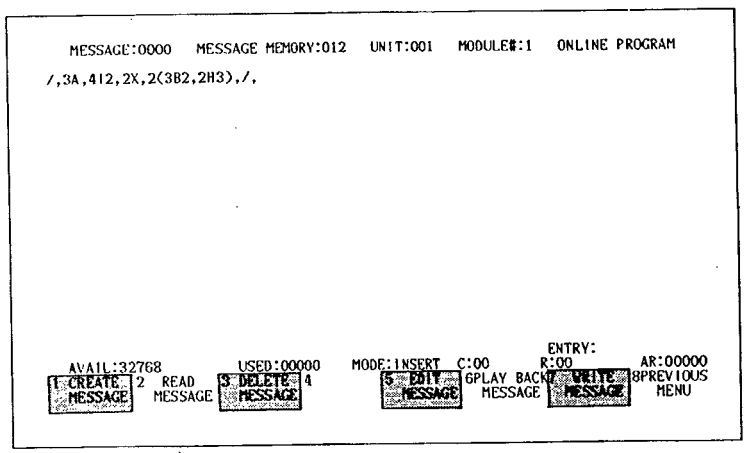
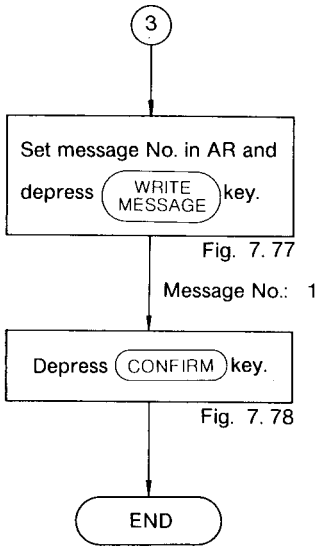


Fig. 7.76



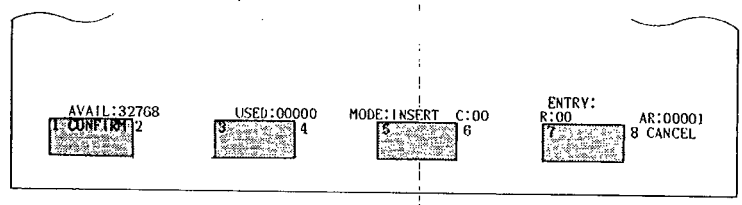


Fig. 7.77

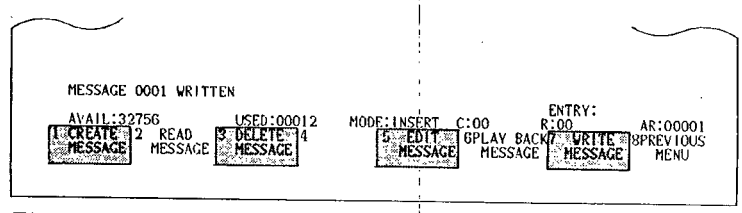


Fig. 7.78

NOTE

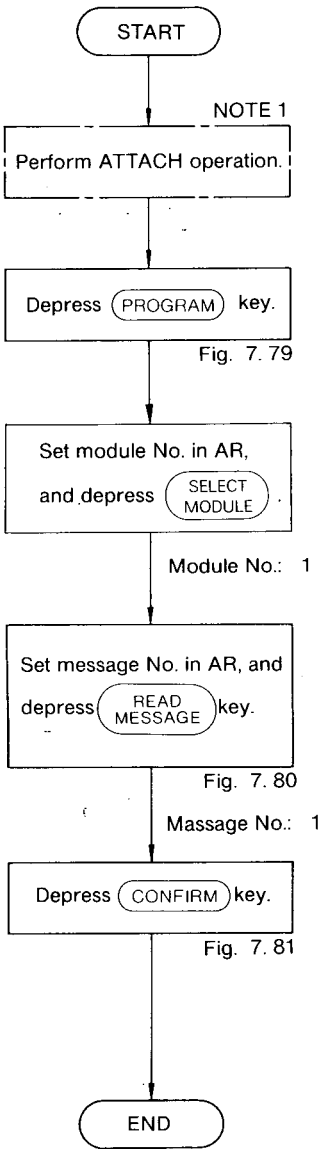
(1) When ATTACH operation has already been completed, this step can be skipped.

(2) If a message is already stored in the ASCII module as in Fig. 7.77, "WARNING: MESSAGE ALREADY EXIST" is displayed. To store it as is, derpess (CONFIRM) key and depress (CANCEL) key if storage is not desired.

(3) Depressing (CANCEL) key calls up the display as shown in Fig. 7.76 and nothing is executed. Reset the module No. or message No. to store.

7.10.2 Message Reading

A Message is read from ASCII module and diplayed on the screen.



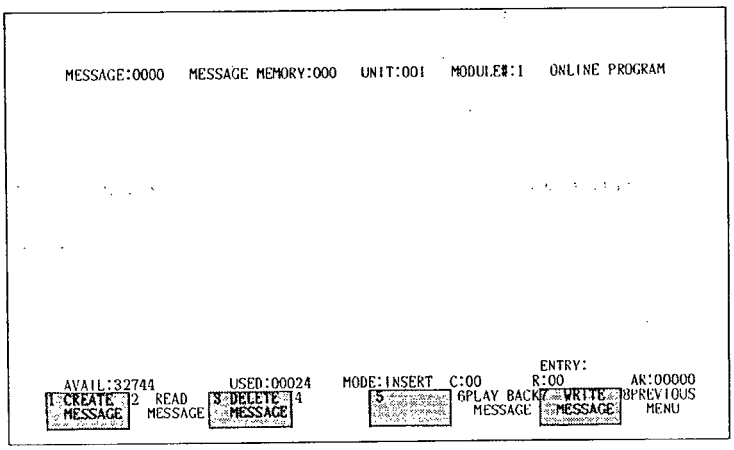


Fig. 7.79

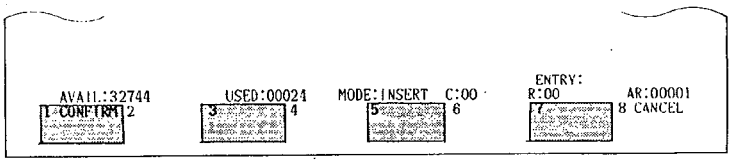


Fig. 7.80

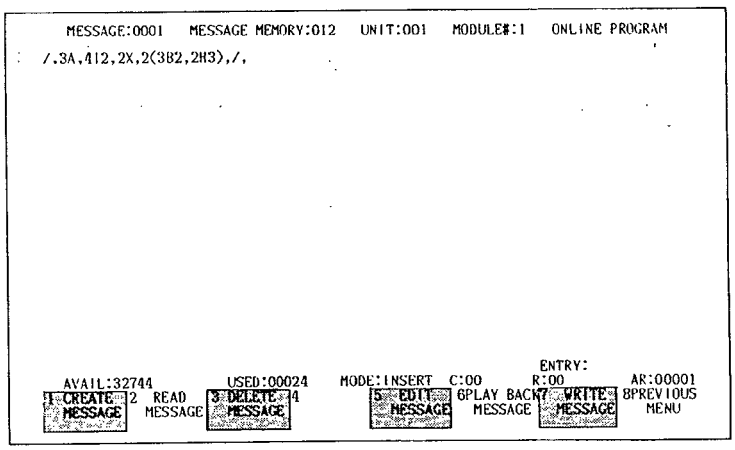


Fig. 7.81

NOTE

(1) When ATTACH operation has already been completed, this step can be skipped.

(2) When (CONFIRM) key is depressed, "READING AND FORMATTING MESSAGE XXXX" is displayed.

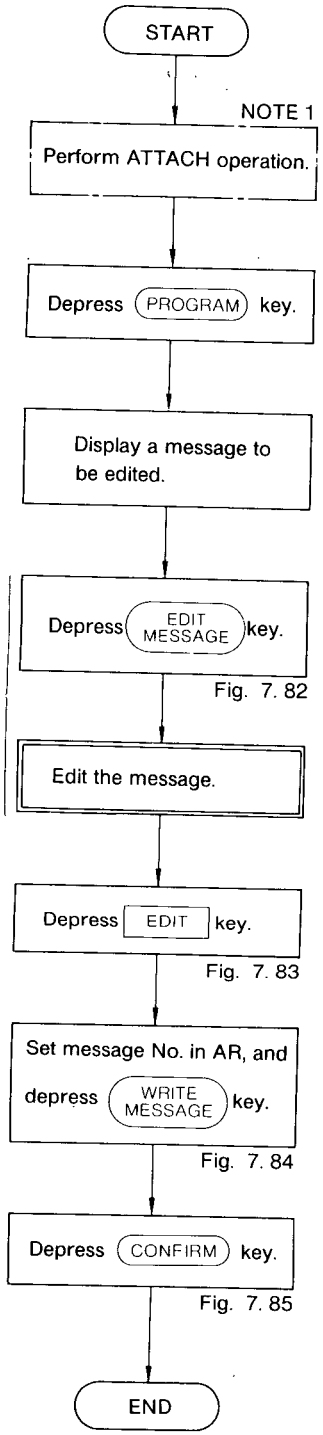
(3) If the desired message is not present, an error message "MESSAGE DOES NOT EXIST" is displayed.

(4) Depressing (CANCEL) key instead of (CONFIRM) key calls up the text display (Fig. 7.52) again without any reading.

7.10.3 Message Editing

This operation is used to alter contents of message stored in or to be stored in ASCII module.

Message Editing.



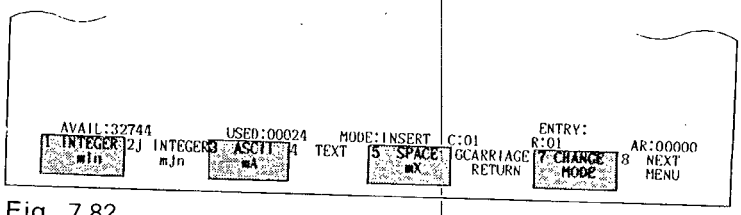


Fig. 7.82

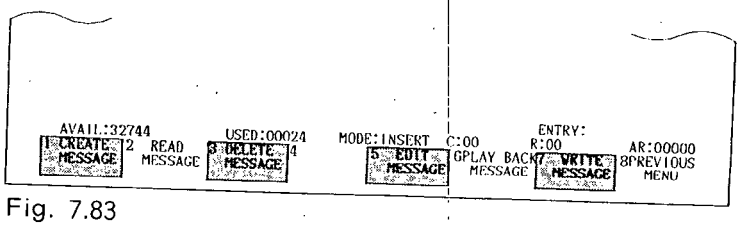


Fig. 7.83

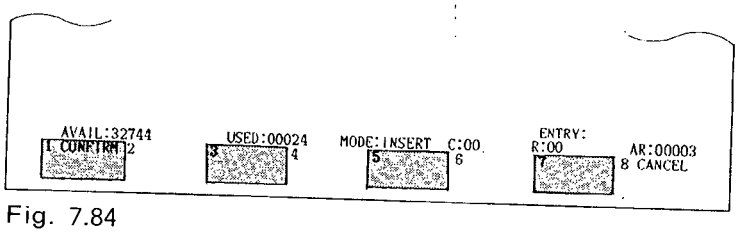


Fig. 7.84

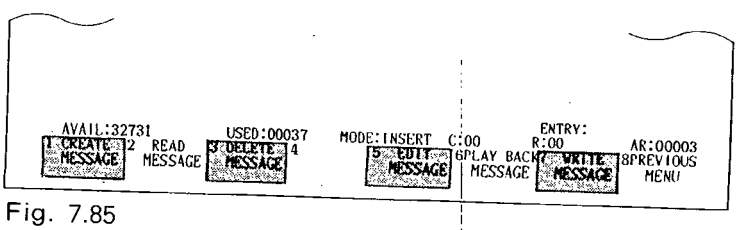


Fig. 7.85

NOTE

(1) When ATTACH operation has already been completed, this step can be skipped.

(2) Depressing (EDIT MESSAGE) key brings the cursor to the leading end (C:01, R:01) of the message. Note that this label is not displayed unless a message is displayed.

(3) Message Symbol

(a) Changing message symbol

1. Move the cursor to the symbol to be changed, with the cursor control keys.
2. Depress (CHANGE MODE) key to change "MODE:" display from "INSERT" to "REPLACE". Each time this key is depressed, "INSERT" and "REPLACE" are displayed alternately.
3. Set a new symbol. The symbol at the cursor changes to the new one.

IMPORTANT · A text cannot be directly changed to a new symbol. First delete the text, and then add a new symbol.

(b) Adding message symbol

1. Move the cursor to the position of the symbol to be added.
2. Depress (CHANGE MODE) key to change the display at "MODE:" from "REPLACE" to "INSERT".
3. When a new symbol is set, the new symbol is added at the cursor position, and all the symbols to the right of the cursor are shifted backward.

(c) Deleting message symbol

1. Bring the cursor to the symbol to be deleted. When the text is to be deleted, bring the cursor to the leading end of the text.
2. Depress [NTWK DELETE NODE] key.

IMPOFTANT · The display at "MODE:" may either be "INSERT" or "REPLACE".

(d) Changing, adding, deleting text contents

1. Bring the cursor to the leading end of the intended text.
2. Depress [→] key while depressing [SHIFT] key to bring the cursor within the text.
3. Bring the cursor to the intended position by using (CURSOR TEXT LEFT), (CURSOR TEXT RIGHT), (START OF TEXT) or (END OF TEXT) key.

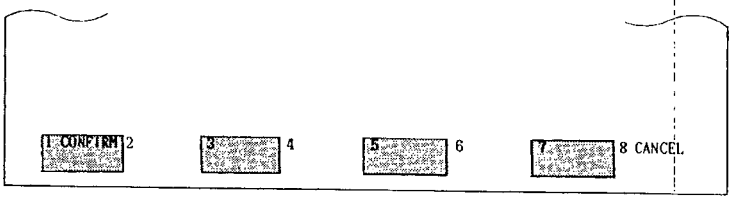
- To change, set new characters in the "REPLACE" mode.
- To add, set new characters in the "INSERT" mode.
- To delete, depress (CURSOR TEXT DEL) key.

In this case, both the INSERT and REPLACE modes are valid.

(4) Edit the message by processes outlined in Par. (3), (a)-(d), above.

(5) When (EDIT) is depressed, the text display (Fig. 7.52) is called up again. However, the message remains displayed in the ASCII message area.

(6) Set the message No. in AR and depress (WRITE MESSAGE) key. The following labels are displayed.



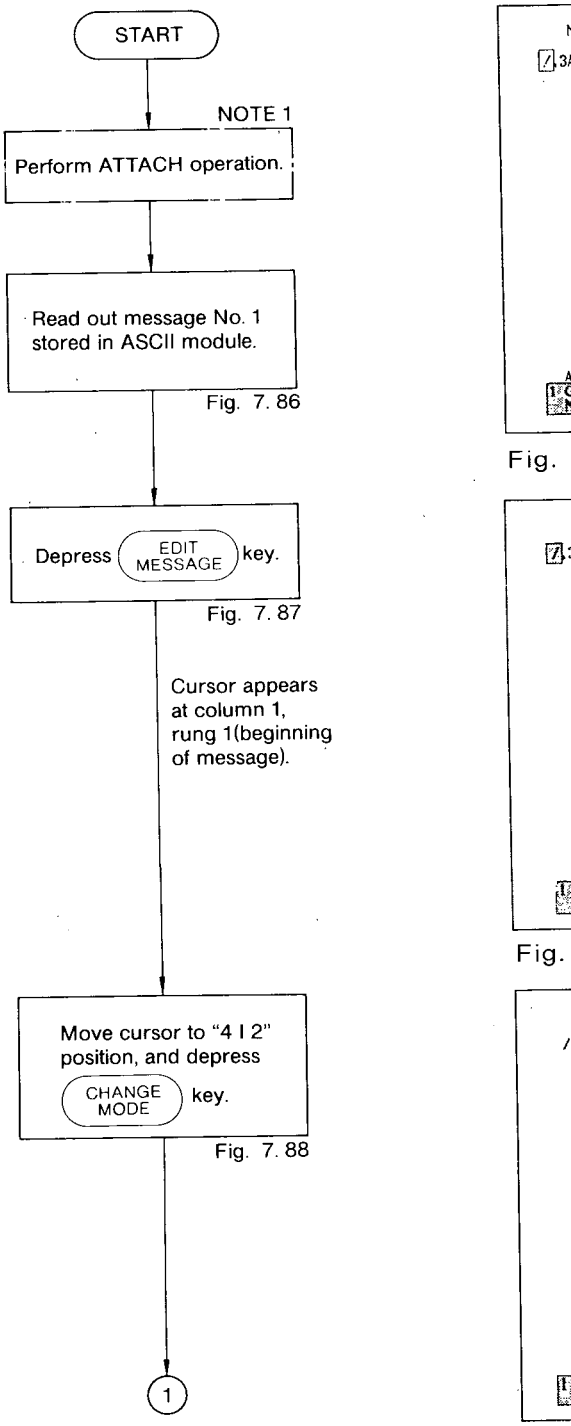
Depressing (CONFIRM) key stores the displayed message in the ASCII module memory. Depressing (CANCEL) key calls up the text display (Fig. 7.52) again without executing anything.

