

GA33-1514-0
File No. S370-01

Systems

**Operator's Library
System/370 Model 115
Procedures**

IBM



This Newsletter No. GN33-1687
Date 15 October 1976

Base Publication No. GA33-1514-0,-1
System S370-01

Previous Newsletters GN33-1603 (for -0 only)
GN33-1629 (for -0 only)
GN33-1674 (for -0 and -1)
GN33-1677 (for -0 and -1)

IBM Operator's Library System/370 Model 115 Procedures

© IBM Corp. 1974

This Technical Newsletter provides replacement pages for the subject publication. Pages to be inserted and/or removed are:

iii, iv	80.1 (added)
29, 30	84.1, 84.2 (added)
41-44	85, 86
73, 74	109, 110
77, 78	117-120

A change to the text or to an illustration is indicated by a vertical line to the left of the change.

Summary of Amendments

This Technical Newsletter provides new information in the section "ICA In-Line Test" on the procedure for bypassing a faulty line by backup from the switched network; other minor changes have also been made.

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

GA33-1514-1
File No. S370-01

Systems

**Operator's Library
System/370 Model 115
Procedures**

IBM

PREFACE

This manual provides operating and reference information for operators of the IBM System/370 Model 115. The information in this manual refers both to systems with an IBM 3115-0 Processing Unit and to systems with an IBM 3115-2 Processing Unit. Note that the 3115-0 Processing Unit is equipped with a machine instruction processor (MIP); whereas the 3115-2 has an instruction processing unit (IPU).

The reader is assumed to have a working knowledge of *Introduction to IBM Data Processing Systems*, GC20-1684, and some previous operating experience on either a similar system or on related data processing equipment.

This manual describes how to operate the system hardware of the 3115-0 and 3115-2 Processing Units.

The manual is divided into:

1. Preliminary information, including action to be taken in an emergency.
2. "Introduction", which briefly describes the system.
3. "Facilities", which describes the operator console, keyboard and video display screen.
4. "Actions", which describes the preparation of the system for operation, and the handling of unexpected situations which may occur during preparation and operation.
5. "Appendix", which provides:
 - a. Reference information on the:
 - Direct disk attachment
 - Magnetic tape adapter
 - Integrated communications adapter
 - Integrated console printer attachment
 - Integrated printer attachment
 - Integrated card I/O attachment.
 - b. Restart Procedures for the IBM 2560 Multi-Function Card Machine (MFCM) and the IBM 5425 Multi-Function Card Unit (MFCU).
 - c. A description of the choices on the "Line Modes for ICA" displays.
 - d. Conversion tables.
6. A glossary, bibliography, and index.

Most pages are divided into one wide column and one narrow column. The wide column contains the principal information for the topic; any actions that have to be performed are given in flowcharts (see "Flowchart Symbols" on page v). The narrow column contains comments that supplement the principal information.

Second Edition (May 1975)

This is a reprint of GA33-1514-0 incorporating changes released in the following Technical Newsletters:

GN33-1603 (dated 30 September 1974)

GN33-1629 (dated 10 February 1975)

Changes are periodically made to the information herein; before using this publication in connection with the operation of IBM systems, refer to the latest *IBM System/360 and System/370 Bibliography*, GA22-6822, and associated Technical Newsletters, for the editions that are applicable and current.

Requests for copies of IBM publications should be made to your IBM representative or to the IBM branch office serving your locality.

A form for readers' comments is provided at the back of this publication. If the form has been removed, comments may be addressed to IBM Laboratories, Product Publications, Dept. 3179, 703 Boeblingen/Wuertt, P.O. Box 210, Germany. Comments become the property of IBM.

© Copyright International Business Machines Corporation 1974

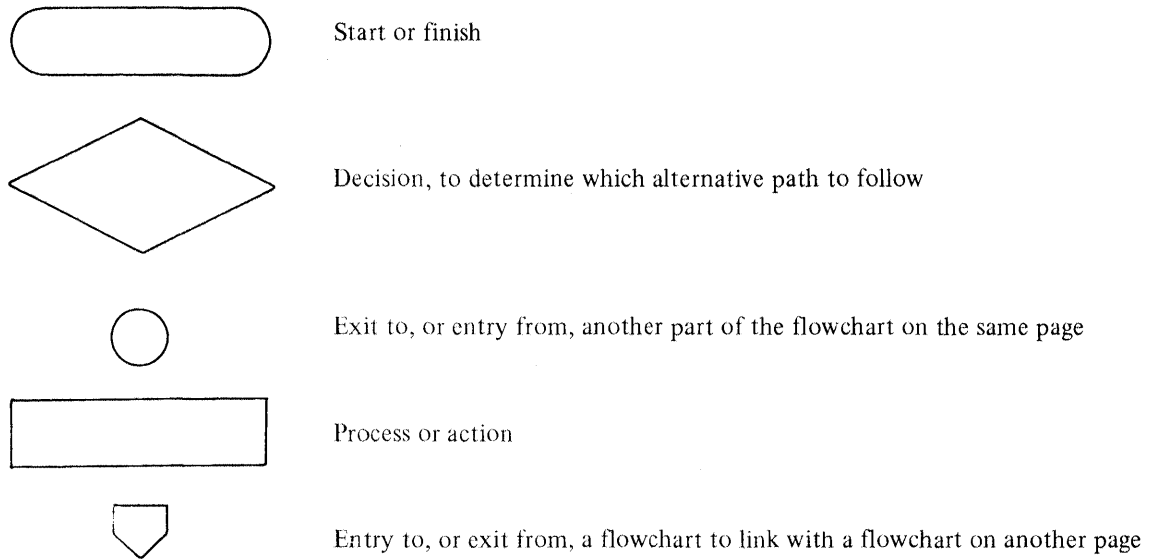
CONTENTS

Abbreviations	iv	Handling Unexpected Situations	59
Flowchart Symbols	v	Resetting the System – Normal Reset (Program Reset)	59
Emergency	vi	Resetting the System – Clear Reset	60
Introduction	1	Comparing Addresses	61
Operator Console	3	Instruction Stepping	63
Video Screen	5	Restarting	64
Control Panel	6	Altering and Displaying	65
Pushbuttons	7	Dumping Main Storage	66
Emergency Pull	8	Action when Unable to Recover from a Fault	67
Lights	9	Power Up Malfunction Task Flow	68
Console Keyboard	10	IMPL Malfunction Task Flow	70
Keyboard Lock and Keyboard Inhibition	10	IPL Malfunction Task Flow	72
Alphanumeric Keys	11	Operating Malfunction Task Flow	74
Cursor	12	Power Malfunction Task Flow	76
Cursor Keys	13	Teleprocessing Malfunction Task Flow	77
Tabulator Keys, Backspace Key, Space Bar	15	Teleprocessing Line Adapter Malfunction Task Flow	78
Function Keys	16	Teleprocessing Switched Network Malfunction Task Flow	79
Mode Selection	20	Teleprocessing Switched Network Backup Task Flow	80.1
Errors Made During Manual Operations	21	Teleprocessing Multipoint Malfunction Task Flow	81
Fast Selection	22	ICA In-Line Tests	82
System Reset Display	23	Appendix	85
Main Storage Address Compare	24	Attachment Features	86
Program Load Display	25	Direct Disk Attachment	86
Interval Timer Display	27	Magnetic Tape Adapter	86
Check Control Display	28	Integrated Console Printer Attachment	86
Main Storage Dump Display	29	Integrated Communications Adapter	86
1403/3203 Carriage Control Feature Display	29.1	Integrated Printer Attachment	87
ICA Line Modes Display	30	Integrated Card I/O Attachment	87
Alter/Display Displays	33	Restart Procedures for the IBM 2560 Multi-Function Card Machine	(MFCM) 88
Instruction Step Display	38	2560 Operator's Controls	88
Restart	38	2560 Card Paths	88
Maintenance Displays	39	Restart Information	89
Log Analysis Displays	40	Restart Information Field in Error Message	90
Store Status	41	Restart Procedures	94
Save Usage Counters	41	Restart Procedures for the IBM 5425 Multi-Function Card Unit	(MFCU) 105
Machine Status Display	42	5425 Card Paths	105
Display Repertoire	42	Restart Information Field	106
Usage Meters	46	Operator Restart Instructions	107
Console File	47	Specifying ICA Line Modes	110
Magnetic Disk Cartridge	47	'Start/Stop Lines' Display	110
Operator Actions	49	'Line Modes for BSC Lines' Display	110
Preparing the System	50	Conversion Tables	111
Inserting the Magnetic Disk Cartridge (Diskette) into the Console	50	Glossary	113
File	50	Bibliography	115
Switching Power On/Off	51	Index	117
Loading the Microprogram (IMPL)	52		
Initial Program Loading (IPL)	53		
Checking Out the System Using ASCP	54		
Cleaning the Print Train/Chain on the Line Printer	57		

ABBREVIATIONS

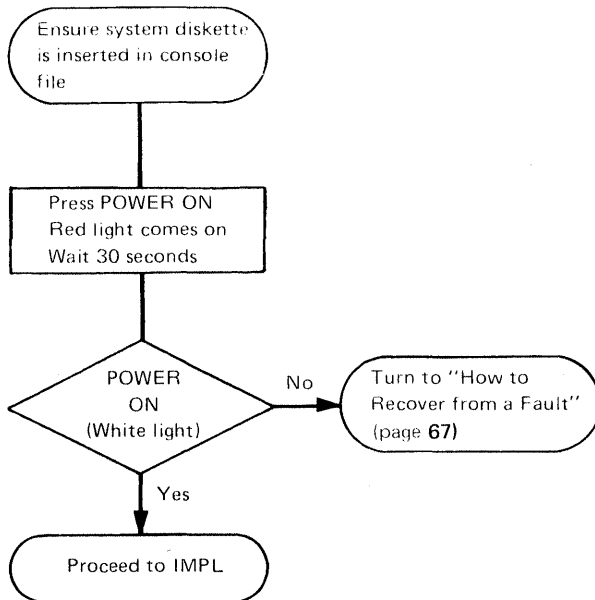
ac	alternating current	IMPL	initial microprogram load
ACO	auto call originator	INTRPT	interrupt
ACT	action	IOP	input/output processor
ACU	automatic calling unit	IPL	initial program load
ADR	address	IPU	instruction processing unit
ANR	alphameric replacement	I-STEP	instruction step
ASCP	automatic system checkout program		
AR	attention routine	KEYBD	keyboard
		KB	keyboard
BC	basic control mode	MAN	manual
BSC	binary synchronous communication	MAN OPS	manual operations
		MFCM	Multifunction Card Machine (IBM 2560)
CBS	Columbia Broadcasting System	MFCU	Multifunction Card Unit (IBM 5425)
CE	customer engineer (IBM service representative)	MIP	machine instruction processor
CHK CTL	check control	MODE SEL	mode selection
CNCL	cancel	MPX	multiplexer
CNSL	console	MSC	main storage controller
COMP	compare		
COS	call originate status	NPRO	non-process runout
CPU	central processing unit		
CRT	cathode ray tube	PRTR	printer
CTS	clear to send	PSW	program status word
		PWR	power
DAT	dynamic address translation	REQ	request
DCD	data carrier detect	RTS	request to send
DOS	disk operating system		
DOS/VS	disk operating system/virtual storage	SRL	Systems Reference Library
DSR	data set reading	SVP	service processor
		SYNC	synchronous
EC	extended control mode		
ENBL	enable	TH	thermal
EREP	environmental recording, editing and printing	TOD	time of day
ERR	error		
		VIRT	virtual
HEX	hexadecimal		
ICA	integrated communications adapter		
ILT	in-line test		

FLOWCHART SYMBOLS



If no arrowhead is shown on a connecting line, assume left-to-right or top-to-bottom direction of flow.

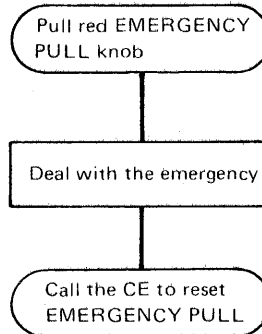
Example



EMERGENCY

Removing Power in an Emergency

In the event of extreme danger to personnel or of a system fire:



POWER ON pushbutton remains disabled until EMERGENCY PULL is reset by the CE.

Electric Shock

Switch off the electrical supply, or remove the casualty by pulling at his *dry* clothing. If the casualty has stopped breathing, apply mouth-to-mouth resuscitation (see below). Call for help.

Mouth-to-Mouth Resuscitation

- If breathing has stopped, use mouth-to-mouth resuscitation *immediately*.
- If necessary, remove the danger.
- Do not move the casualty unless the danger is still active.

Note here the details of emergency arrangements for your location:

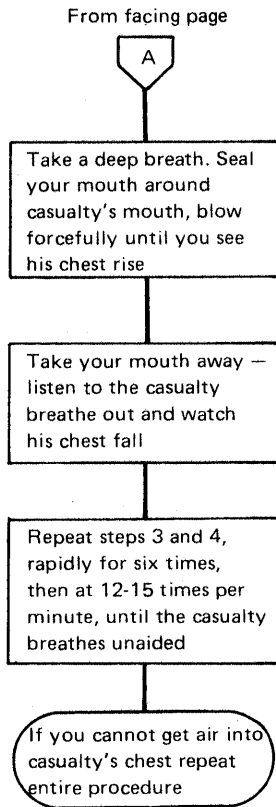
Remove from casualty's mouth anything that might obstruct air passages; for example, dentures or vomited matter. Tilt head back to open mouth and air passages; keep head in this position

Pinch nostrils to stop air leakages or press your cheek against casualty's nose



To facing page





Fire

To fight a fire in electrical equipment, use only a fire extinguisher that is approved for fires in electrical equipment, for example, a carbon dioxide (CO₂) fire extinguisher. *Do not use water.* Follow the instructions on the extinguisher cylinder and call for help.

INTRODUCTION

The IBM System/370 Model 115 Operating Procedures is a graphic manual containing information necessary to operate the System/370 Model 115's Processing Unit and integrated devices.

The order numbers for manuals containing operating procedures for each of the input/output devices can be found in the *IBM System/360 and System/370 Bibliography*, GA22-6822.

This manual handles information required by the operator for normal system operation. Procedures to be carried out by the IBM customer engineers are not described in this manual but are covered in the IBM maintenance documentation for the system.

The operator console for the System/370 Model 115 consists of:

- A video screen
- A control panel
- A console keyboard.

Messages and status information appear on the video screen in clear text: most of the operator functions are performed at the keyboard.

Machine functions are performed by microprogram within the central processing unit (CPU). The Model 115's CPU is either a 3115-0 Processing Unit or a 3115-2 Processing Unit. The control magnetic disk cartridge (diskette) which contains the microprogram is inserted into the console file before power is applied to the system.

After the power has been turned on, and the control diskette is in the console file, the microprogram is automatically loaded into control storage and the system is ready to load the operating system or a standalone program.

Operating procedures that are necessary before a problem program can be run are:

1. Control diskette insertion – Initial Microprogram Load (IMPL) diskette.
2. Power-on.
3. Initial Microprogram Load (IMPL) – automatic with power on.
4. Initial Program Load (IPL) – the operating system (if required).

These procedures must be followed whenever power is off, because once power is removed from the system both control storage and main storage are cleared.

To evaluate the approach used in this manual, you are encouraged to use the Reader's Comment Form in the back of the manual. Your comments will help to provide better documentation in future manuals.

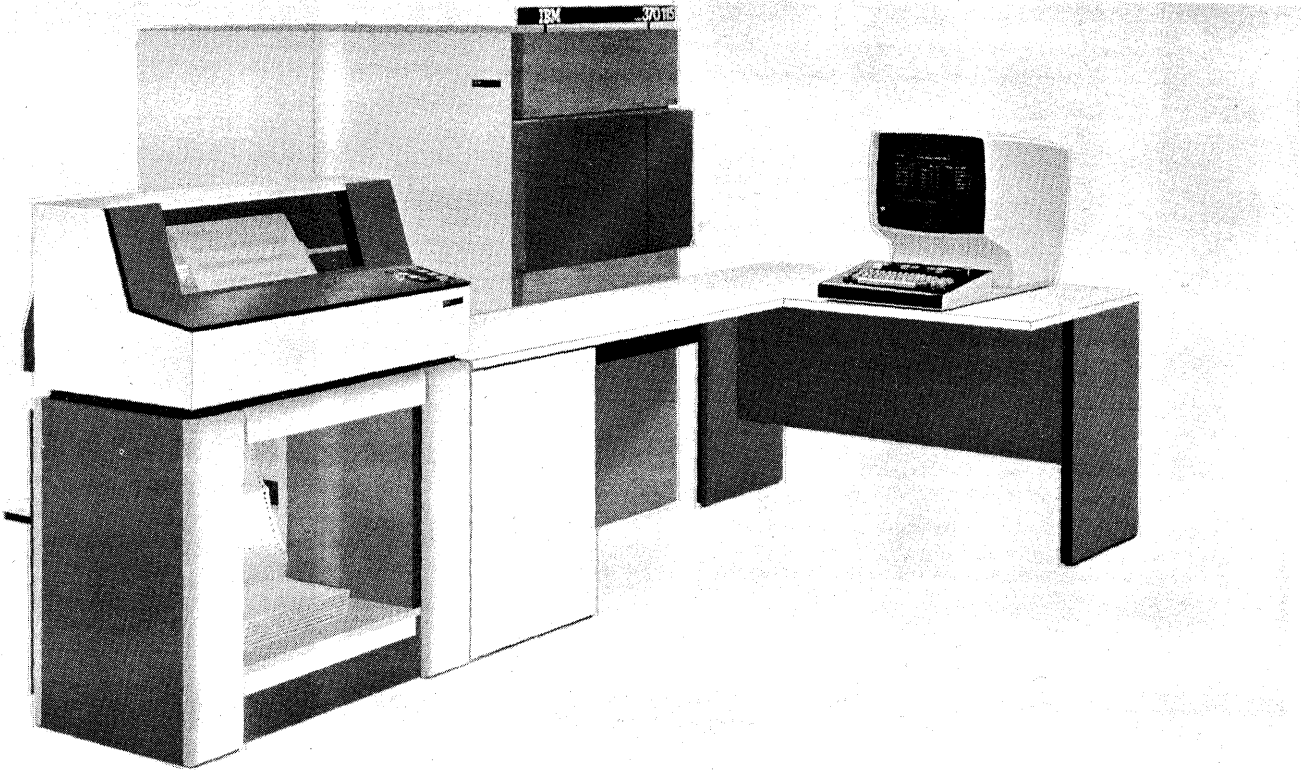
The System/370 Model 115's CPU consists of a number of subprocessors: the Main Storage Controller (MSC), the Machine Instruction Processor (MIP, installed in 3115-0) or Instruction Processing Unit (IPU, installed in 3115-2), the Input/Output Processors (IOPs), and the Service Processor (SVP), as well as the main storage. The Service Processor controls the operator console at which communication between the system operator and the system takes place.

Two command sets – Alphanumeric Replacement (ANR) and 1052 – are available for use with the Model 115 Operator Console. If the 1052 Command Set is used, the 5213 Console Printer must also be installed with the system.

The 1052 compatibility mode is a basic feature.

The magnetic disk cartridge is also described as the 'diskette'.

Model 115 Procedures



System/370 Model 115

OPERATOR CONSOLE

This chapter gives individual descriptions of the facilities such as the keyboard keys, the switches on the control panel, and the display, that allow you to operate the system. The following chapter, "Operator Actions", deals with their use in a particular procedure. The Operator Console chapter contains:

<i>Video Screen</i>	Displays messages, operating modes, and machine status.
<i>Control Panel</i>	Houses basic switches, keys, and lights.
<i>Console Keyboard</i>	Enters operator instruction.
<i>Usage Meters</i>	Customer and customer engineer (CE).
<i>Magnetic Disk Cartridge</i>	Careful handling.

OPERATOR CONSOLE (continued)

There is no hard copy supplied direct from the keyboard. A matrix printer is available to record messages as hard copy

The operator console (consisting of a video screen, control panel and keyboard) replaces the conventional machine panel (consisting of switches and lights).

The operator console is an I/O device used to communicate between the operating system and the operator. Operating system messages appear on the screen, and the operator's answers (commands) are entered via the keyboard.

Manual operations, such as displaying and altering data, loading programs, and running the system in instruction step or address compare mode, are performed by keying selector characters from the keyboard into displays on the video screen. The screen is used to display all actions. There are no indicator lights to be decoded, because all information is displayed on the screen, either in clear text, hexadecimal notation, or binary zeros and ones.