EXAMPLE 1

/, 3A, 4I2, 2X, 2 (3B2, 2H3), /,

↓

/, 3A, 3J2, 2X, 2 (3B2, 4O1, 2H3), /,



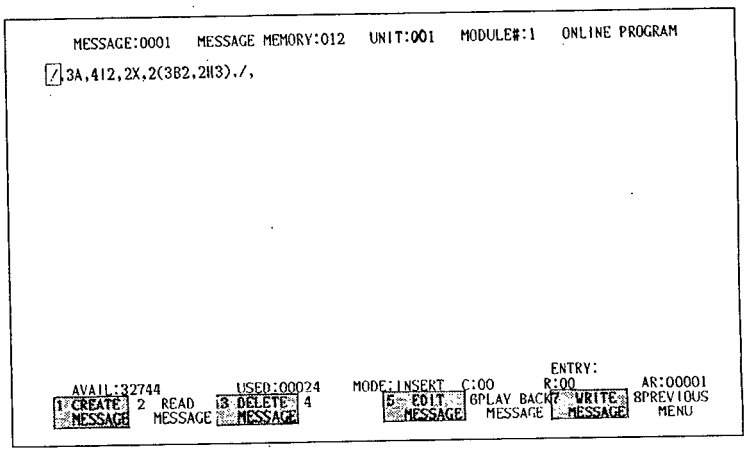


Fig. 7.86

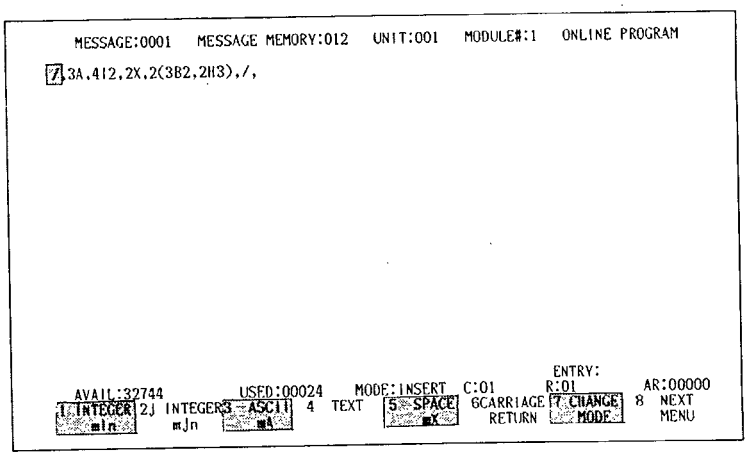


Fig. 7.87

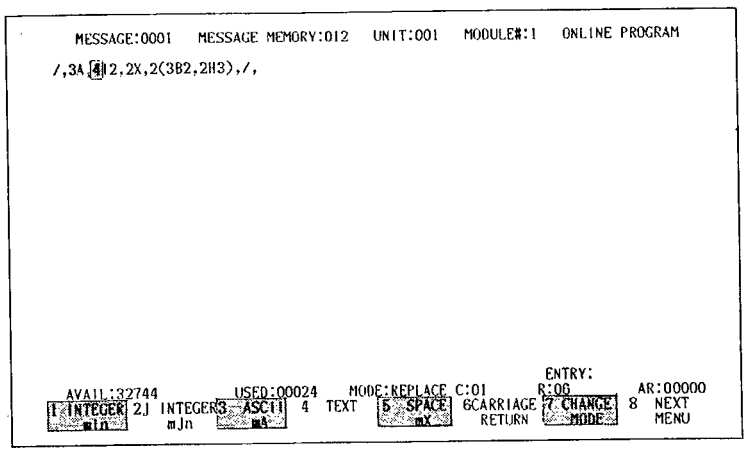
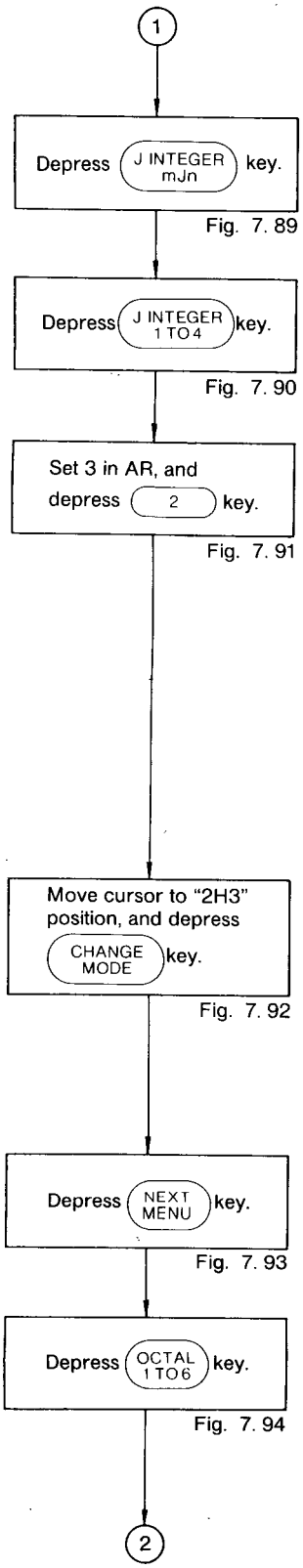


Fig. 7.88



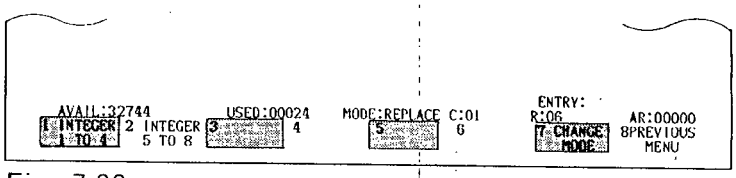


Fig. 7.89

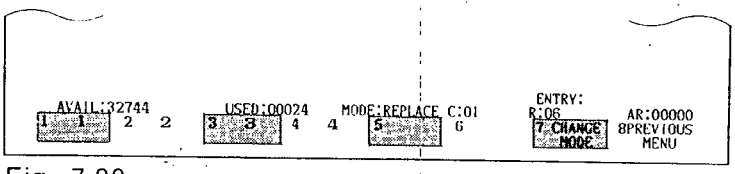


Fig. 7.90

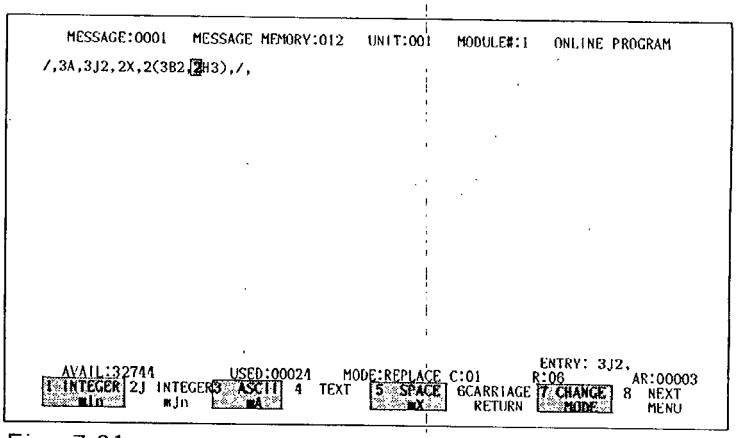


Fig. 7.91

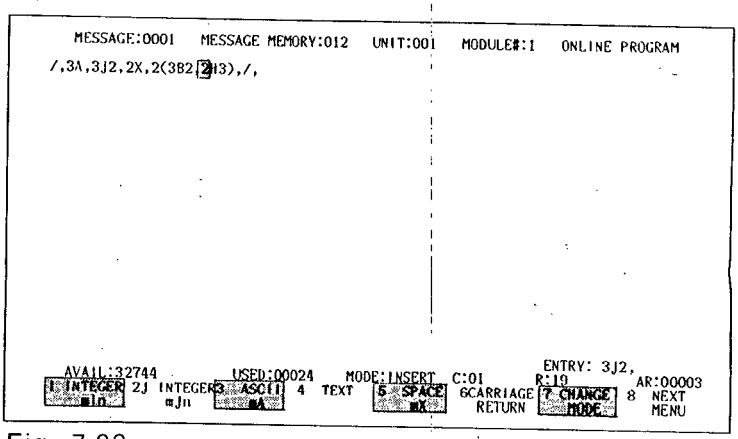


Fig. 7.92

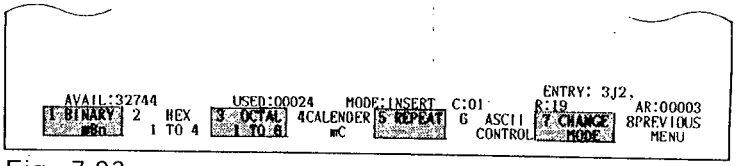


Fig. 7.93

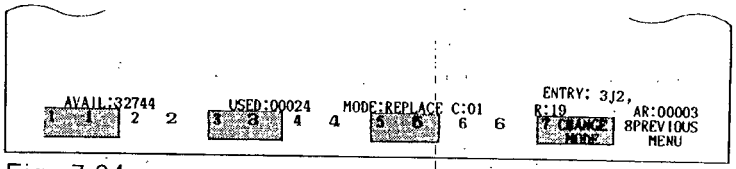
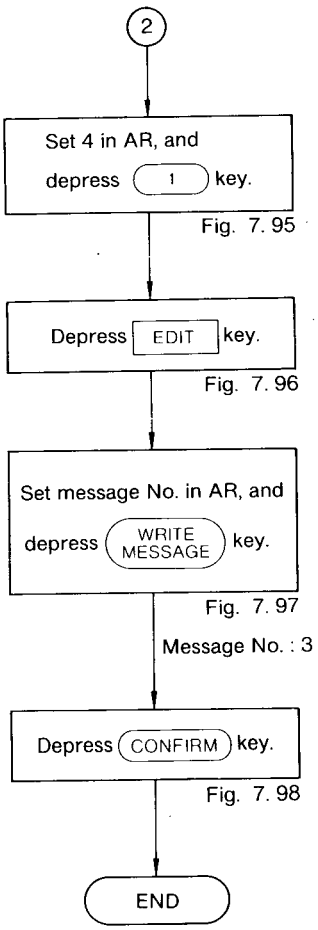


Fig. 7.94



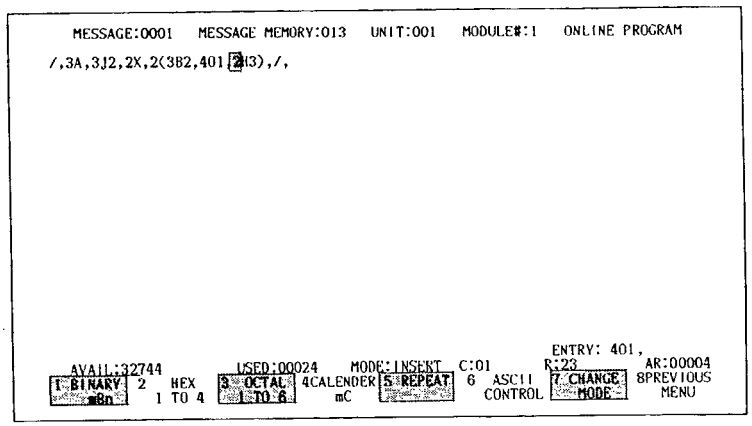


Fig. 7.95

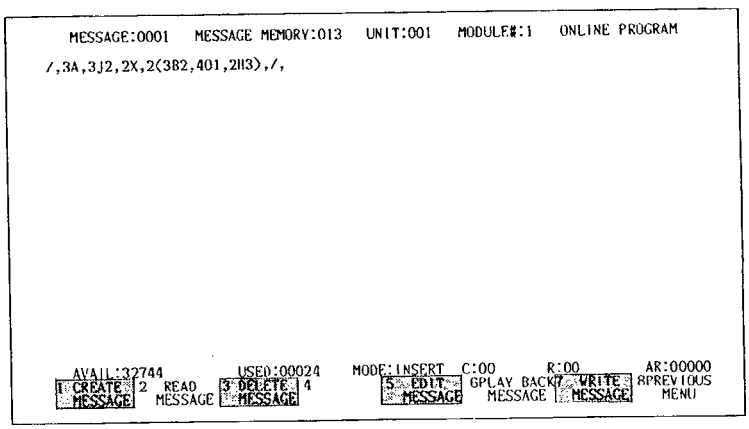


Fig. 7.96

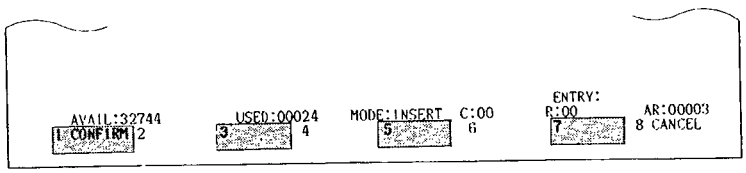


Fig. 7.97

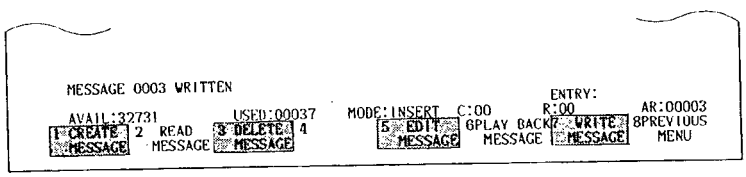


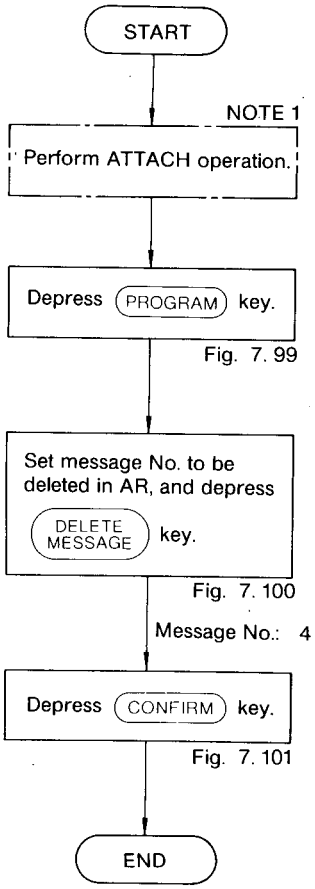
Fig. 7.98

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. Each time (CHANGE MODE) is depressed, "INSERT" and "REPLACE" are alternately displayed.
3. If a message of message No. is already present, "WARNING: MESSAGE ALREADY EXIST" is displayed. To store as is, depress (CONFIRM) key, and depress (CANCEL) key if store is not required.
4. Depressing (CANCEL) key calls up the display as shown in Fig. 7.96 again without executing anything. Restart the storing process by resetting the message No.
5. Messages can be edited both before and after storing.