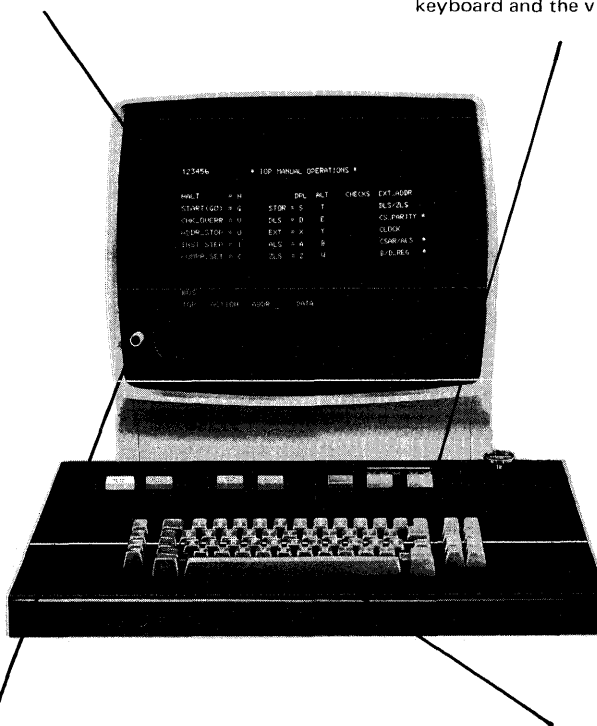
A permanent display of the 3115 status is provided in clear text at the lower part of the screen.

VIDEO SCREEN

Displays keyboard input and messages from the operating system

CONTROL PANEL

Contains keys and lights for functions which cannot be handled conveniently by the keyboard and the video screen



INTENSITY KNOB

Adjusts the intensity of the display

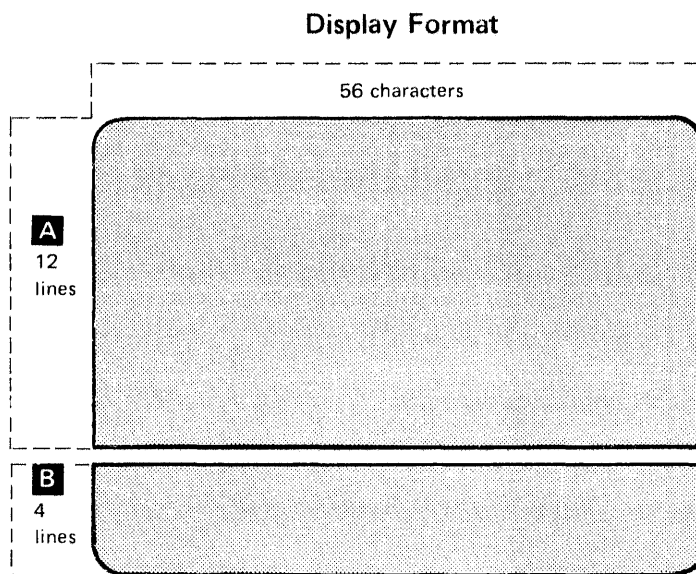
CONSOLE KEYBOARD

Keys information into the system, starting and stopping programs, and so on

Video Screen

The Video Screen:

- Is a 15 in. video monitor.
- Is mounted on a separate table and can be rotated through 180°.
- Displays numeric characters, upper case alphabetic characters, and special symbols.
- Can be manually adjusted for intensity.
- Is equipped with a program-controlled audible alarm, which alerts the operator to messages requiring attention.



When the intensity knob is turned clockwise, a raster pattern may appear on the console display

A SYSTEM OUTPUT AREA

This area of the screen displays messages from the operating system during normal operation. During manual operation it is used for displaying and selecting operating modes. If PROCEED is displayed, the operator uses this area for responses. The cursor marks the beginning of the field the operator may use.

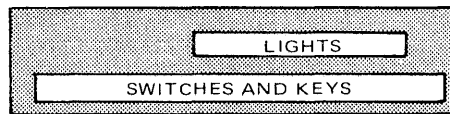
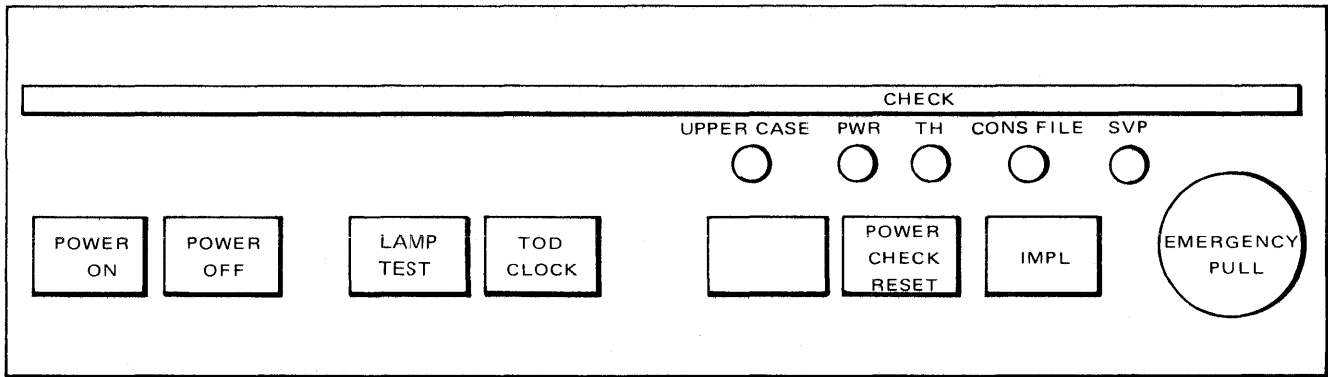
B MACHINE STATUS AREA

This area of the screen displays the machine status.

The status of the machine is not displayed during maintenance operations and displays

Control Panel

The control panel, houses a number of switches, keys, and lights. The keys are used for basic tasks such as making the system operational. The lights alert the operator to check conditions.



Pushbuttons

**POWER
ON**

The POWER ON pushbutton is pressed to start a power-on sequence. The POWER ON key lights up red. Then after about 30 seconds the key turns white.

- The power supplies for the CPU and on-line devices are turned on.
- The initial microprogram loading (IMPL) sequence is automatic (provided the system cartridge diskette is mounted in the console file).
- A clear system reset occurs.
- The system enters the manual stop condition.

**POWER
OFF**

The POWER OFF pushbutton is pressed to start a power-off sequence.

- The POWER ON key will remain red during the power-off sequence, and will become dark when power is completely removed.
- The power-off sequence destroys the contents of all storages.

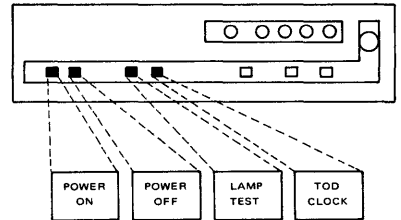
**LAMP
TEST**

The lamp test pushbutton is not back-lighted. It is used to test the lamps on the system.

- Pressing the key causes the check lights on the panel, and the indicator lights on all natively attached card I/O devices, that have no lamp test switch, to be lighted.
- Releasing the key causes the indicator lights to go out.

**TOD
CLOCK**

The time of day clock (TOD) pushbutton is not backlighted. It is used to prevent an improper change to the TOD clock. To set the TOD clock this key has to be pressed (the enable set position) when the set clock instruction is issued.



POWER ON is red:

- During the power-on sequence
- If the power-on sequence fails
- If subsequent failure occurs in the power supply of any on-line I/O device

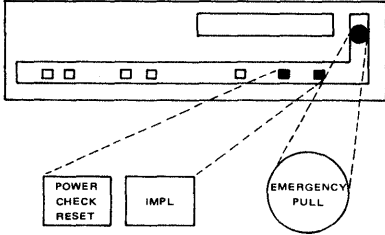
POWER ON is dark:

- When the power is off
- When no power on sequence is being performed

Model 115 Procedures

Operator Console

Control Panel



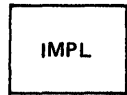
IMPL is automatic during power on, so normally there is no need to press the IMPL key. The IMPL key can be used to overcome system damage

Pushbuttons (continued)



The POWER CHECK RESET pushbutton is not back-lighted.

- This key is pressed after power off to extinguish the power check lights (power and thermal) at the control panel. This causes the power checks to be reset.
- The key has no effect during the power off sequence, or when there are no power checks.



The initial microprogram load (IMPL) pushbutton is not back-lighted. IMPL may be pressed after power on has been completed, and with the control diskette mounted in the console file.

Emergency Pull



All power is at once removed when the EMERGENCY PULL switch is pulled. Once pulled, it must be restored mechanically by a CE before POWER ON is effective.

Lights

UPPER CASE



The upper case light indicates the transfer of data in upper case. Data can be transferred in lower case, but it always appears in upper case on the video screen.

PWR



The red PWR (power) check light indicates a failure in one of the logic voltage supplies.

TH



The red TH (thermal) check light indicates overheating in:

- One of the logic gates.
- One of the storage arrays.
- The power system.

If the TH light turns on, the power goes down immediately.

CONS FILE

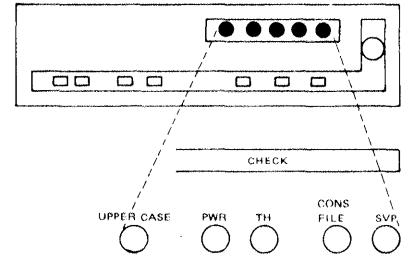


The red CONS FILE (console file) light indicates a check in the console file. This check may require attention by the CE. If IMPL is pressed when no diskette is installed, the console file light turns on.

SVP



The red SVP (service processor) light indicates a check in the service processor. This check requires attention by the CE.



Power Failure:

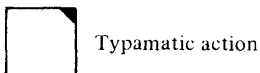
- **In a control unit.** If power failure occurs in a control unit the POWER ON key turns red, but the power check indicator does not turn on. The system is not powered down
- **In the CPU.** If power fails in the CPU during the power-on sequence, or if an overvoltage or an undervoltage condition occurs thereafter, the POWER ON key turns red and the PWR check light illuminates

Console Keyboard

The console keyboard allows the operator to communicate with the system. Most of its functions are available in the stopped and in the running state of the system.