7.10.4 Message Deleting

To delete ASCII messages stored in the ASCII module, proceed as follows:



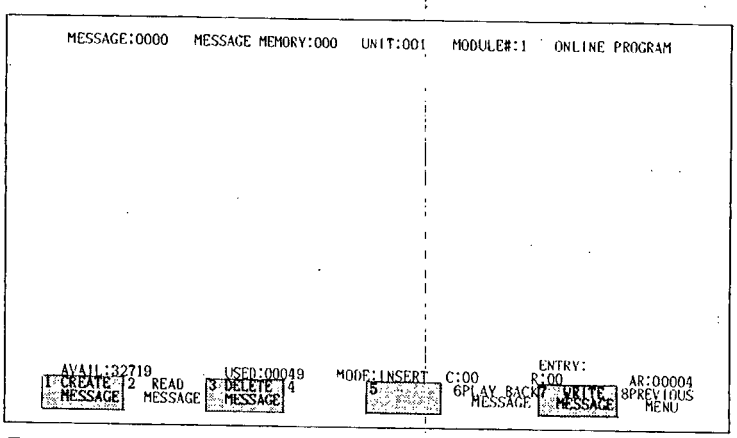


Fig. 7.99

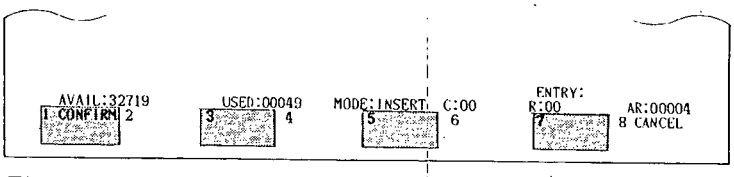


Fig. 7.100

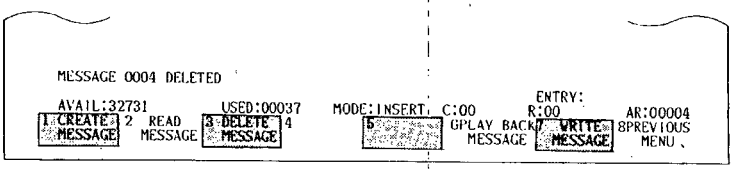


Fig. 7.101

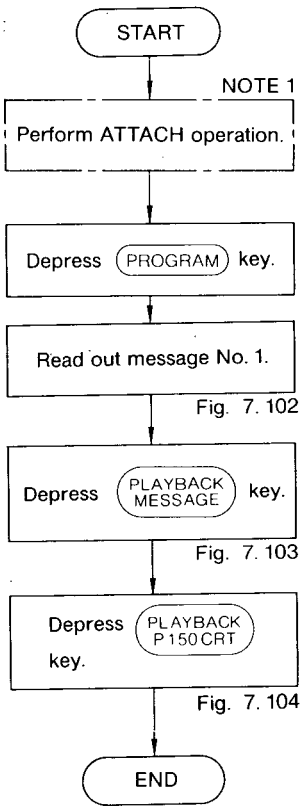
NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. Depressing (CANCEL) key instead of (CONFIRM) key calls up the display as shown in Fig. 7.99 again without executing anything.
3. If a message to be deleted is not present, "MESSAGE DOES NOT EXIST" is displayed.

7.10.5 Message Playback

With this procedure, the ASCII message shown on the P150 screen is displayed or printed in the same format as for outputting to the ASCII terminal.

[1] Playback to P150 Display Screen



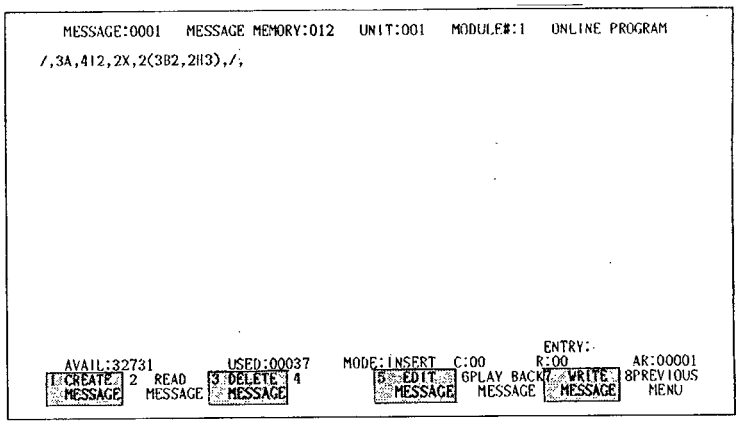


Fig. 7.102

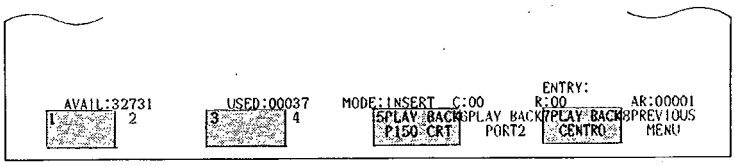


Fig. 7.103

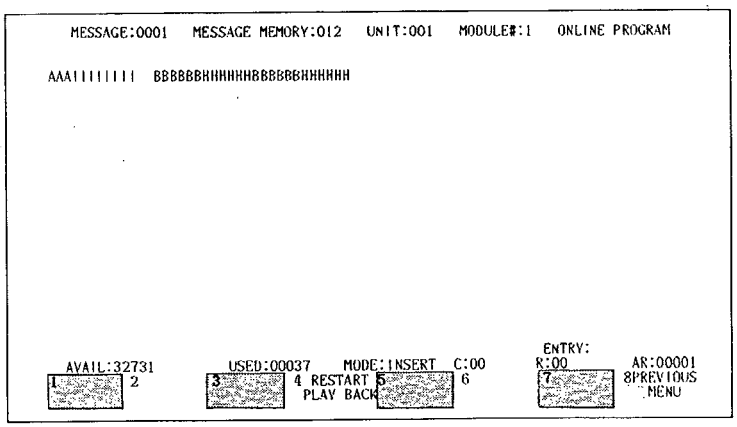
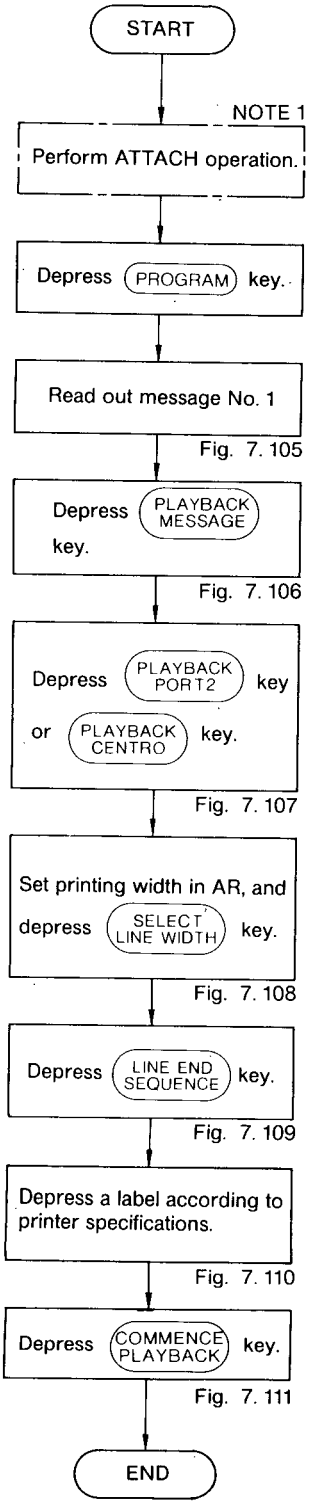


Fig. 7.104

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. Messages can be played back both before and after storing. If the message contains syntax errors, the error message "INCOMPLETE MESSAGE" is displayed.
3. ASCII control signals, e.g., "000", are not played back.
4. If the message cannot be displayed in one picture, the label (CONTINUE PLAYBACK) appears, and depressing this label calls up the subsequent portion of the message.
5. By depressing (RESTART PLAYBACK) key, playback function is active from the beginning.

[2] Playback to Printer



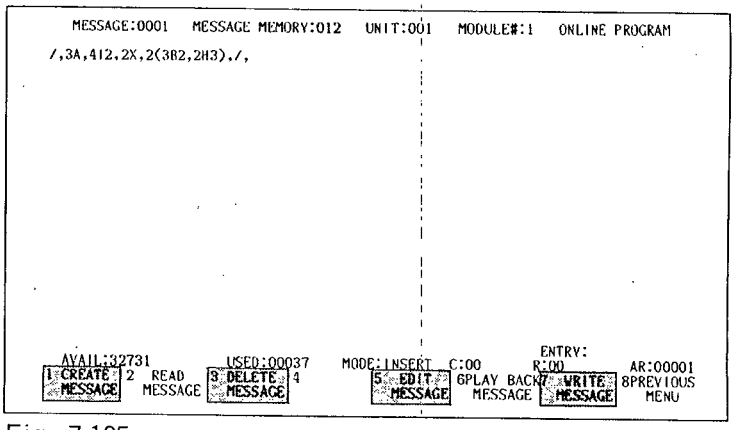


Fig. 7.105

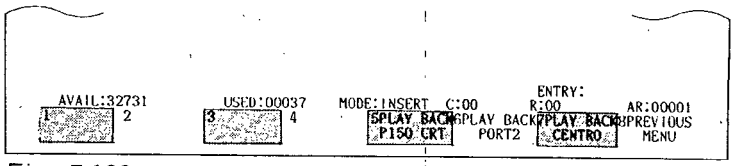


Fig. 7.106

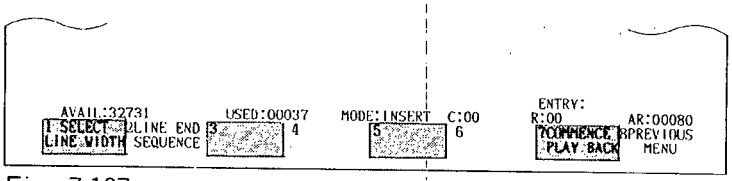


Fig. 7.107

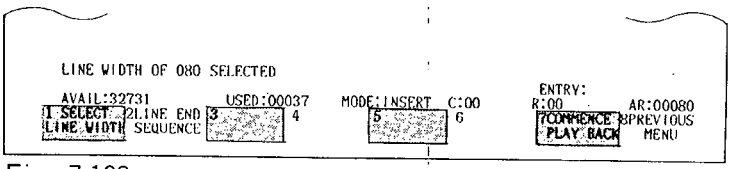


Fig. 7.108

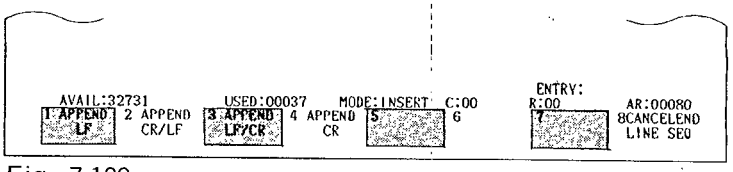


Fig. 7.109

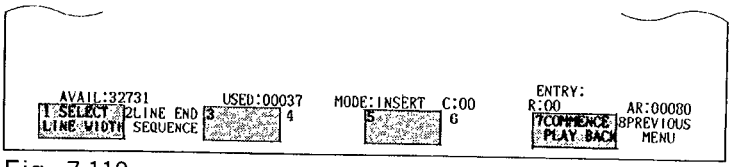


Fig. 7.110

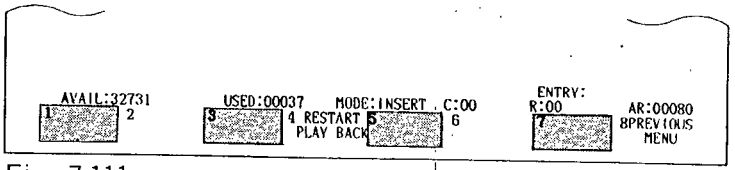


Fig. 7.111

[2] Playback to Printer (Cont'd)

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. Connect the printer to the P150 PORT in advance. When the printer is connected to PORT1, the label (PLAY BACK PORT1), is automatically displayed; when connected to PORT2, (PLAY BACK PORT2) is displayed.
3. The maximum printing width is 132 columns.

   When the maximum printing width of the printer is 80 columns, the printing width setting operation is unnecessary.
4. When the printing width is selected,

   "LINE WIDTH OF XXX SELECTED" is displayed.
5. When the label conforming to the printer specification in Fig. 7.109 is depressed, the line feed (LF) code for advancing the line at the end of each line (after printing the set printing width) is attached to the following keys.

   (APPEND LF) : Attaching LF code

   (APPEND CR/LF) : Attaching CR and LF codes (CR first)

   (APPEND LF/CR) : Attaching LF and CR codes (LF first)

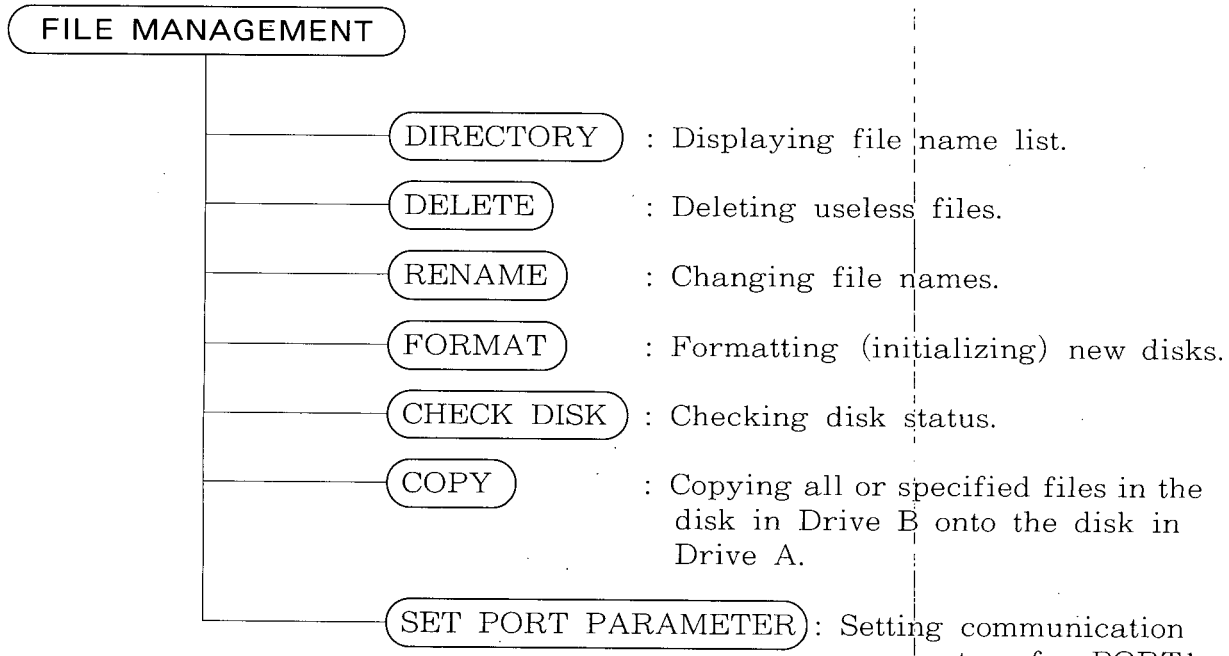
   (APPEND CR) : Attaching CR code
6. Depressing (COMMENCE PLAYBACK) key starts playback printing.
7. For the PORT setting and printer handling, refer to Par. 7.11.1, "P150 Communication Parameter Selection" and Par. 7.12 "DISPLAY PRINTING PROCEDURE."
8. An actual printout looks as shown at the right:

```
PLAYBACK OF MESSAGE 00000 FOLLOWS

!!!!!!HHHH  AAP150
!!!!!!HHHH  AAP150

PLAYBACK OF MESSAGE 00000 COMPLETE
```

7.11 FILE MANAGEMENT

In the file management mode, the data disk files (user files) are processed, disks are initialized, and P150 communication parameters are set as shown below.

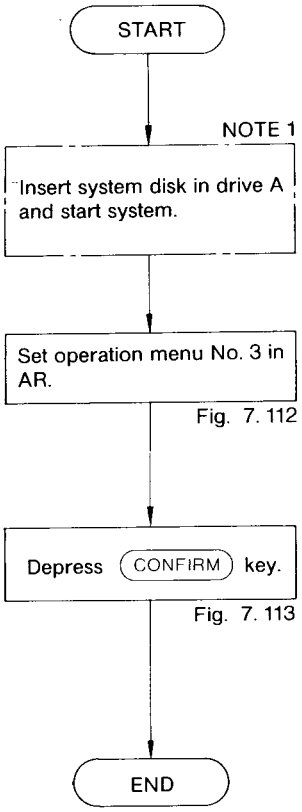
Note that all these processes can be executed with the P150 alone (OFF-LINE).



POINT

Before starting the procedure, insert the correct disks in Drives A and B according to the displayed instruction.

7.11 FILE MANAGEMENT (Cont'd)



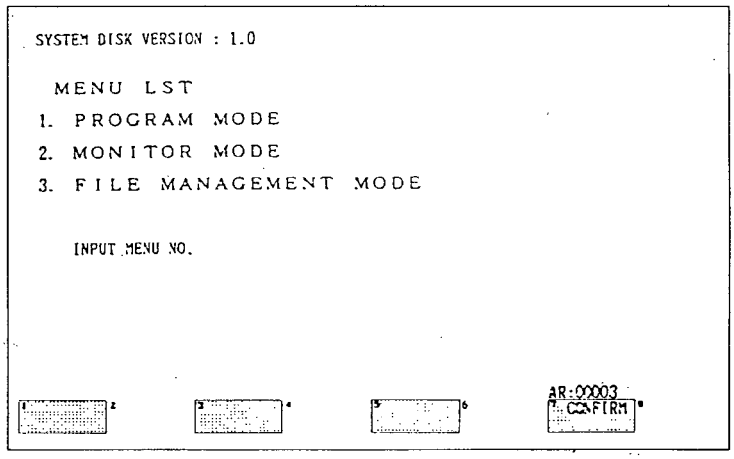


Fig. 7.112

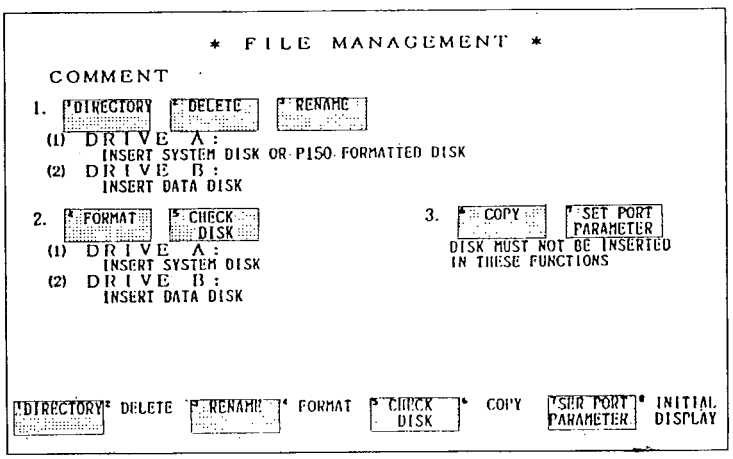


Fig. 7.113

NOTE

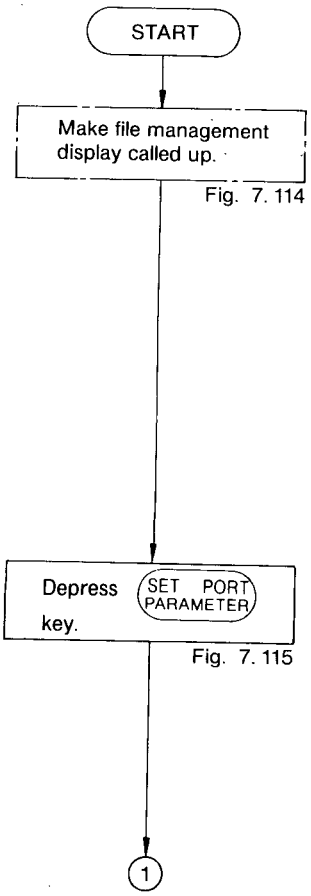
1. When ATTACH operation has already been completed, depressing SUPER VISORY and (INITIAL DISPLAY) key, or depressing SHIFT and SUPER VISORY keys calls up the initial (Menu List) display again.
2. Depressing (INITIAL DISPLAY) key as shown in Fig. 7.113 also calls up the initial (Menu List) display again.

7.11.1 P150 Port Parameter Selection

When using the P150 serial ports, set the communication parameters for port (port 1 or port 2) to be connected to GL60S. One of these ports will be used in the future for a serial printer. General printer (PC-PR201F or PC-PR101F) is connected to a parallel port (centronics interface).

POINT

This operation is not required if GL60S is connected to port 1, with GL60S port parameters preset at the factory. In the initial state, the parallel port (Centronics interface) is used. When connecting a printer (PC-PR201F or PC-PR101F), this procedure is unnecessary.



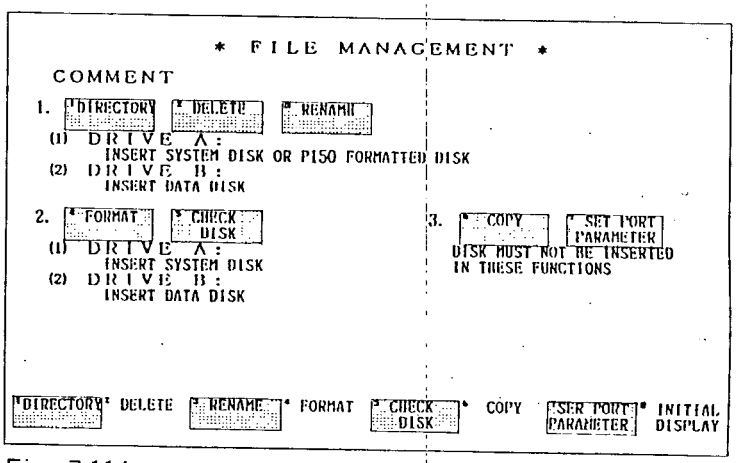


Fig. 7.114

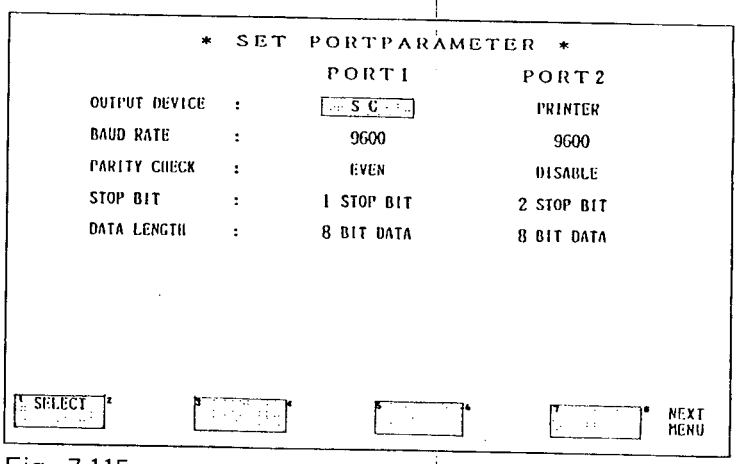
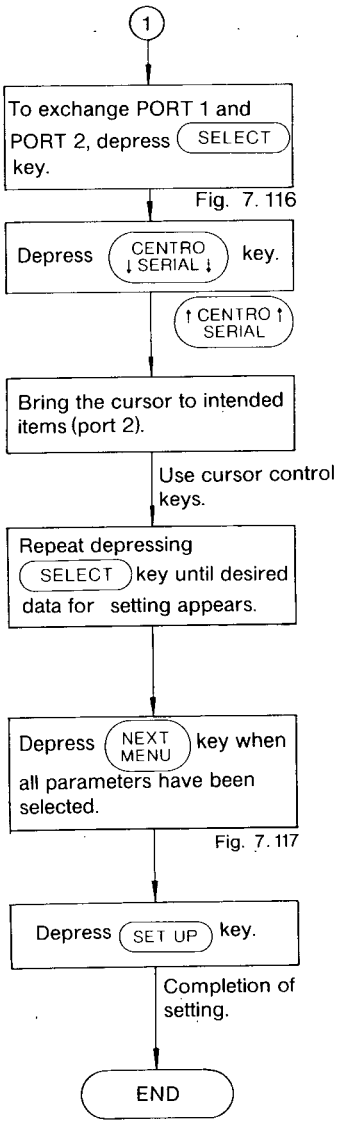


Fig. 7.115



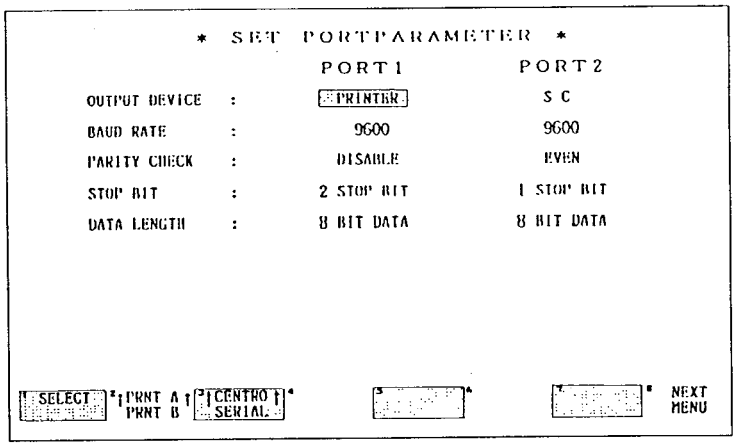


Fig. 7.116

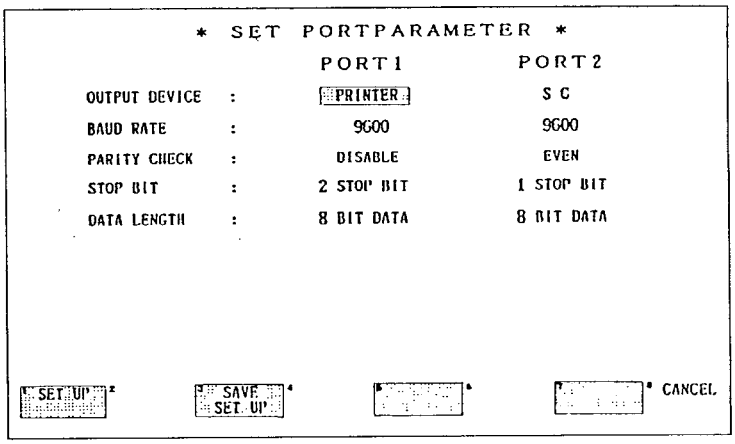


Fig. 7.117

NOTE

P150 has a communication parameter file in the system disk with the default values (initial values) as shown in Fig. 7.115. When these parameters are changed, they should be copied on the system disk to make changing unnecessary each time the system is started up. In this case, depress (SAVE SET UP) key instead of (SET UP) key). The display as shown in Fig. 7.118 is displayed. Insert a system disk made writable in Drive A, and depress (COMMENCE) key.

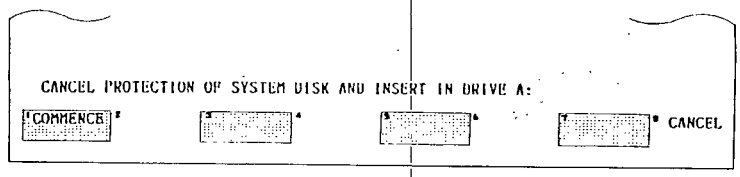


Fig. 7.118

IMPORTANT

After executing the above set-up saving procedure, be sure to disable the system disk for writing.

Parameter Change upon Depressing (SELECT)

Item	Parameter
Output Device	SC → Printer
Baud Rate	75 → 110 → 150 → 300 → 600 → 1200 → 2400 → 4800 → 9600 → 19200
Parity Check	Disable → Odd parity → Even parity
Stop Bit	1 bit → 2 bits
Data Length	7 bits* → 8 bits

*For future expansion.

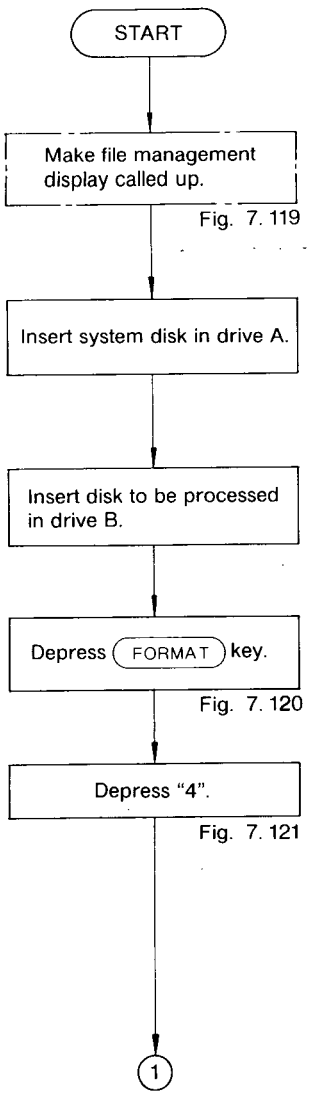
7.11.2 Disk Operation

(1) Disk Formatting

With this procedure, the disk is initialized (formatted) to become ready for use in P150.

POINT

- Blank disks (Model F150-000) are formatted before shipment, and require no formatting by the user.
- When using a commercial disk of correct specifications, be sure to format it before use.
- For the formatting procedure, prepare the disk for writing in advance.



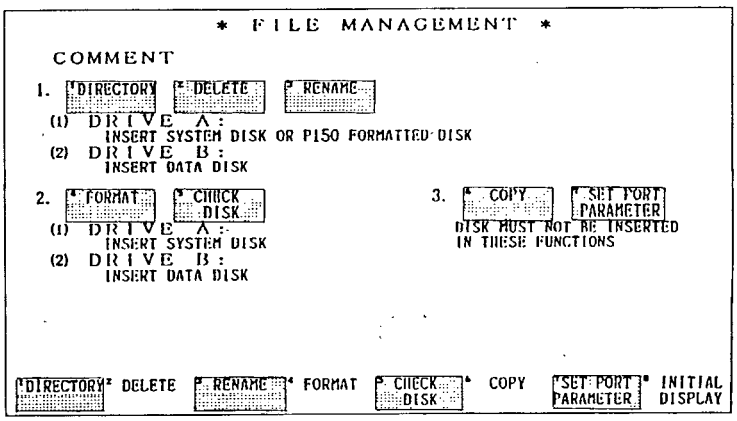


Fig. 7.119

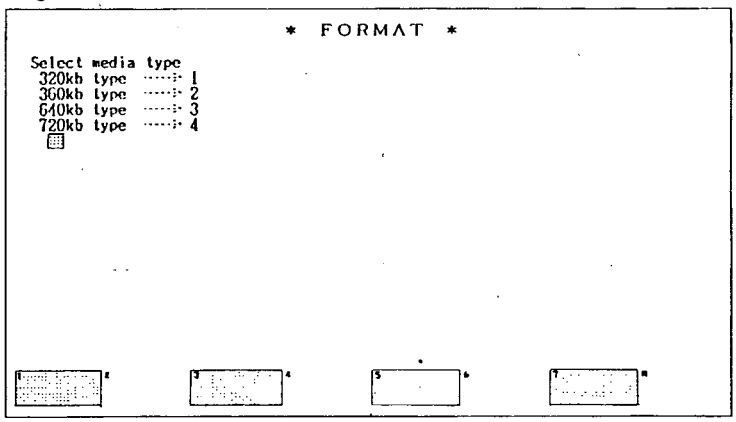


Fig. 7.120

Media types can be selected from 4 types between 320 and 720k bytes. Normally, 720k bytes should be selected.