CNCL	= 1	< 2	; 3	: 4	% 5	' 6	> 7	* 8	(9) 0	- -	+ &	←	START	STOP
ILT	→	Q	W	E	R	T	Y	U	I	O	P	ç @	←	MODE SEL	INTRPT
REQ	LOCK	A	S	D	F	G	H	J	K	L	! \$	" #	↵	↑	↓
COPY	SHIFT	Z	X	C	V	B	N	M	 ,	~ .	? /	SHIFT	←	→	
	KEYBD RESET	SPACE BAR										ENTER			

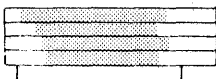
Legend



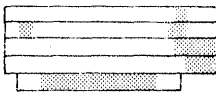
Note: The space bar is not marked on actual keyboard.

There are three types of keys:

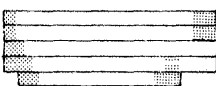
Alphameric
Keys



Cursor,
Backspace,
Tabulator Keys
and Space Bar



Function Keys



Keyboard Lock, and Keyboard Inhibition

Both keyboard lock and keyboard inhibition prevent character entry. This action is only electrical, so the affected keys can still be physically operated but there is no result.

Keyboard lock is caused by the computer, and locked keys can only be enabled (unlocked) by program instruction, or by internal control.

Keyboard inhibition is caused when an attempt has been made to enter a character into a protected location on the screen. The keyboard is inhibited, and none of the alphameric keys will cause any action when they are pressed. Keyboard inhibition is removed by pressing the KEYBD (Keyboard) RESET key.

The status of the keyboard is shown on line 13 of the video screen, in the machine status display area. The status is described as 'Proceed', 'Locked', or 'Inhibited'.

Keys which lock and are inhibited are:

- All alphameric keys (including shift, space, and backspace keys).
- ENTER
- COPY

Keys which lock but are not inhibited are:

- KEYBD RESET

Keys which do not lock and are not inhibited are:

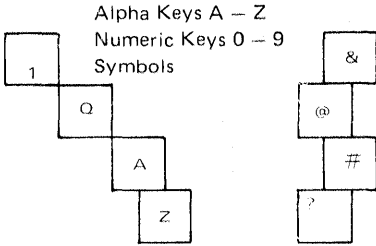
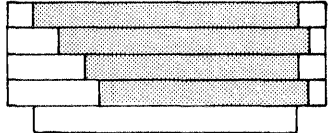
- START
- INTRPT (interrupt)
- MODE SEL (select)
- STOP
- CNCL (cancel)
- REQ (request)
- Cursor Keys
- ILT (in-line test).

If the 1052 command set is being used, the keyboard is normally locked. It becomes enabled only when a read command is given. Pressing the REQ key causes an attention interrupt which is used to obtain a read command that unlocks the keyboard

Alphameric Keys

The alphameric keys are used to key in messages, data, and for calling up various displays.

The SHIFT keys are used in conjunction with the alphameric keys that bear two characters (see 'Shift Keys' page 18).



Model 115 Procedures

Operator Console

Console Keyboard

Cursor

The five cursor keys are:

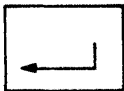
- Cursor to new line
- Cursor up
- Cursor down
- Cursor to left
- Cursor to right

The tabulator keys and backspace key also operate the cursor, but are referred to as the 'Tabulator Keys' and the 'Backspace Key'

A protected area is an area where data cannot be entered. For example, you cannot alter any part of the mode selection display. An attempt to do so inhibits the keyboard

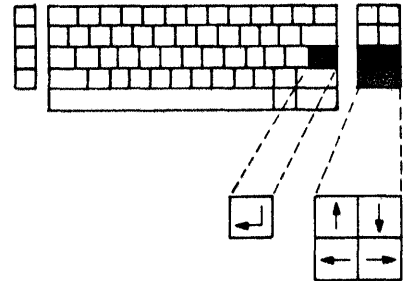
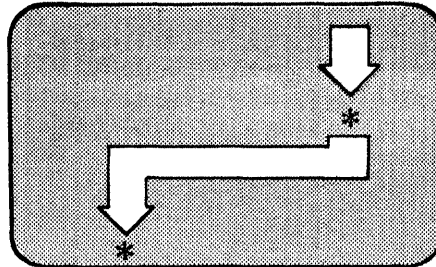
- The cursor is a dash which indicates where a new character will appear on the screen (the character will appear just above the cursor).
- During manual operations the cursor is automatically positioned, ready for your entry.
- The cursor can be manually positioned by using one or more of the five cursor keys, which are never locked.
- The five cursor keys are typamatic. This means you can *run* the cursor as long as the key is held down. Pressing briefly causes the cursor to move one position only.
- When a typamatic cursor key is held down long enough for the cursor to reach the edge of the screen, the cursor moves to, or *wraps* to, the other edge of the screen and continues moving until the key is released.
- The cursor can be moved to any position on the screen except the machine status area (lines 13 - 16). The cursor can be moved into a protected area without inhibiting the keyboard. However, if you key a character into a protected area INHIBIT will appear on the screen and you must press KEYBD RESET to continue.
- To alter data you need only position the cursor under the data to be changed (cursor movement does not affect data on the screen), and key in the new character. Data entry is not complete until ENTER is pressed.
- The cursor can be moved by the space bar and the backspace key.

Cursor Keys



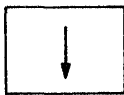
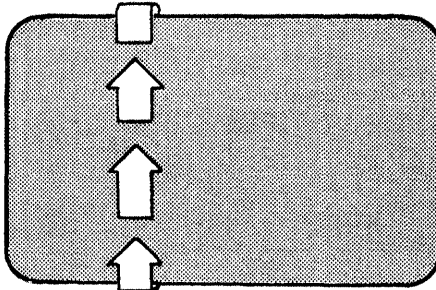
CURSOR TO NEW LINE

When this key is held down, the cursor moves to the first unprotected character position (*) in the next lower line, and so on, until a scan of all such lines has been made. Finally the cursor wraps to the first line with an unprotected character position.



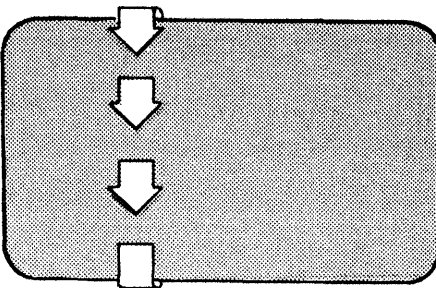
CURSOR UP

When this key is held down, the cursor moves upwards, but stays in the same character column. Finally it wraps to the bottom and continues upwards.



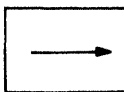
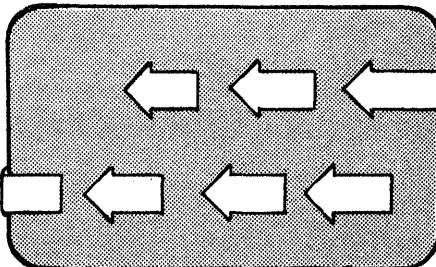
CURSOR DOWN

When this key is held down, the cursor moves downwards, but stays in the same character column. Finally it wraps to the top and continues downwards.



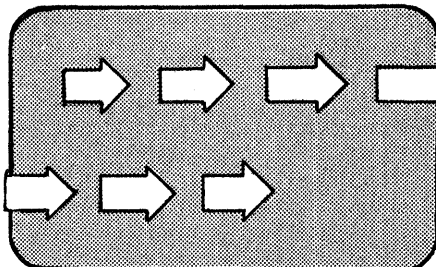
CURSOR TO LEFT

When this key is held down, the cursor moves right-to-left, and line by line in an upward direction. Finally it wraps to the bottom right-hand position.

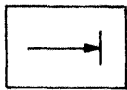


CURSOR TO RIGHT

When this key is held down, the cursor moves left-to-right and line by line in a downward direction. Finally it wraps to the top left-hand position.

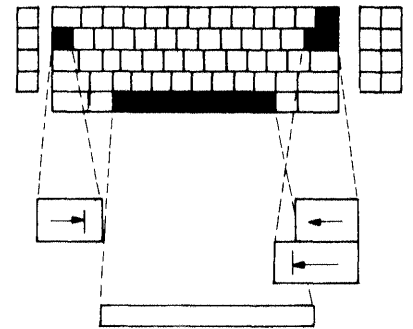
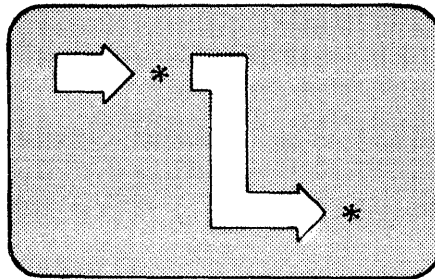


Tabulator Keys, Backspace Key, Space Bar



TABULATOR LEFT-TO-RIGHT

When this key is held down, the cursor skips rightwards to the first unprotected character position (*) on the screen. The cursor then scans all first character positions of unprotected fields in a left-to-right, top-to-bottom direction. Finally it wraps to the leftmost character of the topmost unprotected field.

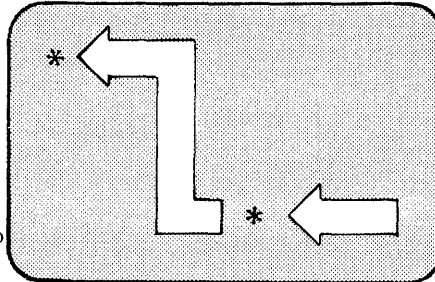


This is a tyomatic key



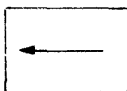
TABULATOR RIGHT-TO-LEFT

The current position of the cursor affects the operation of the back-tabulator key. When the cursor is in an input field at a location other than the first character location, the backtab key repositions it to the first character position in the field. When the cursor is in a protected field, or at the first character position of the input field, the backtab key repositions it to the first character position of the first input field to the left of the present field.



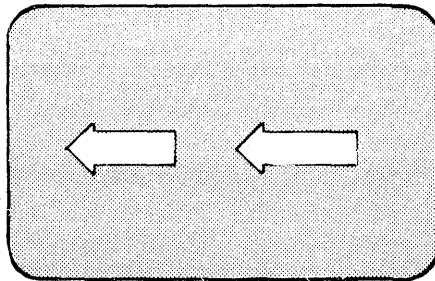
These three keys and the space bar position the cursor.

This is not a tyomatic key

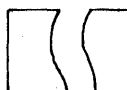


BACKSPACE KEY

When this key is pressed, the cursor moves one position to the left, unless it is already in the leftmost position, in which case it moves to the rightmost position of the line above.

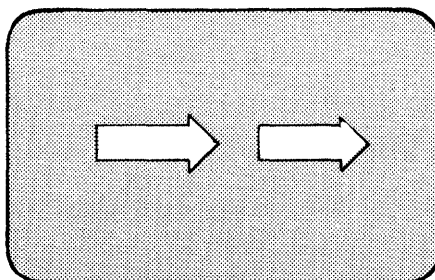


This is a tyomatic key



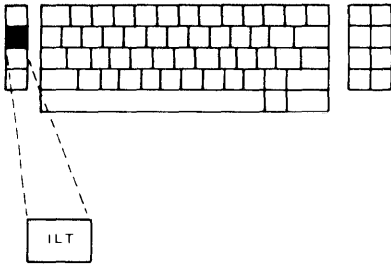
SPACE BAR

When this key is pressed, the cursor moves to the right and inserts a blank character.

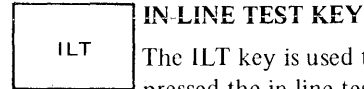


This is a tyomatic key

Model 115 Procedures
Operator Console
Console Keyboard



Function Keys



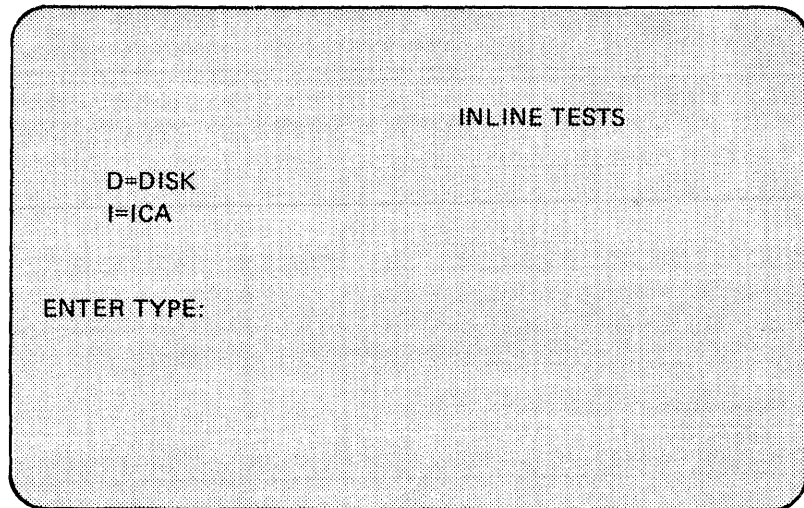
The ILT key is used to carry out in-line tests. When the ILT key is pressed the in-line test display appears and any operating system messages are stored. TEST appears on line 13 of the screen. Test results and special messages appear on line 16.

The ICA In-Line tests described on page 84 are

- Wrap Test
- Dial Test
- Auto Answer Test

The ICA control procedures described on page 84 are

- Activate Line
- Select Normal Speed
- Select Half Speed



The set of in-line tests includes tests for

- The direct disk attachment and the attached disk devices
- The integrated communications attachment (ICA).

In-line tests are designed to be used by the CE, but they are available to the operator as well. Several In-Line tests and control procedures for the ICA are described in the section 'Action When Unable to Recover from a Fault', pages 82, 83 and 84. However, because certain tests require specific prerequisites (such as making a disk drive not-ready, or disabling a teleprocessing line) the operator should get guidance from the CE before attempting to run tests not described in this manual.

Function Keys (continued)

CNCL Pressing the CNCL (Cancel) key stops operations that have been started, but not completed (ENTER key has not been pressed). The result of pressing CNCL depends upon the mode the screen is in when the data entry is started.

- If the screen is under the control of the operating system and a reply or message was keyed in, the CNCL key *either* wipes out the message, if the command set is ANR, *or* marks the message with asterisks if the command set is 1052.
- If manual operations are displayed (alter/display, etc.) the CNCL key wipes out the display and returns the screen to the operating system. The last full picture that was on the screen before the manual operations were started, re-appears.

REQ The result of pressing the REQ (Request) key depends upon the command set being used;

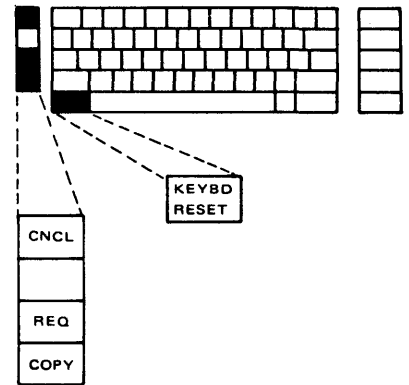
- With the 1052 command set, the keyboard is normally locked. The keyboard is enabled by the operating system carrying out a read enquiry command, or by the pressing of REQ.
- With the ANR command set, the keyboard is normally unlocked and the REQ key has no function during manual operations. When the operating system is in control of the screen, REQ is used to call the DOS or DOS/VS Attention Routine (AR).

COPY The COPY key can only be used:

- When the 5213 matrix printer is attached to the system
- When manual operations are on the screen.

When COPY is pressed, the matrix printer makes a copy of the display on the screen. Only the first 12 lines (and not the machine status area) are copied. During copying the keyboard (excepting the function keys) locks.

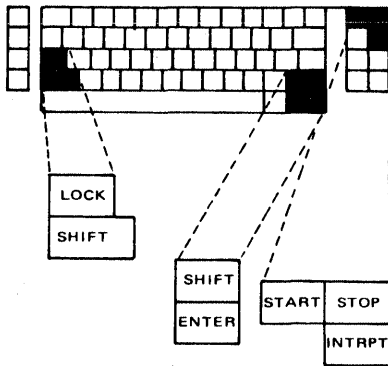
KEYBD RESET Pressing KEYBD RESET (Keyboard Reset) restores the keyboard when it has been inhibited. The keyboard is inhibited whenever an attempt is made to enter a character into a protected location. This can happen when the cursor is moved (via the cursor keys) to a protected field. When the keyboard is inhibited the alphanumeric keys can be pressed but no action results. A message, INHIBIT, appears on line 13 (in the machine status display) on the video screen. To remove this inhibition, press the keyboard reset key. PROCEED then appears on line 13 in the machine status area.



The CNCL key or the MODE SEL key can be used to stop the copying process. If the printer is not ready when COPY is pressed, the keyboard does not lock, nor does copying take place, but PRTR INTV REQ appears on the screen

The cursor can be moved into the protected location without inhibiting the keyboard. INHIBIT appears only after an attempt has been made to enter a character or space. To find the next unprotected field (to avoid inhibiting the keyboard again), press the tabulator left-to-right or the tabulator right-to-left key. Keys that are inhibited are: All alphanumeric keys (including shift, space, and backspace keys)

Operator Console
Console Keyboard



When a shift key is pressed the UPPER CASE light comes on

Function Keys (continued)

ENTER

Pressing the ENTER key causes the keyed-in data to enter the system. Data can be entered for different purposes:

- When the screen is under the control of the operating system and a message has been keyed in, the ENTER key indicates the end of the operator's input, and the message is transferred to main storage.
- When the screen is being used as the machine panel for manual operations the ENTER key causes the specified operation to be performed.

Before the ENTER key is pressed, the keyed-in data is displayed on the screen and it can be changed or corrected.

SHIFT

Both shift keys serve the same purpose. Pressing a shift key causes:

- The upper character of a key with two characters to be entered.
- The upper case of an alphabetic key to be transferred to main storage.

If the shift key is not pressed, the characters are transferred in lower case, but will appear on the screen in upper case.

LOCK

Pressing the LOCK key holds the SHIFT keys in place. To release the shift lock, press either one of the SHIFT keys.

START

Pressing the START key causes the CPU to execute instructions:

- When the instruction step mode is on, only one instruction is processed each time the START key is pressed.
- When the START key is pressed after a normal stop, the CPU carries on instruction processing as if no stop had occurred, provided instruction step mode is off.
- When instruction processing is in progress, with the CPU in the wait state or, with the CPU in the check-stop state, the START key has no effect.
- The START key is ineffective if a maintenance or log display program is running.

STOP

Pressing the STOP key causes the system to stop after the current instruction has been processed, and any pending interruptions have been serviced.

- When PSW looping occurs, the STOP key has no effect, and only system reset or IPL can cause a normal stop.
- If STOP is pressed while the console printer is printing, the printer will complete the operation even after MAN appears on line 13.
- The STOP key is ineffective if a maintenance or log display program is running.

INTRPT

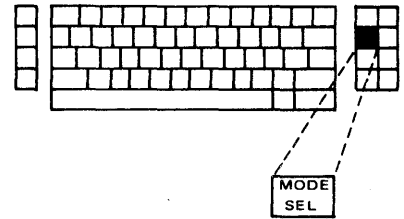
Pressing the INTRPT key requests an external interruption.

If the external interrupt bit in the current PSW is masked off, the external interrupt remains pending

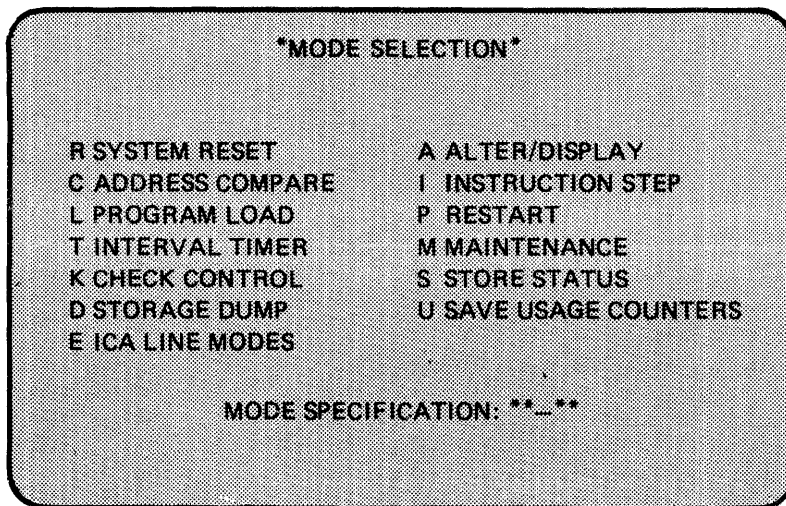
Function Keys (continued)

MODE SEL Pressing MODE SEL brings the main set of modes to the screen. This can be done at any time. If the machine is stopped, check-stopped, in wait state, or running, the state of the machine is not changed when the MODE SEL key is pressed. The only difference is that the screen cannot be used by the operating system.