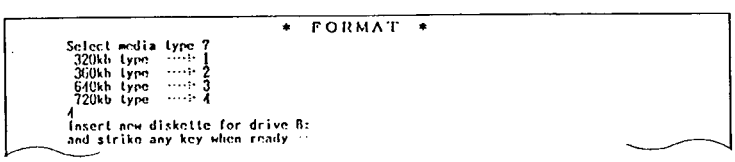
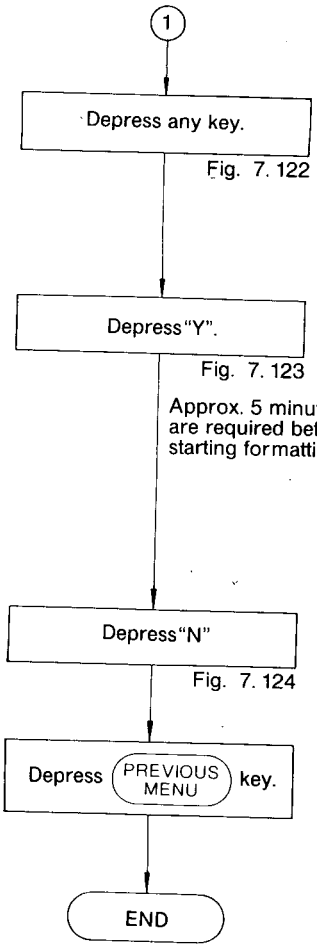


Fig. 7.121




```
                    * FORMAT *
Select media type ?
 320kb type ------: 1
 360kb type ------: 2
 640kb type ------: 3
 720kb type ------: 4
4
Insert new diskette for drive B:
and strike any key when ready

All data in disk of drive B: are cleared. Are you sure <Y/N>?
```

Fig. 7.122

```
                    * FORMAT *
Select media type ?
 320kb type ------: 1
 360kb type ------: 2
 640kb type ------: 3
 720kb type ------: 4
4
Insert new diskette for drive B:
and strike any key when ready

All data in disk of drive B: are cleared. Are you sure <Y/N>? y
Formatting . . .
```

Fig. 7.123

```
                    * FORMAT *
Select media type ?
 320kb type ------: 1
 360kb type ------: 2
 640kb type ------: 3
 720kb type ------: 4
4
Insert new diskette for drive B:
and strike any key when ready

All data in disk of drive B: are cleared. Are you sure <Y/N> ? y
Formatting . . . System transferred

 730112 bytes total disk space
  61440 bytes used by system
 668672 bytes available on disk

Format another <Y/N>? n
```

Fig. 7.124

NOTE

(1) Depressing "N" (Fig. 7.122) calls up PREVIOUS MENU. Depressing the PREVIOUS MENU key calls up the initial display (Fig. 7.119) again.

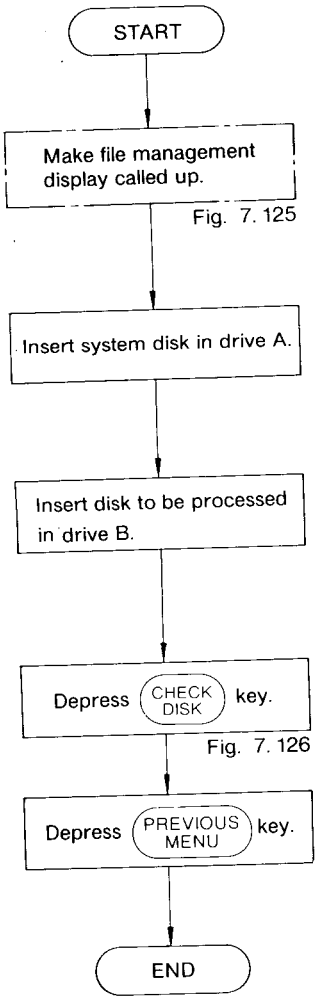
(2) The disk formatted by P150 contains a copied file "COMMAND. COM". This disk may be used as a substitute for the system disk by file processing.

IMPORTANT

The formatting process destroys all the data on the disk. To clear the formatted disk, execute the file delete procedure.

(2) Disk Checking

Check the disks for correct usage, record (directory), and reserve capacity as follows:



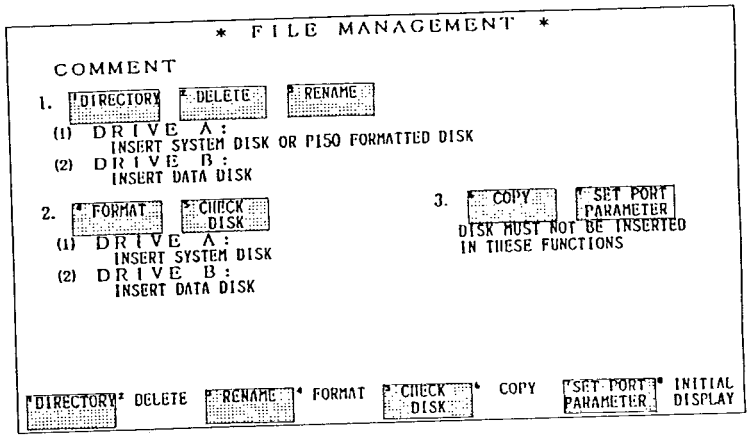


Fig. 7.125

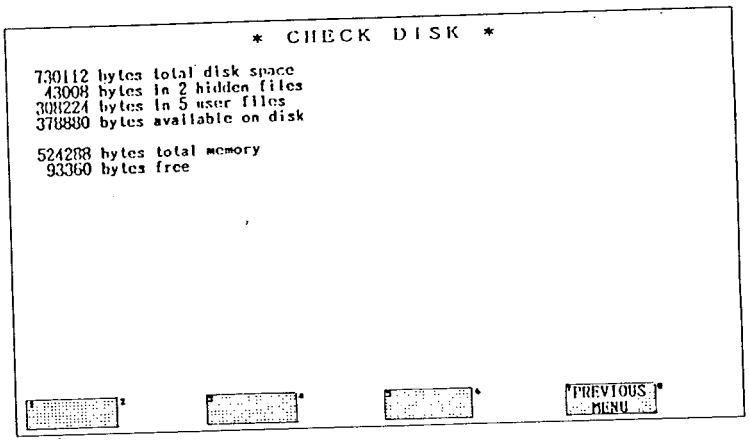
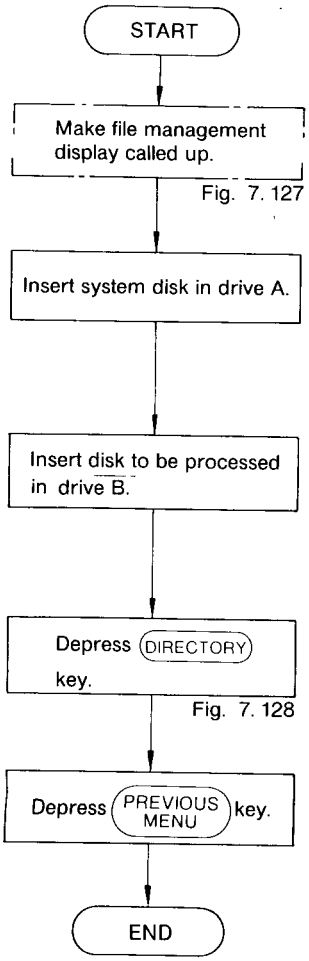


Fig. 7.126

7.11.3 File Operation

(1) Directory

The file names, sizes, and the dates of generation and updating are displayed.



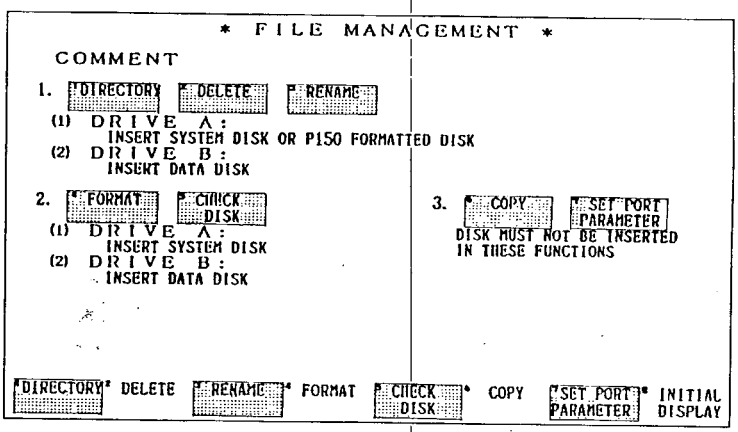


Fig. 7.127

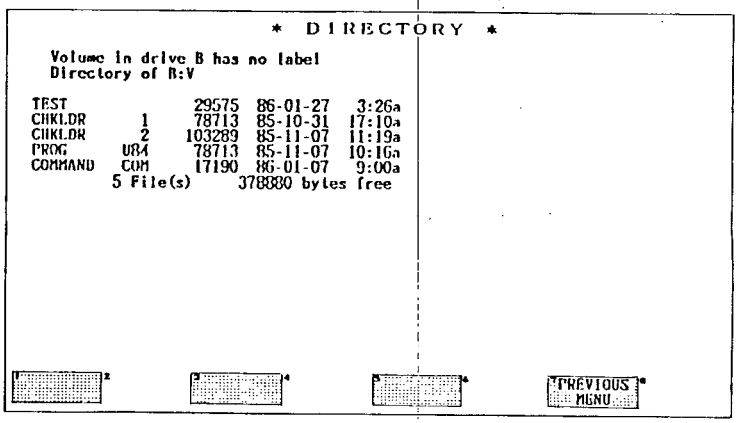


Fig. 7.128

NOTE

(1) Instead of a system disk, a disk formatted by P 150 (containing "COMMAND. COM" file) may also be used.

(2) File names are composed of up to 8 characters and up to 3 escape characters. The escapes can be omitted, but when they are used. A "." (period) must be prefixed to them. For file names and extenders, the following characters can be used:

A～Z 0～9 $ & #
% ／ ( ) － @ _
＾ ｛ ｝ ～ !
カナ

Both capital and lower case letters can be used for file names, but they are all converted into capitals for processing. The following file names cannot be used for file name creation:

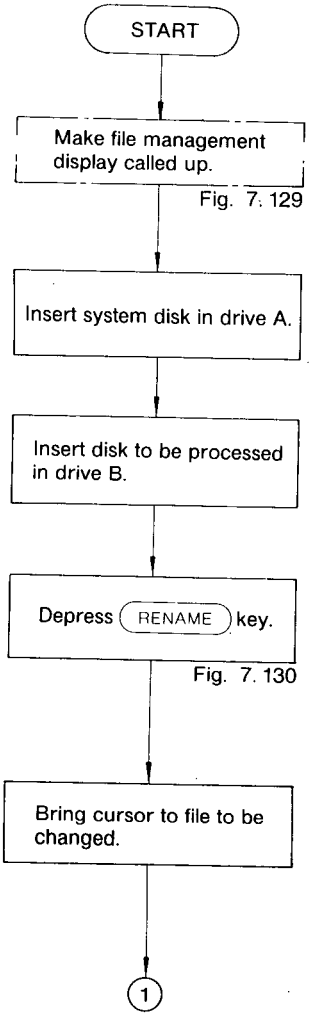
AUX
CON
LST
PRN
NUL
IO.SYS
MSDOS.SYS
COMMAND.COM

(2) File Renaming

The file names in the data disk can be changed, unless the same file name is already present in the disk.

POINT

Prepare the data file for writing in advance.



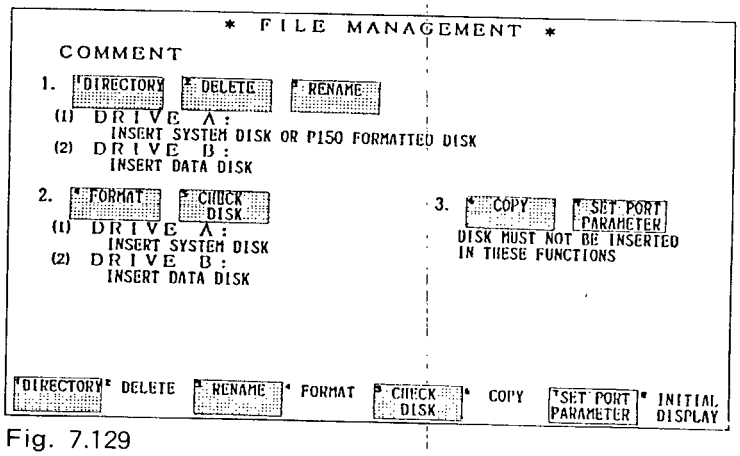


Fig. 7.129

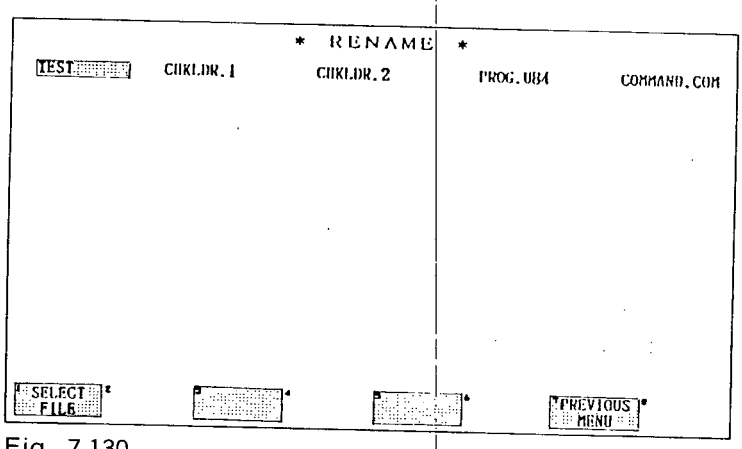
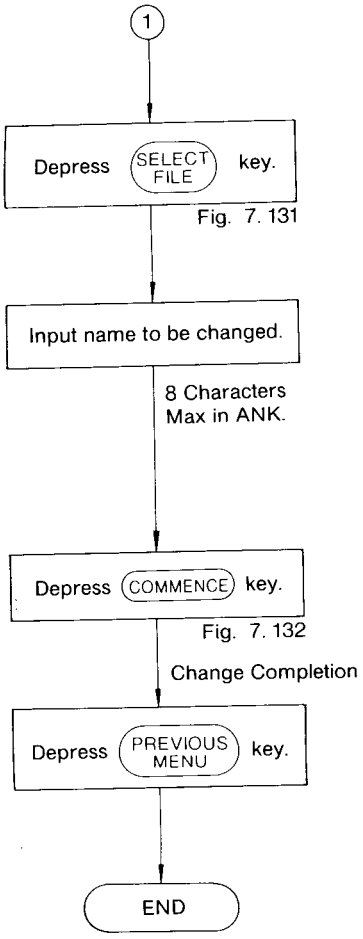


Fig. 7.130



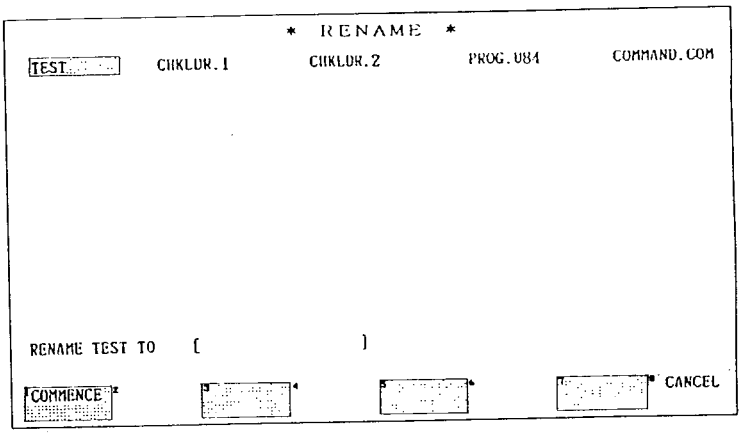


Fig. 7.131

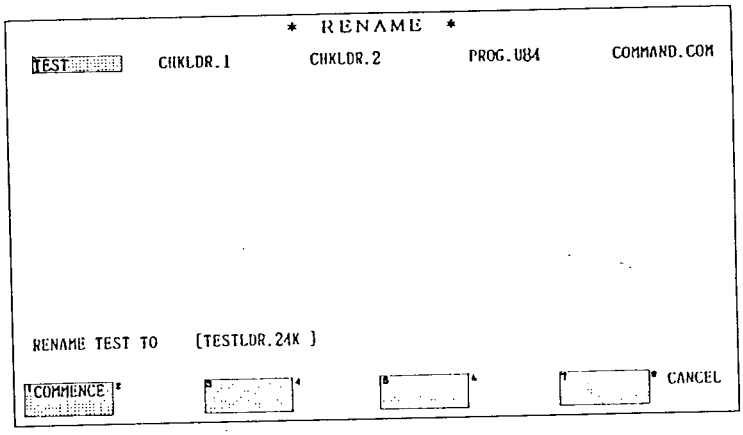


Fig. 7.132

NOTE

(1) Depressing (CANCEL) in Fig. 7.132 calls up the display shown in Fig. 7.130 again.

(2) Instead of a system disk, a disk formatted by P 150 (containing "COMMAND. COM" file) may be used.