The last picture of the operating system (that was on the screen before the MODE SEL key was pressed) is stored by the machine for later use. If the MODE SEL key was pressed accidentally, the CNCL key should be pressed. This releases the screen to the operating system, and the previous picture will appear.



MODE SELECTION display



Fast selection can be made when all the necessary characters can be remembered. The characters are keyed in, in order, next to MODE SPECIFICATION

If ICA feature is not installed E will not appear on the display

Depending on the features installed, F PRINTER FORMS may appear in place of D STORAGE DUMP

The cursor is next to MODE SPECIFICATION ready for input. To select one of the displayed modes:

1. Key in the selector character shown on the left of the required operation.
2. Press ENTER.

Another display will appear on the screen. This new display will usually require the same action as above i.e., selection of a displayed character and press ENTER.

Note: *There is no display for characters P, S, and U from this 'mode selection' display. The appropriate action is carried out as soon as ENTER is pressed.*

Errors that can occur during mode selection entry are classed as follows:

- **INVALID CHARACTER** appears on the screen when a character not shown on the mode selection picture is typed in beside MODE SPECIFICATION. The mode selection picture stays on the screen and the cursor marks the error spot.
- **INCOMPLETE ENTRY** appears on the screen if no character or too few characters were keyed in but the ENTER key was pressed.

All displays disappear after the operation is selected, and ENTER pressed, except for SYSTEM RESET, STORE STATUS, STORAGE DUMP, and ALTER/DISPLAY displays. After these operations press CNCL to return the screen to the operating system.

Note: *If the machine is running do not keep the mode selection or other manual operation displays on the screen longer than necessary. During this time:*

- *The operating system cannot use the screen.*
- *The system cannot log errors.*

Operator Console
Mode Selection

Mode Selection

This display appears when MODE SEL is pressed

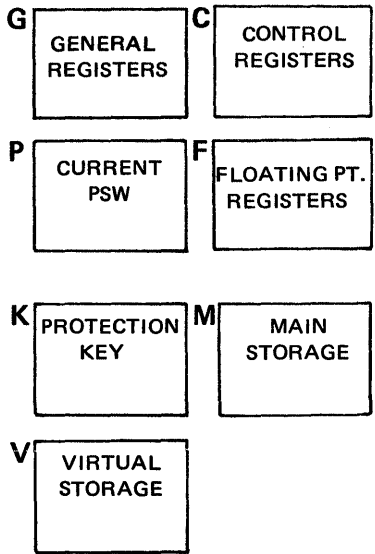
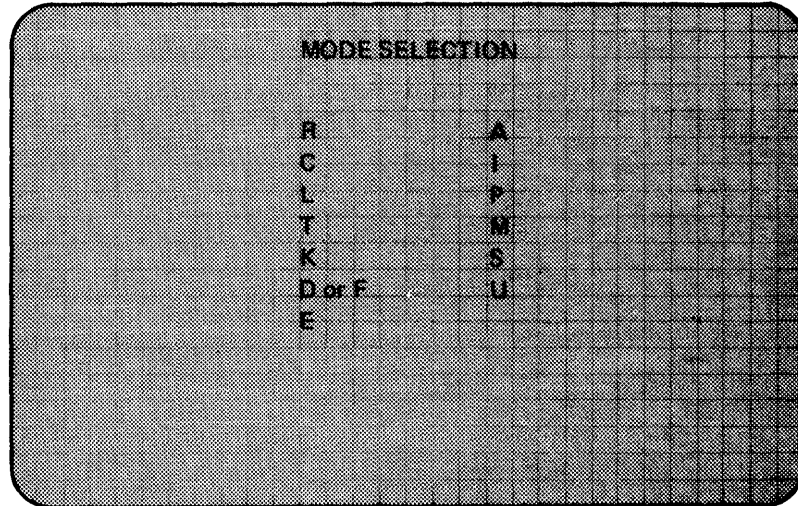
There is no display for P = Restart
S = Store Status
U = Save Usage
Counters

One of the mode selection displays appears after:

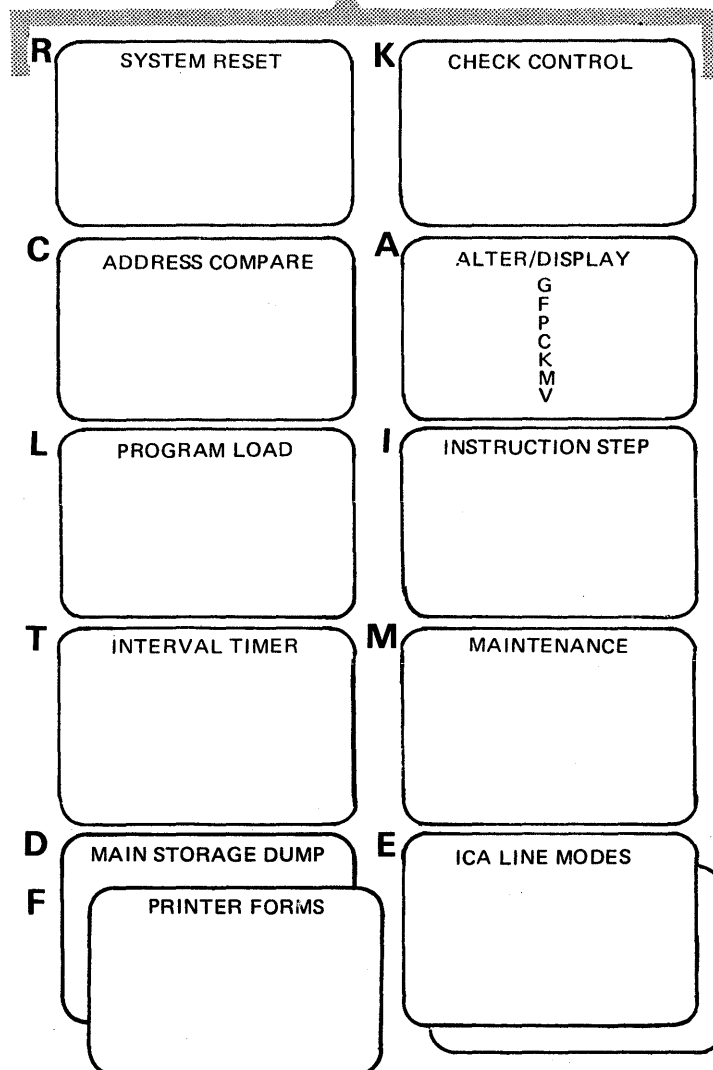
1. The required character (e.g., R or K) is entered beside MODE SPECIFICATION on the mode selection display
2. ENTER is pressed

One of the alter/display displays appears after:

1. The required character is entered beside MODE SPECIFICATION (and in some cases, the address must be entered beside ADDRESS) on the alter/display display
2. ENTER is pressed



- Restart and program load are the only modes that can start the system.
- Alter/display, system reset, storage dump, and instruction step are the only modes that can stop the system.
- Address compare and check control modes can cause a stop if the stop condition arises.



Errors Made During Manual Operations

There are three forms of incorrect entry:

- A** Wrong character entry
- B** Invalid character entry
- C** Incomplete entry

EXAMPLE: To request a stop on address compare specifying 'Any' and the address 005FC2, you should enter CSA005FC2 into the mode select display (fast selection).

- A** If a wrong character is entered, the system does not recognise it as a wrong entry, and carries out the operation as it was requested. **For example** if CSA00F5C2 is entered into the mode select display, the machine will stop at the address specified.
- B** If CSB00F5C2 is entered the address compare display appears:
 - INVALID CHARACTER appears on the display.
 - The cursor is positioned below character B. The entry must be corrected.
- C** If an incomplete entry is made, the system will carry out the operation as far as correctly specified. The display for the manual operation appears on the screen; continue by completing the specifications.
 1. If CS005FC2 is entered, the address compare display appears on the screen.
 - Part of the address (0) is in the 'compare type' area.
 - INVALID CHARACTER appears. The entry must be corrected.
 2. If CSA is entered
 - The address compare display appears on the screen.
 - INCOMPLETE ENTRY appears.
 - The cursor is positioned at the beginning of the address field.

Operator Console

Mode Selection

Fast Selection

Once the mode selection, selector characters, and subsequent displays are familiar to you the selector characters can be keyed directly into the mode selection display.

To perform fast selection:

1. Press MODE SEL.
2. Key in character(s) shown in column 1.
3. Key in one character from each of the groups in column 2 (where shown).
4. Press ENTER.

(Do not insert commas or blanks between characters.)

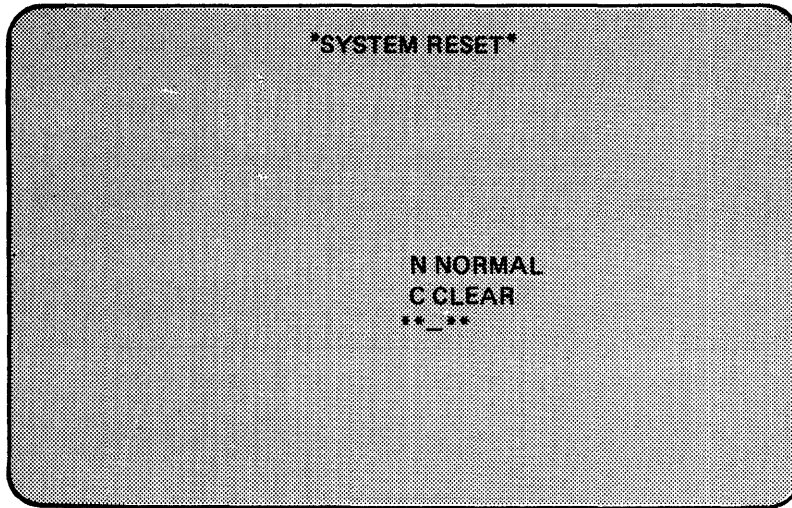
There is no fast selection for ICA lines and main storage dump.

There is a method of fast selection for the ICA in-line tests (see page 82).

MODE	Selector Characters	
	1.	2.
System Reset - normal - clear	RN RC	
Main Storage Address Compare	C	1. S = Stop Y = Synch P = Process (no further parameters needed) 2. A = Any D = Data store I = I/O data C = Instruction count 3. Storage address - a six digit hexadecimal number
EXAMPLE: CSA0046FA		
Program Load	L	1. 0-2 = Channel 2. 0-F = Control unit 3. 0-F = Device 4. N = Normal C = Clear 5. 1-8 = number of 2314 buffers (only if disk compatibility feature is installed) 6. E = 1052 emulation
EXAMPLE: L09CC (no 2314 buffers or 1052 emulation)		
Interval Timer - on - off	TN TF	
Check Control	K	N = Normal S = Hard stop I = I/O stop C = Compatibility
EXAMPLE: KN		

MODE	Selector Characters	
	1.	2.
Alter/Display	A	1. G = General registers F = Floating point registers P = Current PSW *C = Control registers *K = Protection key *M = Main storage real *V = Main storage virtual * + 2. A six-digit hexadecimal storage
EXAMPLE: 1. AG 2. AM00FC43		
Printer Forms	F	I = Information F = Fill picture S = Store picture T = Transfer picture A = Alter/display pictures D = Delete pictures N = Display picture names C = Copy pictures
EXAMPLE: FT1A (The last two characters are a name already given to a picture stored on the diskette.)		
Instruction Step - to set - to cancel	II IP	(process)
Maintenance	M	AB = Last log analysis, or last log display (This is the only display the operator need normally use) I = Change diskette R = Run ASCP.

System Reset Display



To select the system reset display:

1. Key in R beside MODE SPECIFICATION on the mode select display.
2. Press ENTER.

The system reset display will come onto the screen.

You then:

1. Key in either N (normal) or C (clear); the cursor is already correctly positioned).
2. Press ENTER.

and one of the following occurs:

- If you keyed in N a normal reset occurs.
- If you keyed in C a clear reset occurs.

Pressing either N or C and then ENTER causes:

- Pending interrupts or machine check condition to be cleared.
- The following to stop:

Execution of the present CPU instruction (if any)

The CPU

All channels and their control units

All adapters

All I/O devices (channel and natively attached).

The system reset display remains on the screen and RESET COMPLETE appears when the operation has been completed.

A normal reset must be performed in order to display or dump the 2314 buffers.

If the message SYSTEM RESET CHECK appears, inform the CE.

If an error is made while keying in a character, such as keying in B which is not on the mode select display,

- The Mode select display remains.
- The cursor underscores the invalid entry.
- Press CNCL to release the screen to the operating system.
- Press START to continue processing

A **normal reset**, (also called the 'program reset'):

- Does not affect the values of
 - Current PSW
 - CPU timer
 - Clock comparator
 - General registers
 - Floating point registers
 - Control registers
 - Main storage
 - Keys in main storage.
- Resets the channels and the CPU

A **clear reset**:

- Clears to zero the values of
 - Current PSW
 - CPU timer
 - Clock comparator
 - General registers
 - Floating point registers
 - Main storage
 - Keys in main storage.
- Initializes the control registers
- Resets the channels and the CPU
- Wipes out any 2314 buffers that have been assigned

System reset does not turn off the following modes:

- Instruction step
- Check control
- Address compare
- 1403/3203 carriage control mode.

Operator Console

Mode Selection

Main Storage Address Compare

If an error is made while keying in the selector characters:

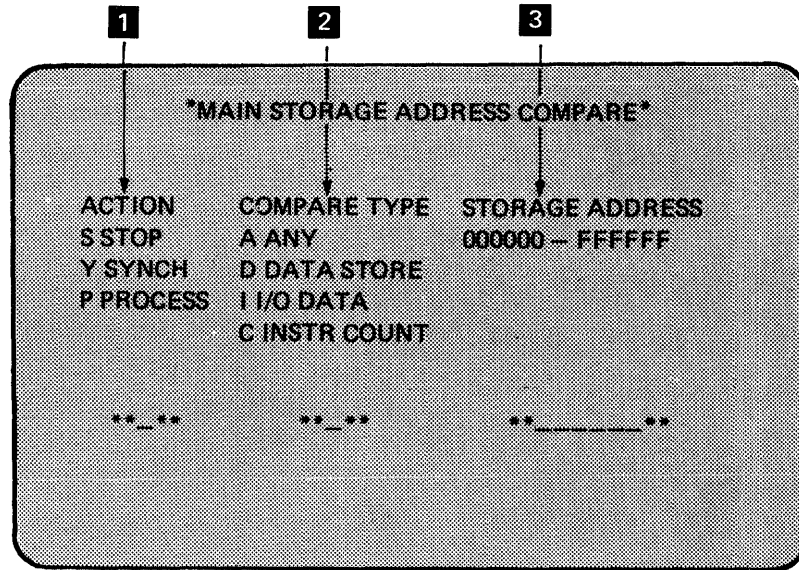
- The address compare display stays on the screen.
- INVALID CHARACTER appears.
- The cursor marks the location of the first error.

The display remains on the screen as long as an entry error has not been corrected. When there is no error the display disappears after the ENTER key is pressed

When address compare is on, the specifications are shown on line 14 of the screen (in the machine status area)

Address compare mode is canceled by any of the following:

- Keying-in P (process) in the address compare display.
- Selecting a maintenance display.
- Turning power off.



To select the main storage address compare display:

1. Key in C on the mode select display.
2. Press ENTER.

There are three columns on the display, and a selector character has to be keyed in under each column.

- 1** Column one is headed ACTION and one of three codes has to be keyed in.
 - S (stop): the machine stops when the address has been found.
 - Y (sync): a signal for the customer engineer is given when the address has been found.
 - P (process): address compare mode is turned off and normal processing continues.

Do not enter any second or third selector characters

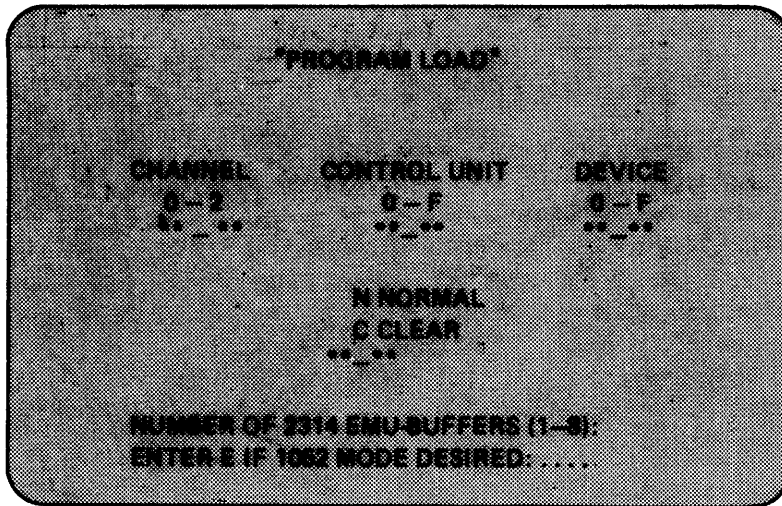
- 2** Column two is headed COMPARE TYPE and one of four codes has to be keyed in.
 - A (any): the CPU will compare the search address (the address keyed into column 3) against all addresses used in the system.
 - D (data store): the CPU will compare your search address against only those addresses in main storage used to store data.
 - I (I/O data): This mode causes only addresses used in transferring data to and from input/output devices to be compared with the search address.
 - C (instr count): the CPU will compare the search address against only those addresses used when fetching instructions.

The search address is not compared against addresses used in transferring data to or from I/O devices

The search address must be a six digit hexadecimal number, such as 005FAC

- 3** Column three is headed STORAGE ADDRESS and the search address has to be keyed in.

Program Load Display



The Program Load display also appears on the screen while starting the system. It appears after:

- The POWER ON key turns white
- The words IMPL IN PROGRESS appear on the screen
- Short progress reports appear indicating that the various subprocessors have been loaded, for example, MIP/NAT DISK 1: LOADED

To select the program load display:

1. Key in L on the mode select display.
2. Press ENTER.

The cursor is positioned under the channel field. As each field of the address is entered, the cursor automatically moves to the next field, and after the device address has been entered, the cursor moves to the normal/clear field. Here either N or C must be entered.

N (normal) loading causes:

- Channels and CPU to be reset.
- CPU timer and clock comparator to be cleared to zero.
- The control registers to be initialized.

C (clear) loading causes:

- Channels in CPU to be reset.
- CPU timer, clock comparator, keys in storage, general registers, main storage and floating point registers to be cleared to zero.
- The control registers to be initialized.

If the 2311/3340 or 2314/3340 Series compatibility feature is installed, specify up to eight buffers.

When all the specifications have been entered, press the ENTER key. If the correct procedure has been carried out, the screen turns blank and loading begins. The screen is returned to the operating system, and the load specifications are stored. When loading again from the same device (before power off) the specifications do not have to be repeated.

The 1052 mode is supported only by DOS releases prior to release 28

Programs that run with DOS releases prior to release 27 must be run in compatibility check control mode

The reset action caused by Clear is the same as occurs during power on except that the TOD clock remains unchanged

At least one buffer has to be specified to make 2311/3340 or 2314/3340 feature operational

For details of disk emulation, see the chapter "Compatibility Features" in *IBM System/370 Model 115 Functional Characteristics*, GA33-1510. Particularly important is the subsection on conversion entitled "2311-2314/3340 Series Compatibility Feature". See also Appendix C of *IBM System/370 Model 115 Functional Characteristics*, GA33-1510.

Model 115 Procedures

Operator Console

Mode Selection

Program Load Display (continued)

A VALID load operation is indicated in the machine status area:

- Before pressing ENTER, the mode indicator is MAN.
- After pressing ENTER, MAN disappears, SYS and LOAD appear.
- After completion of loading, LOAD disappears.

To recover from an IPL error perform
RESET CLEAR or RESET NORMAL

LOAD remains and IPL-ERROR appears on line 13 if:

- You addressed, for example, a printer as a loading device.
- You have used an unassigned address.
- You have addressed a device which is not ready.
- The device address used for loading is assigned twice (for example, two devices have the same address).
- An invalid PSW is loaded.
- An interruption from a device other than the load device occurred.

The PROGRAM LOAD display appears on the screen containing the previous specification. The correct specifications have to be entered.

Model 115 Procedures**Operator Console****Mode Selection*****Program Load Display***

```

*PROGRAM LOAD*

CHANNEL      CONTROL UNIT      DEVICE
  0-2        0-F              0-F
  **_**      **_**          **_**

          N NORMAL
          C CLEAR
          **_**

NUMBER OF 2314 EMU-BUFFERS (1-8):
ENTER E IF 1052 MODE DESIRED: . . . .