(3) File Copying

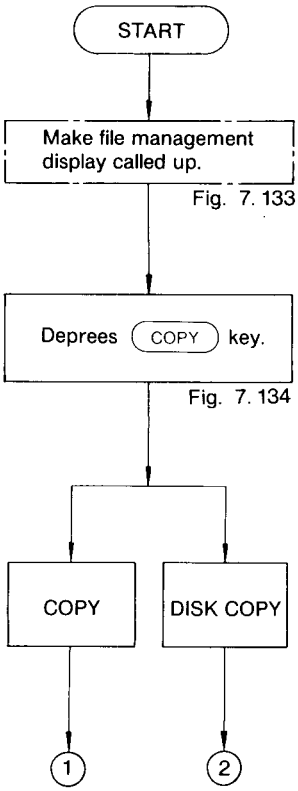
All or specified files of the disk in drive B can be copied on the disk in drive A.

Drive A: Destination disk

Drive B: Source disk

POINT

Prepare the destination disk for writing in advance.



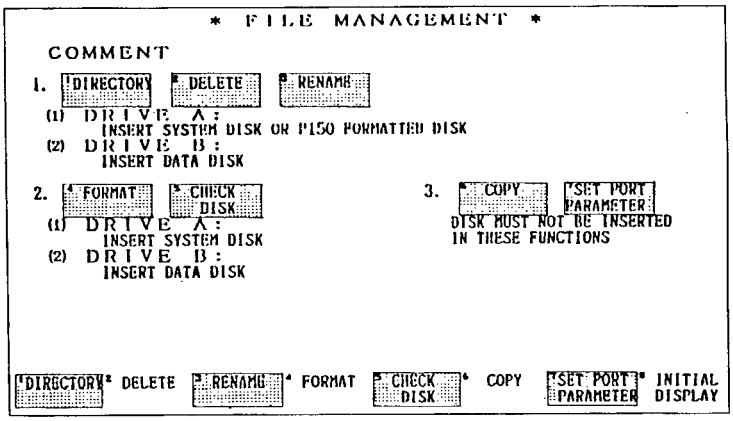


Fig. 7.133

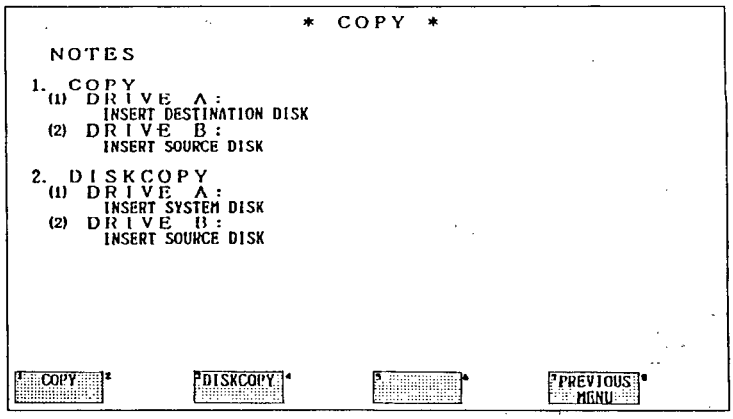


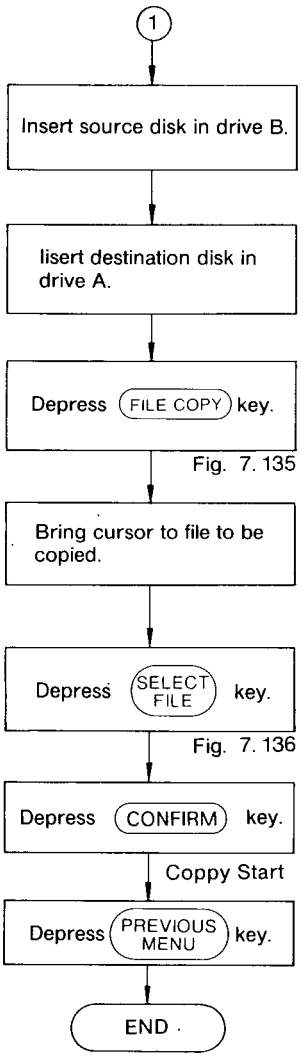
Fig. 7.134

NOTE

All the disks, especially important disks, should be copied for use in case the data is destroyed or damaged by error.

■ File Copy

To copy the file contents from the disk in drive B to the disk in drive A,



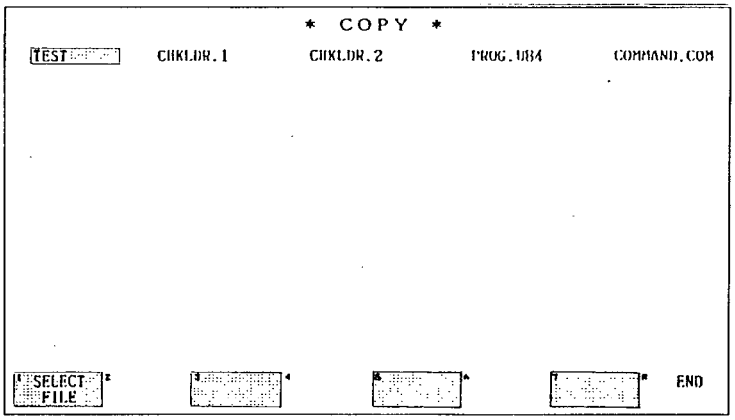


Fig. 7.135

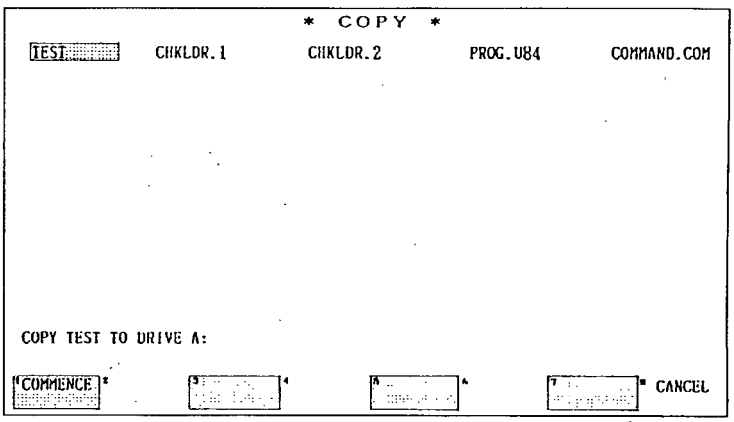


Fig. 7.136

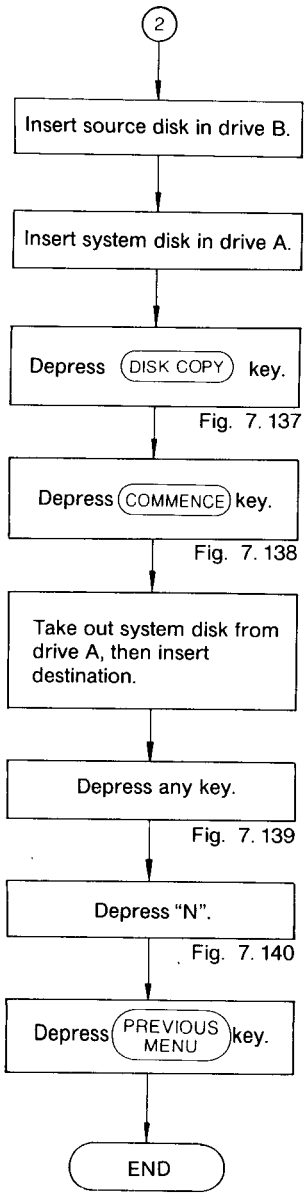
NOTE

(1) Prepare the destination disk for writing in advance.

(2) Depressing CANCEL key in the display as shown in Fig. 7.136 calls up the dispaly as shown in Fig. 7.134 again.

■ Disk Copy

The complete contents of the disk in drive B are copied onto the disk in drive A.



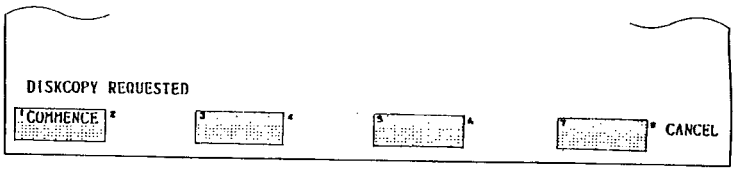


Fig. 7.137

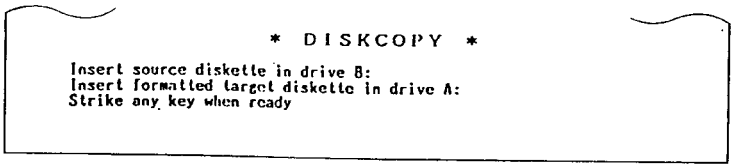


Fig. 7.138

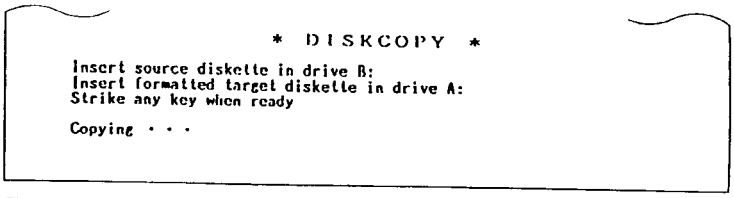


Fig. 7.139

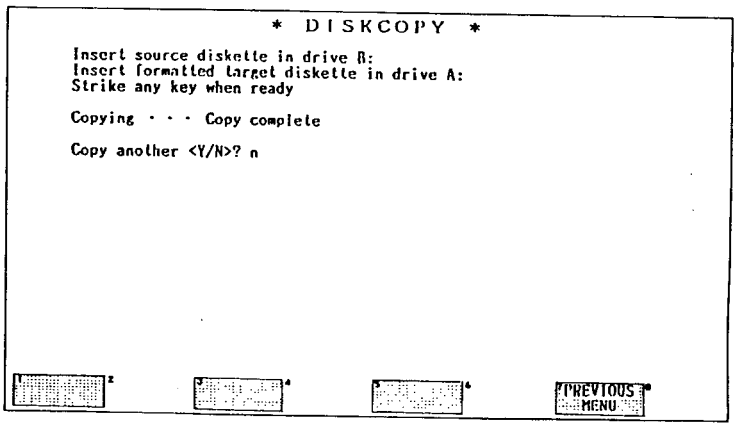


Fig. 7.140

NOTE

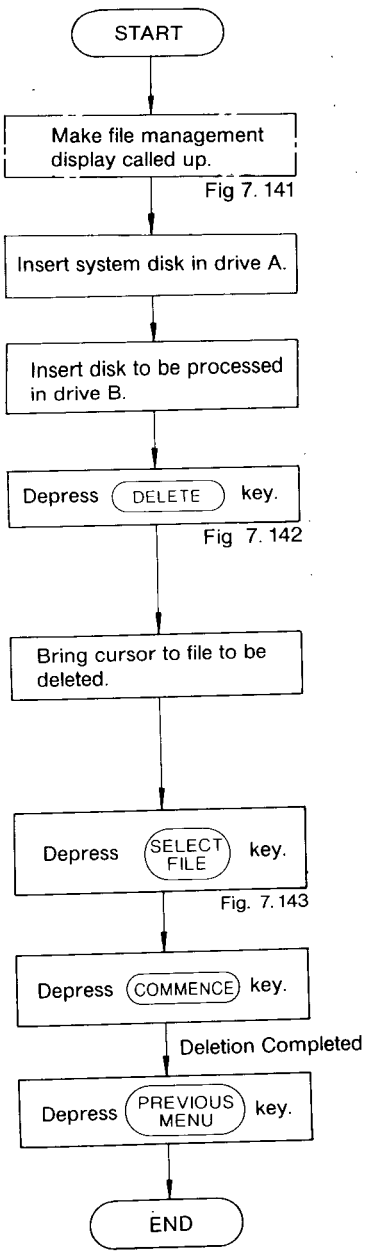
1. Prepare the destination disk for writing in advance.
2. Depressing (CANCEL) key in Fig. 7.137 calls up the display shown in Fig. 7.134 again.
3. To copy other disks, depress Y as shown in Fig. 7.140, and execute the same procedure.

(4) File Deleting

Delete unnecessary files from the data disk as follows:

POINT

.Prepare the data disk for writing in advance.



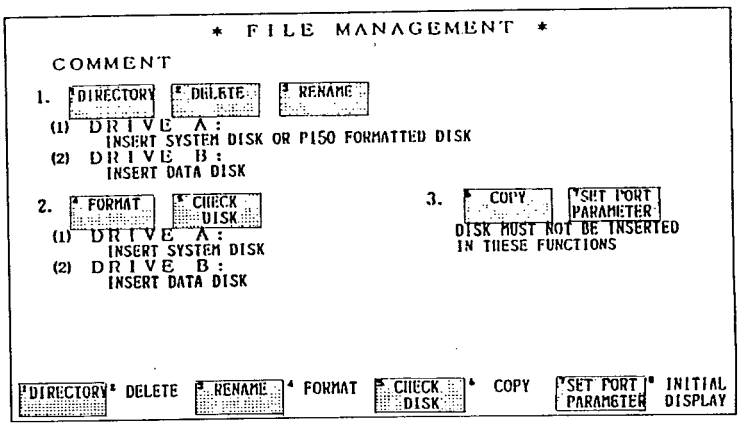


Fig. 7.141

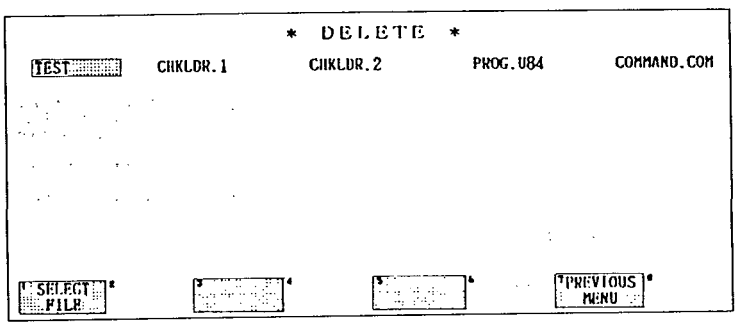


Fig. 7.142

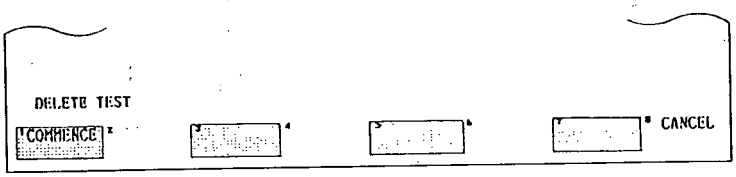


Fig. 7.143

NOTE

1. Depressing (CANCEL) key Fig. 7.143 calls up the display shown in Fig. 7.142 again.
2. Instead of a system disk, a disk formatted by P150 (disk containing COMMAND COM file) may be used.

IMPORTANT Be sure to disable important disks for writing.

7.12 DISPLAY PRINTING

Commercial printers can be connected to the parallel port (Centronics interface) for printing out the display. For printing, depress SHIFT and PRINT CHG NODE keys.

For Parallel Port

(1) Recommended printer: PC-PR201F (NEC)
PC-PR101F (NEC)

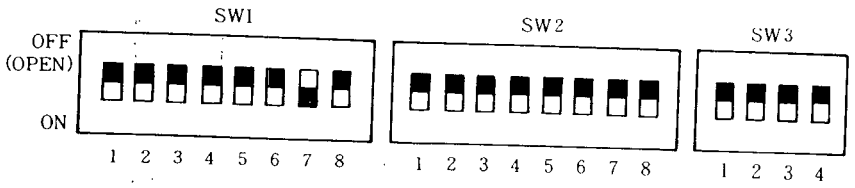
(2) Required components

In addition to GL60S, P150 and the connecting cable (Model JZMSZ-W1006), the following components are required:

Name	Model	Q'ty	Maker	Remarks
Cable between P150 and Printer	PC-8894	1	NEC	Packed with printer.
Printer	·PC-PR201F ·PC-PR101F	1	NEC	Purchase from maker or dealer.
Printing Paper	10×11(inch)	1 set	—	

(3) Setting communication parameter

When using PC-PR201F or PC-PR101F:



POINT · Make this setting after turning off the power supply.

(4) Cable for connecting the printer

Use the cable packed with the printer.

8. MAINTENANCE OF ASCII MODULES

8.1 BATTERY REPLACEMENT

(1) Battery Specifications

ASCII module memory for the GL60S is backed up with a battery. It is recommended to replace the battery approximately every two years. However, the battery life varies depending on the operating environment (temperature and humidity), power failure time, etc.

Table 8.1 lists the specifications of the battery used in an ASCII module for the GL60S

Table 8.1 Battery Specifications

Item	Specifications
Name	Lithium battery
Type	BR-2/3A-1 (with wiring tab)
Manufacturer	Matsushita Battery Industry Co., Ltd.
Nominal Voltage	3V
Nominal Capacity	1200 mAh
Ambient Temperature	0℃ to +55℃
Storage Temperature	−20℃ to +45℃
Life	· Warranty: 5 years at 25℃ · Actual protective period for memory: 1 year at 25℃
Approx Weight	15g

Note: When the battery in the Table above is required, contact Yaskawa representative.

(2) Battery Replacement Interval

The battery life is a maximum of five years or until the total time of power failure reaches one year. However, if the "BAT ALM" (battery error) indicator on the ASCII module goes on, replace the battery within one month.

The following are guidelines of the battery replacement interval (life) according to the ASCII module energization time:

- For 12-hour energization on the daily mean: Every two years
- For 16-hour energization on the daily mean: Every three years
- For 20-hour energization on the daily mean: Every four years

NOTE

The total energization time shall contains holidays.

(3) Battery Replacement Procedure

Replace the battery with a new one, with AC power supplied to the GL60S (the ASCII module mounted on the mounting base). Removal of the battery without AC power supply longer than 30 minutes will destroy the memory contents.

Replace the battery according to the following sequence:

1. Preheat a soldering iron.
2. Check that the POWER indicator on the power supply module is ON (AC power is ON).
3. Remove the front cover of the ASCII module.
4. Take out the battery in the battery holder and remove the connector at the tips of the leads from the ASCII module.
5. Using the soldering iron, remove the leads from the soldering tabs of the battery.
6. Solder the leads removed in step 5 to the soldering tabs of a new battery with the correct polarity (positive pole: red lead, negative pole: black lead).
7. Enter the battery in the battery holder and connect the connector at the tips of the leads to the ASCII module connector.
8. Check that the "BAT ALM" (battery error) indicator on the ASCII module is OFF.
9. Attach the front cover of the ASCII module and power off the soldering iron. This completes battery replacement.

8.2 ERROR CODE DISPLAY AND CORRECTIVE ACTION

The ASCII module makes a self-diagnosis which is a power-up diagnosis made only when power is turned on or the ASCII module reset switch is pressed, or a background diagnosis made repeatedly when the ASCII module is running. A power-up diagnosis is also made when memory change operation such as message store or editing is performed on the P150 programming panel.

In either self-diagnosis, if an error is detected, the ASCII module outputs an appropriate error code by blinking a combination of indicators to indicate the error contents. Similar error code display is also made on the P150 programming panel.

(1) Error Code Display on ASCII Module Indicators

The ASCII module displays error code by using the four indicators "READY" (running), "TX1/ER1", "RX1", and "TX2/ER2."

If a self-diagnosis of the ASCII module results in detection of an error, an appropriate error code is indicated by blinking a combination of some of the indicators. At this time, the indicators have no original meanings.

Table 8.2 lists ASCII module error code display and corrective action (recovery step).

Table 8.2 ASCII Module Error Code Display and Corrective Action

	"READY"	"TX1/ER1"	"RX1"	"TX2/ER2"	"RX2"	Error Contents	Corrective Action
	1	0	0	1	0	ROM error (power-up diagnosis)	Replace the ASCII module.
	1	0	0	0	0	ROM error (background diagnosis)	
*	1	1	0	1	0	ROM (for interface) error (power-up diagnosis)	
	1	0	1	0	1	Module address, dip SW set error (power-up diagnosis)	
	1	0	1	0	0	RAM (message format area) error (power-up, background diagnosis)	Clear the ASCII module memory using the P150 programming panel before restoring messages.
†	1	0	0	0	1	RAM (message pointer area) error (power-up, background diagnosis)	
	1	1	0	1	0	RAM (port parameter) error (power-up diagnosis)	Again set parameters using the P150.
*	0	1	1	1	0	Watchdog timer error	Replace the ASCII module.

{1: Indicator blinks
0: Indicator is OFF.}

* Indicators blink.

† These error codes may be displayed when power is turned on initially, with the ASCII module for the GL60S mounted on the mounting base. These codes do not indicate actual errors. To counteract this false error status, set a communication parameter by the P150 and store ASCII messages.

(2) Error Code Display on P150 Programming Panel

If an error is detected in a self-diagnosis of the ASCII module, the following error code display is made after P150 ATTACH operation or when ASCII module memory change operation is performed:

```
MODULE STATUS ERROR #1: 81
```

Fig. 8.1 Example of Error Code Display on P150

Error code is displayed in 2-digit hexadecimal. Table 8.3 lists the error codes displayed on P150 screen and their corrective actions.

Table 8.3 P150 Error Codes and Their Corrective Actions

Error Codes	Error Contents	Corrective Actions
B0	Checksum error in message format area (power-up, background diagnosis)	Clear the ASCII module memory using P150 before restoring messages.
B1	Checksum error in message pointer area (power-up, background diagnosis)	
B2	RAM error (power-up diagnosis)	Replace the ASCII module.
B3	ROM error (power-up, background diagnosis)	
B4	Error in ASCII system area (power-up, background diagnosis)	· Clear the ASCII module memory using P150. · Again set port parameters.
B5	Battery error	Replace the battery.
B6	Not used	——
B7	ASCII module stop flag	If any error of B0 to B4 occurs, this bit is ON. The bit is OFF when error is released.

B7	B6	B5	B4	B3	B2	B1	B0

Higher order: X Lower order: X

9. ERROR MESSAGES

Various error messages are displayed on the P150 programming panel when errorneous operation is performed or a trouble occurs in the GL60S system. The operation error messages vary depending on the type of control program stored in the P150. The error messages that may be output when GL60S ASCII programmer tape (F60S-E003) is used are explained below:

9.1 ERROR MESSAGES ON OPERATION

Table 9.1 Error Messages on Operation

Error Message	Description	Suggested Action
ANOTHER SC SAVED FILE	In load or verify operation, the file type is wrong.	Depress CLR AR / CLR ERR key.
ASCII I/F NOT ATTACHED	An operation requiring ATTACH operation was executed before the ATTACH operation.	Perform ATTACH operation first.
ASCII MEMORY FULL	Message cannot be written because the specified ASCII module memory is full.	Reduce the number of messages.
CAN NOT COPY SYSTEM DISK	The system disk was inserted in drive B, and (FILE COPY) key was depressed.	Insert a disk in drive B.
CAN NOT CREATE FILE	In save operation, a file creation error occurred.	Perfom a disk check operation. Change the data disk.
CAN NOT DELETE SYSTEM FILE	The system disk was inserted in drive B, and (DELETE) key was depressed.	Insert a data in drive B.
CAN NOT DELETE	In delete operation, "COMMAND. COM" was selected.	Select a correct file.
CAN NOT DISPLAY SYSTEM FILE	The system disk was inserted in drive B, and (DIRECTORY) key was depressed.	Insert a data disk in drive B.
CAN NOT READ DISK	In load or verify operation, a disk data read error occurred.	Depress CLR AR / CLR ERR key.
CAN NOT RENAME SYSTEM FILE	The system disk was inserted in drive B, and the (RENAME) key was depressed.	Insert a data disk in drive B.
CAN NOT RENAME	The "COMMAND. COM" file cannot be renamed.	Select a correct file.
CAN NOT USE THE DISK	An unformatted disk was inserted in drive B, and a disk or a file operation other than formatting was attempted.	Insert a correct disk.
CAN NOT WRITE TO DISK	In save operation, a disk data write error occurred.	Depress CLR AR / CLR ERR key.
DISK NOT INSERTED OR DISK ERROR	The disk is not in the drive, or is defective.	Insert or change the disk.
DISK WRITE PROTECTED	A file operation or save operation was attempted to the write-protected data disk.	Make the disk write-permitted.

Table 9.1 Error Messages on Operation (Cont'd)

Error Message	Description	Suggested Action
FILE ALREADY EXIST. OVERWRITE OK?	An attempt was made to save the file whose file name already exists on the data disk.	Depress (COMMENCE) or (CANCEL) key.
FILE NOT FOUND	In load or verify operation, a file name which does not exist was specified.	Enter a correct file name.
FUNCTION NOT ALLOWED END OF MESSAGE	When the cursor is placed at the next to the last symbol of the message, ⊟ key is depressed.	Depress [CLR AR / CLR ERR] key.
FUNCTION NOT ALLOWED END OF TEXT	When the cursor is placed at the end of the text, (CURSOR TEXT RIGHT) key is depressed.	Depress [CLR AR / CLR ERR] key.
FUNCTION NOT ALLOWED NOT IN TEXT FIELD	When the cursor is placed within the text, [SHIFT] and ⊟ keys are depressed.	Depress [CLR AR / CLR ERR] key.
FUNCTION NOT ALLOWED START OF MESSAGE	When the cursor is placed on the first symbol of the message, ⊟ key is depressed.	Depress [CLR AR / CLR ERR] key.
FUNCTION NOT ALLOWED START OF TEXT	When the cursor is placed at the head of the text, (CURSOR TEXT RIGHT) key is depressed.	Depress [CLR AR / CLR ERR] key.
FUNCTION NOT ALLOWED	· The requested function cannot be performed when the wrong (function) key is depressed. · When an operation other than message storing or editing is performed, cursor control key is depressed.	Depress [CLR AR / CLR ERR] key.
ILLEGAL BAUD RATE	A numeric value not allowed for the baud rate is set in AR and (SET BAUD RATE) key is depressed.	Set correct baud rate.
ILLEGAL DATA BITS	A numeric value other than 5 to 8 is set in AR and (# OF DATA BITS) key is depressed.	Set a numeric value in the range of 5 to 8.
ILLEGAL MESSAGE	An error is contained in the message symbol to be set.	Make a valid message symbol.
ILLEGAL PORT PARAMETER	An error is contained in GL60S or ASCII parameters.	Using RAP, set the GL60S or ASCII port parameters from the beginning.
INCOMPLETE MESSAGE	The message contains a syntax error.	Delete the message once then restore a valid message.
INVALID CALENDAR	Calendar was tried to be set out of range.	Set the correct value.
INVALID DATE	In load operation, an attempt was made to enter a date in the wrong format.	Enter the date correctly.
INVALID FILE NAME	The specified file name does not exist on the disk or cannot be used.	Change the file name.

Table 9.1 Error Messages on Operation (Cont'd)

Error Message	Description	Suggested Action
INVALID LINE WIDTH	In printer playback, line width was tried to be set out of range.	Set the correct value.
INVALID MENU NO.	An invalid menu number was entered.	Reenter a valid menu number (1, 2, or 3).
INVALID MESSAGE NUMBER	Message number other than 1 to 1024 is specified.	Specify message number in the range of 1 to 1024.
INVALID MODULE NUMBER	A numeric value other than 1 to 8 is specified as the ASCII module number.	Specify any numeric value of 1 to 8 as the module number.
INVALID PLAYBACK-MESSAGE LENGTH IS ZERO	Although no message appeared on the screen, (PLAYBACK MESSAGE) key is depressed.	Display a message on the screen before depressing (PLAYBACK MESSAGE) key.
INVALID REPLACEMENT	In REPLACE mode, a text is directly changed to a message symbol other than a text.	Delete the text once then set a new message symbol.
INVALID SUB MENU NO.	An invalid sub menu number was entered.	Reenter a valid sub menu number (1 or 2).
INVALID UNIT NUMBER	A numeric value other than 1 to 247 is set in AR and (UNIT NO) key is depressed.	Set the same number as unit number of PC connected.
INVALID WRITE-MESSAGE LENGTH IS ZERO	Although no message appeared on the screen, (WRITE MESSAGE) key is depressed.	Display a message on the screen before depressing (WRITE MESSAGE) key.
MAX MESSAGE WORDS: 512	The number of required memory words for one message exceeds 512.	Shorten the message.
MAX REGISTERS: 999	The number of required registers for one message exceeds 999.	Reduce the number of required registers.
MEMORY PROTECT ON	The memory size cannot be altered when the IOP.COM memory protect switch is on.	Turn off the memory protect switch.
MESSAGE AREA BOTTOM LINE	When the cursor is placed on the bottom line of the message, ↓ key is depressed.	Dpress [CLR AR / CLR ERR] key.
MESSAGE AREA TOP LINE	When the cursor is placed on the top line of the message, ↑ key is depressed.	Dpress [CLR AR / CLR ERR] key.
MESSAGE DOES NOT EXIST	Message having the specified number does not exist in the specified ASCII module.	Specify correct message number.
MISCOMPARE IN CONFIGURATION AREA	A verify error was detected in the configuration area.	Retry the operation from the first step.
MISCOMPARE IN FORMAT AREA	A verify error was detected in the format area.	Retry the operation from the first step.
MISCOMPARE IN POINTER AREA	A verify error was detected in the pointer area.	Retry the operation from the first step.

Table 9.1 Error Messages on Operation (Cont'd)

Error Message	Description	Suggested Action
NOT DATA IN THE DISK [MESSAGE FORMAT {MESSAGE POINTER [CONFIGURATION	File with no message is verified with something stored in ASCII module.	Verify using correct file.
NOT ENOUGH MEMORY	There is not enough space on the data disk to save or copy data.	Use a new data disk.
NO MESSAGE EXIST IN ASCII MODULE	No message is contained in the specified ASCII module.	Store a message.
NO SYSTEM DISK	The system disk is not in drive A.	Insert the system disk in drive A.
ONLY DECIMAL OR HEXADECIMAL CHARACTERS ALLOWED IN AR	A character other than 0 to 9, A to F, S, T or R was set to AR.	Depress CLR AR / CLR ERR key.
PRINTER NOT CONNECTED OR POWER OFF	In playback operation of printer, printer is not connected or printer power is OFF.	· Connect the printer to P150. · Turn on the printer power.
WARNING: MESSAGE ALREADY EXIST	Message No. to be stored in ASCII module already exists.	Depress (CONFIRM) or (CANCEL) key.

9.2 MESSAGES ON OPERATION

- ALL MESSAGE NUMBERS DISPLAYS
- ASCII MODULE MEMORY CLEAR REQUESTED
- ATTACHING
- BATTERY ERROR
- CLEARING ASCII MEMORY
- DISKCOPY REQUESTED
- LINE WIDTH OF XXX SELECTED
- MESSAGE XXXX DELETED
- MESSAGE XXXX WRITTEN
- MODULE STATUS ERROR # : XX
- READING AND FORMATTING MESSAGE XXXX
- READING USED MESSAGE NUMBERS
- SAVE COMPLETE
- VERIFY COMPLETE
- XXXXX MISCOMPARE: VERIFY COMPLETE

9.3 ERROR MESSAGES ON SYSTEM

Table 9.2 Error Messages on System

Error Message	Description	Suggested Action
BCC FAILURE	An error was found in the data sent from the P150. (CRC check error)	Retry the operation from the first step.
CRC FAILURE	An error was found in the data received from the GL60S or ASCII. (CRC check error)	Retry the operation from the first step.
FATAL I/O ERROR MUST INITIALIZE RESET SEQUENCE	Another operation was performed after an error occurred during data communication with the GL60S or ASCII.	Retry the operation from the first step.
INVALID ADR/ADR RANGE	An error was found in the data received from the GL60S or ASCII. A wrong floppy disk was used.	Retry the operation from the first step. Use the floppy disk for the GL60S.
INVALID CHARACTER	An error was found in the data received from the GL60S or ASCII. A wrong floppy disk was used.	Retry the operation from the first step. Use the floppy disk for the GL60S.
INVALID COMMAND	An error was found in the data received from the GL60S or ASCII. A wrong floppy disk was used.	Retry the operation from the first step. Use the floppy disk for the GL60S.
INVALID PAGE	An error was found in the data received from the GL60S or ASCII. A wrong floppy disk was used.	Retry the operation from the first step. Use the floppy disk for the GL60S.
INVALID PARAMETER (COUNT, SEQ #, etc)	An error was found in the data received from the GL60S or ASCII. A wrong floppy disk was used.	Retry the operation from the first step. Use the floppy disk for the GL60S.
TIMEOUT ERROR-COMMUNICATIONS DOWN	This message is displayed when the P150 does not receive a response after transmitting a signal to the GL60S or ASCII.	Check the parameters (P150 and GL60S) and cables. Check the GL60S by turning the power switch ON and OFF and then ON again.
UART STATUS ERROR	An error was found in the data received by the P150. (This error may be caused by external noise.)	Retry the operation from the first step. (Keep the device away from the source of the noise.)
INVALID INSERT (ASCII)	An error was found in the data sent from the P150.	Retry the operation from the first step.
INVALID MSG (ASCII)	An error was found in the data sent from the P150.	Retry the operation from the first step.

Table 9.3 7-bit ASCII Character Codes

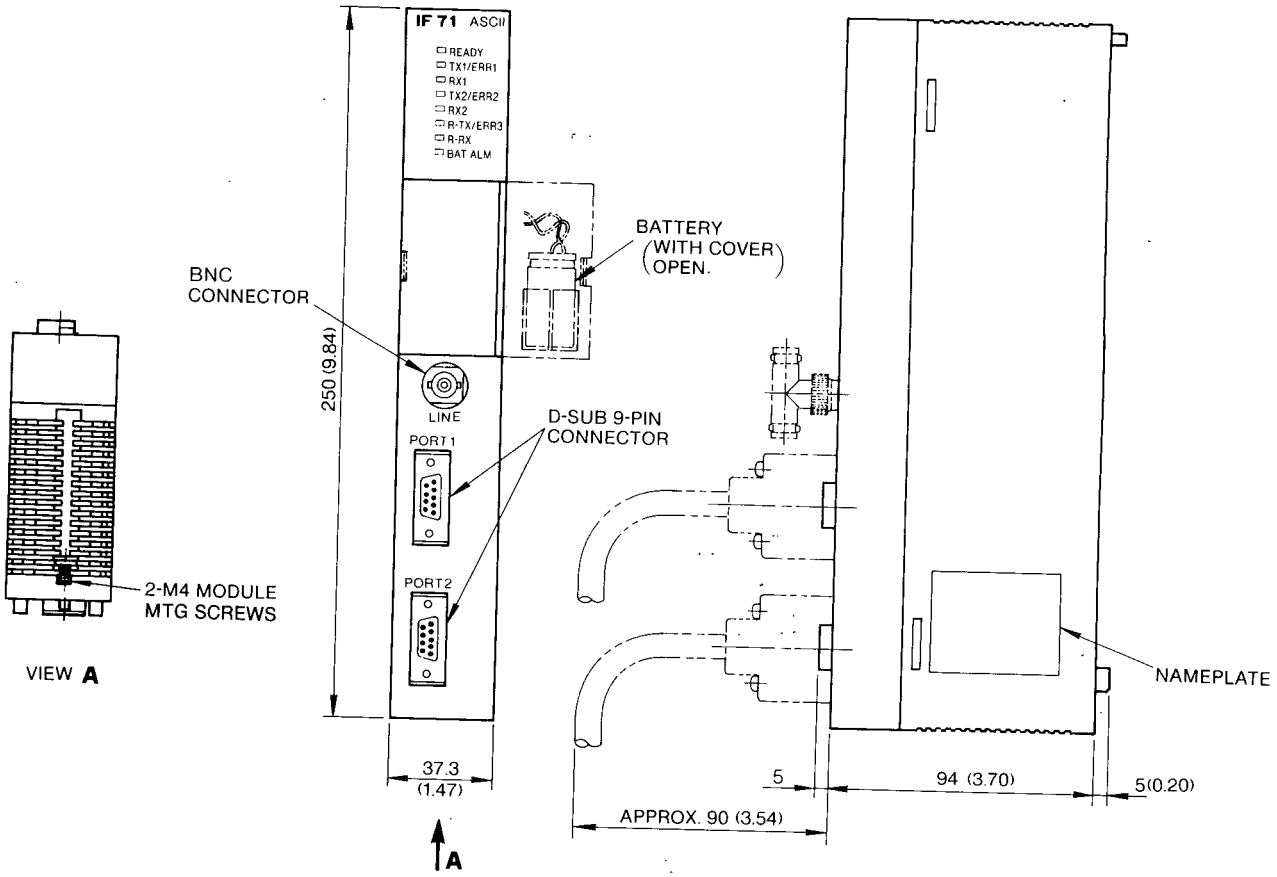
High-order 3 bits / Low-order 4 bits	000	001	010	011	100	101	110	111
	0	1	2	3	4	5	6	7
0000	000	020	040	060	100	120	140	160
0	NUL	DEL	SP (SP)	0 (ー)	@ (タ)	P (ミ)	`	p
0001	001	021	041	061	101	121	141	161
1	SOH	DC1	! (。)	1 (ア)	A (チ)	Q (ム)	a	q
0010	002	022	042	062	102	122	142	162
2	STX	DC2	" (「)	2 (イ)	B (ツ)	R (メ)	b	r
0011	003	023	043	063	103	123	143	163
3	ETX	DC3	# (」)	3 (ウ)	C (テ)	S (モ)	c	s
0100	004	024	044	064	104	124	144	164
4	EOT	DC4	$ (、)	4 (エ)	D (ト)	T (ヤ)	d	t
0101	005	025	045	065	105	125	145	165
5	ENQ	NAK	% (・)	5 (オ)	E (ナ)	U (ユ)	e	u
0110	006	026	046	066	106	126	146	166
6	ACK	SYN	& (ヲ)	6 (カ)	F (ニ)	V (ヨ)	f	v
0111	007	027	047	067	107	127	147	167
7	BEL	ETB	' (ア)	7 (キ)	G (ヌ)	W (ラ)	g	w
1000	010	030	050	070	110	130	150	170
8	BS	CAN	((イ)	8 (ク)	H (ネ)	X (リ)	h	x
1001	011	031	051	071	111	131	151	171
9	HT	EM	) (ウ)	9 (ケ)	I (ノ)	Y (ル)	i	y
1010	012	032	052	072	112	132	152	172
A	LF	SUB	* (エ)	: (コ)	J (ハ)	Z (レ)	j	z
1011	013	033	053	073	113	133	153	173
B	VT	ESC	+ (オ)	; (サ)	K (ヒ)	[(ロ)	k	{
1100	014	034	054	074	114	134	154	174
C	FF	FS	, (ヤ)	< (シ)	L (フ)	/* (ワ)	l	|
1101	015	035	055	075	115	135	155	175
D	CR	GS	- (ユ)	= (ス)	M (ヘ)	] (ン)	m	}
1110	016	036	056	076	116	136	156	176
E	SO	RS	. (ョ)	> (セ)	N (ホ)	< (゛)	n	~
1111	017	037	057	077	117	137	157	177
F	SI	US	/ (ッ)	? (ソ)	O (マ)	- (゜)	o	DEL

* ¥ in JIS (Japanese Industrial Standard) C 6220.

Note: The character enclosed in parentheses is a JIS (Japanese Industrial Standard) C 6220 kana character selected by shift out (SO).

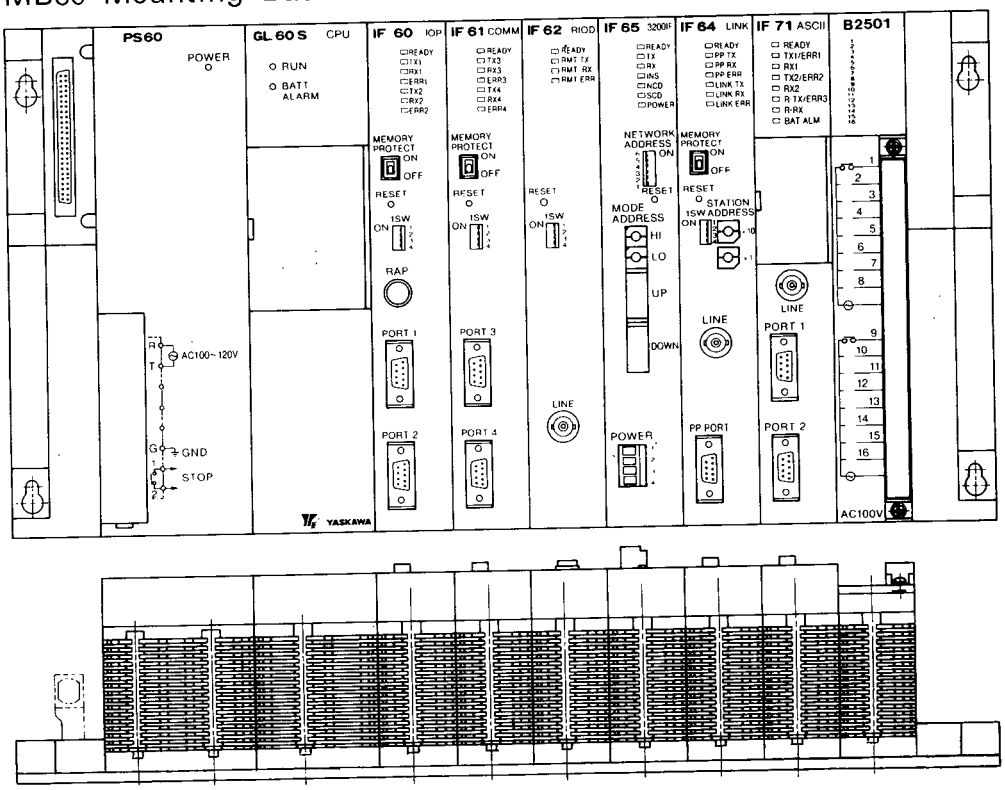
APPENDIX A DIMENSIONS in mm (inches)

ASCII Module (JAMSC-IF71)

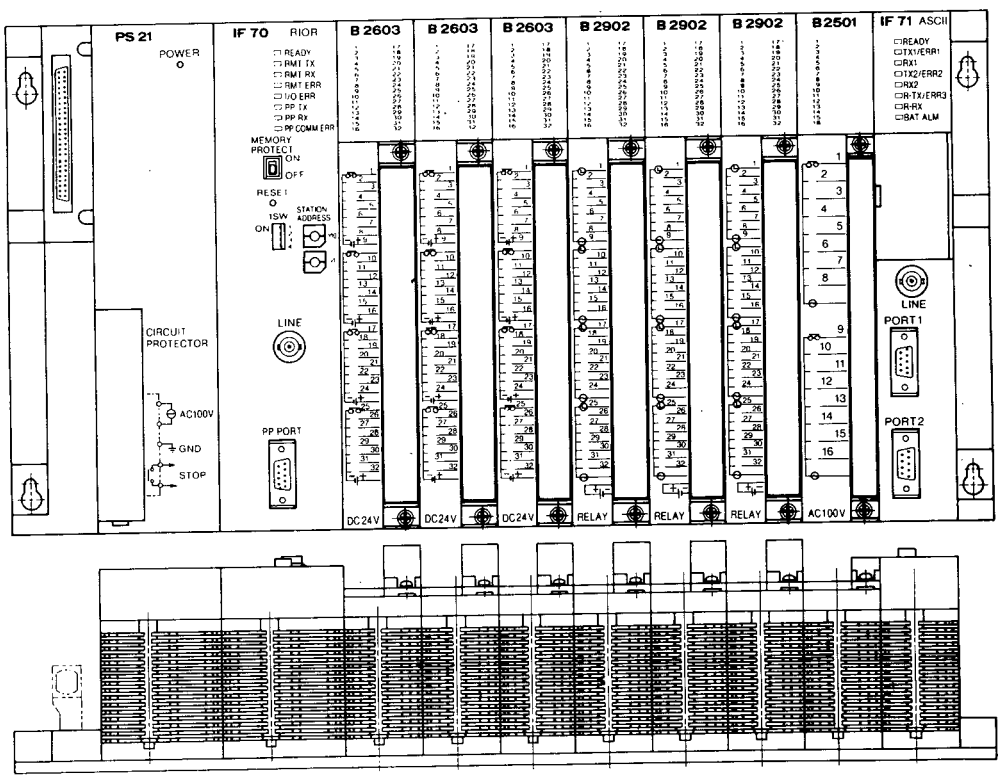


APPENDIX B MODULE MOUNTING DRAWINGS

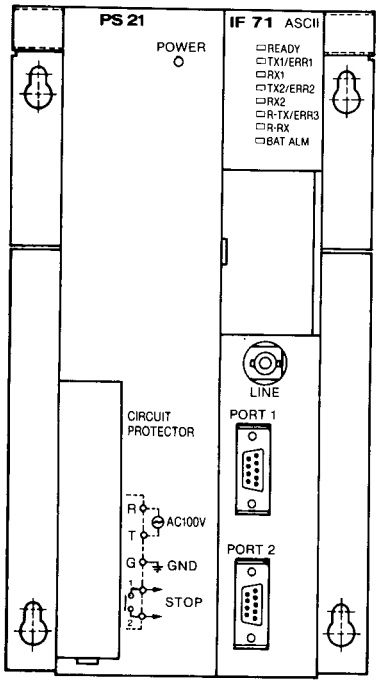
(1) MB60 Mounting Base

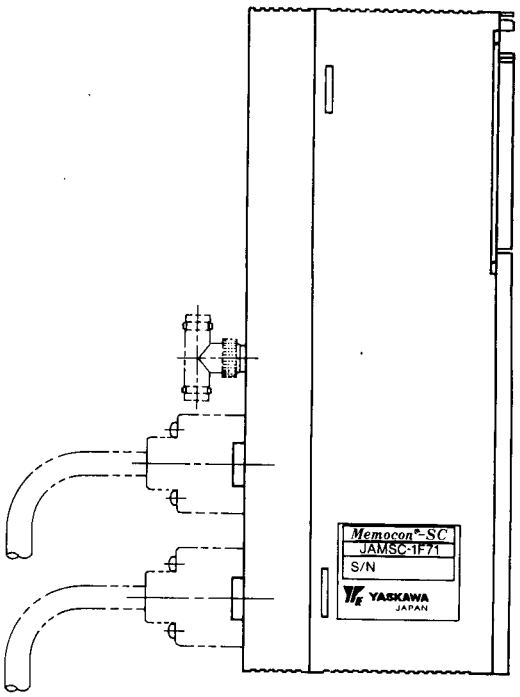


(2) MB70 Mounting Base

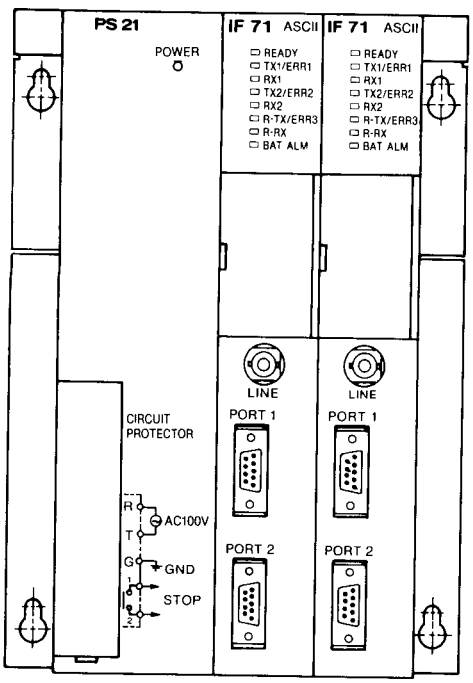


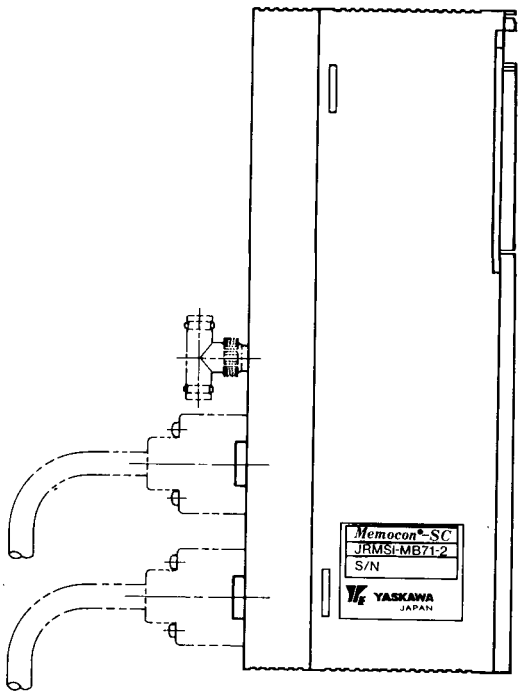
(3) MB71-1 Mounting Base





(4) MB71-2 Mounting Base





A Better Tomorrow for Industry through Automation

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