```

The Program Load display also appears on the screen while starting the system. It appears after:

- The POWER ON key turns white
- The words IMPL IN PROGRESS appear on the screen
- Short progress reports appear indicating that the various subprocessors have been loaded, for example MIP (or IPU)/NAT DISK 1: LOADED

To select the program load display:

1. Key in L on the mode select display.
2. Press ENTER.

The cursor is positioned under the channel field. As each field of the address is entered, the cursor automatically moves to the next field, and after the device address has been entered, the cursor moves to the normal/clear field. Here either N or C must be entered.

N (normal) loading causes:

- Channels and CPU to be reset.
- CPU timer and clock comparator to be cleared to zero.
- The control registers to be initialized.

C (clear) loading causes:

- Channels in CPU to be reset.
- CPU timer, clock comparator, keys in storage, general registers, main storage and floating point registers to be cleared to zero.
- The control registers to be initialized.

If the 2311/3340 or 2314/3340 Series compatibility feature is installed, specify up to eight buffers.

When all the specifications have been entered, press the ENTER key. If the correct procedure has been carried out, the screen turns blank and loading begins. The screen is returned to the operating system, and the load specifications are stored. When loading again from the same device (before power off) the specifications do not have to be repeated.

The 1052 mode is supported only by DOS releases prior to release 28

Programs that run with DOS releases prior to release 27 must be run in compatibility check control mode

The reset action caused by Clear is the same as occurs during power on except that the TOD clock remains unchanged

At least one buffer has to be specified to make 2311/3340 or 2314/3340 feature operational

For details of disk emulation, see the chapter "Compatibility Features" in *IBM System/370 Model 115 Functional Characteristics*, GA33-1510. Particularly important is the subsection on conversion entitled "2311-2314/3340 Series Compatibility Feature". See also Appendix C of *IBM System/370 Model 115 Functional Characteristics*, GA33-1510.

Model 115 Procedures

Operator Console

Mode Selection

Program Load Display (continued)

A VALID load operation is indicated in the machine status area:

- Before pressing ENTER, the mode indicator is MAN.
- After pressing ENTER, MAN disappears, SYS and LOAD appear.
- After completion of loading, LOAD disappears.

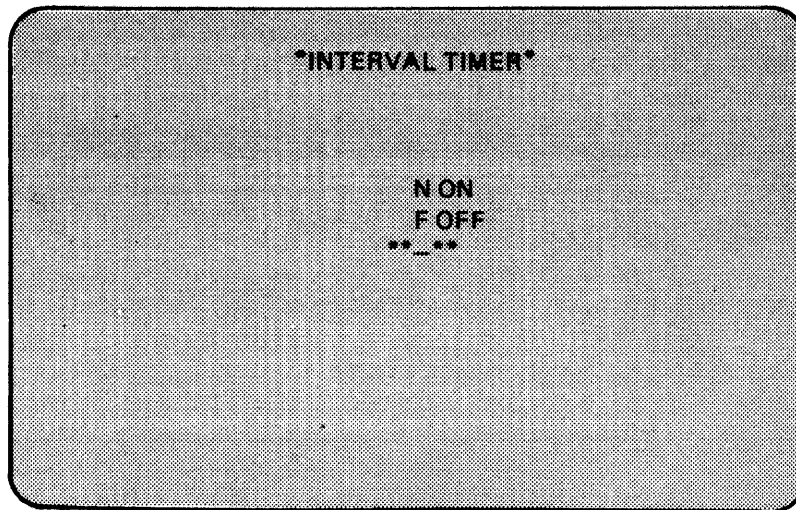
LOAD remains and IPL-ERROR appears on line 13 if:

- You addressed, for example, a printer as a loading device.
- You have used an unassigned address.
- You have addressed a device which is not ready.
- The device address used for loading is assigned twice (for example, two devices have the same address).
- An invalid PSW is loaded.
- An interruption from a device other than the load device occurred.

The PROGRAM LOAD display appears on the screen containing the previous specification. The correct specifications have to be entered.

To recover from an IPL error perform
RESET CLEAR or RESET NORMAL

Interval Timer Display



To select the interval timer display:

1. Key T on the mode select display.
2. Press ENTER.

Because the current state of the interval timer is shown on line 13 in the machine status areas, the character which has to be entered to change the state of the timer can be easily seen.

N (on): the interval timer is turned on.
F (off): the interval timer is turned off.

- If the timer is on and you enter N, or if the timer is off and you enter F, the display will disappear and there will be no message.
- When a character other than N or F is entered, the display stays on the screen and INVALID CHARACTER appears.

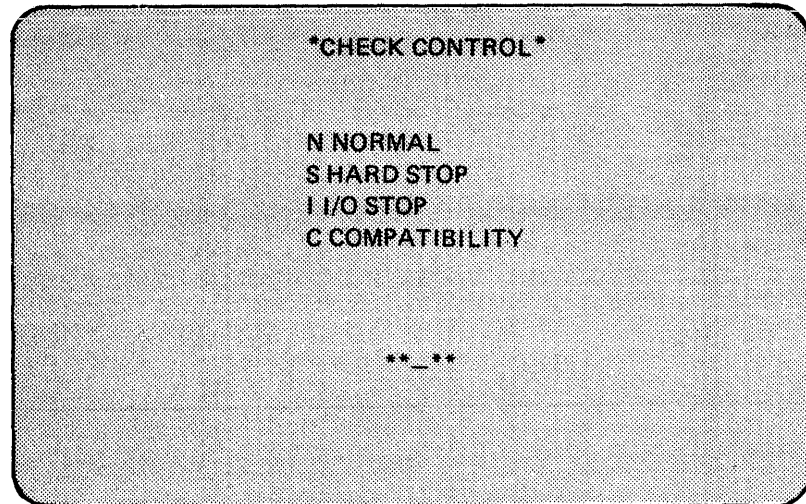
Model 115 Procedures

Operator Console

Mode Selection

Check Control Display

When the machine is in the check-stop state both the START key and the restart mode are ineffective



Do not perform SAVE USAGE COUNTERS while the system is in a check control mode

CHECK-STOP appears on line 13 when the system enters the check-stop state

To select the check control display:

1. Key K on the mode select display.
2. Press ENTER.

The current check control mode is shown on line 15 of the machine status area.

N (normal): In this mode the handling of the machine checks is determined by the system.

S (hardstop): This mode prevents logging of errors and causes the system to enter the check-stop state when a machine-check condition appears. When the system, in the hardstop mode, makes a log request, LOG WAITING appears on line 16, the error is not logged, and the system continues processing. When a machine-check occurs, CHECK-STOP appears on line 13 and the system stops. To record the log and continue processing, press MODE SEI. and enter KN.

I (I/O stop): This mode causes the machine to enter the check-stop state, when a limited channel logout has been stored.

C (compatibility): This mode causes the machine to enter the check-stop state after a limited channel logout or a machine-check interrupt has been taken.

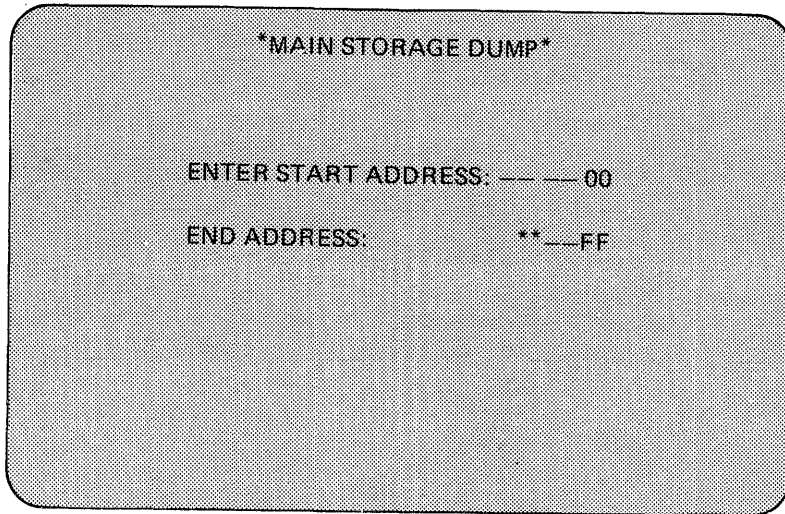
The compatibility mode is necessary when running a System/360 program, or programs that run with DOS releases prior to release 27.

The check control modes (hardstop, I/O stop, and compatibility) are turned off by selecting NORMAL or a maintenance display.

CAUTION

If the compatibility mode is not used when running a System/360 program, program code can be destroyed without any indication being given.

Main Storage Dump Display



- There is no fast selection
- To dump main storage via the dump display you need:
 - the control diskette
 - the natively attached line printer (5203 or 3203).
 If the natively attached printer is not available, the message NOT INSTALLED appears
- Skip to a new sheet and make the printer ready before performing a storage dump

To select the main storage dump display:

1. Key D on the mode select display.
2. Press ENTER.

- When specifying the main storage address your choice is limited to a 64K block at a time. Therefore the start address has preselected 00 in the low order positions, and the end address has preselected FF. The two asterisks mean that these positions take the value of the two leftmost digits of the start address.
- If the dump required is more than 64K bytes, repeat the operation with a new start and end address.
- If, during dumping, START is pressed, dumping stops, DUMP CANCELLED appears, and instruction processing continues. Pressing STOP, or performing a stop on address compare, now would cause dumping to resume.
- Pressing MODE SEL or CNCL stops the dump, and the dump display disappears.
- DUMP COMPLETE appears on the screen when the selected dump range has been printed.

To get the dump display off the screen, press CNCL. To continue processing after a dump operation press START.



Addresses must be in hexadecimal notation

Errors

PRINTER NOT READY appears if the line printer is not ready.

STORAGE END appears if the start address is greater than the physical size of main storage.

INVALID CHARACTER appears for any non-hexadecimal digits.

INCOMPLETE ENTRY appears when applicable.

Note: *If a log or retry operation takes place at the same time as a dump request, PRESS CANCEL appears on the screen. After pressing CNCL the message LOG IN PROGRESS appears in the machine status area. Dumping can be repeated as soon as the log message disappears.*

Operator Console

Mode Selection

If you enter characters other than hexadecimal digits, such characters (for example L, Q, R) are translated into their assigned hexadecimal codes and these are used as addresses.

ICA Line Modes Display

There are two ICA line mode displays:

1. Line modes for ICA-start/stop lines.
2. Line modes for ICA-BSC lines.

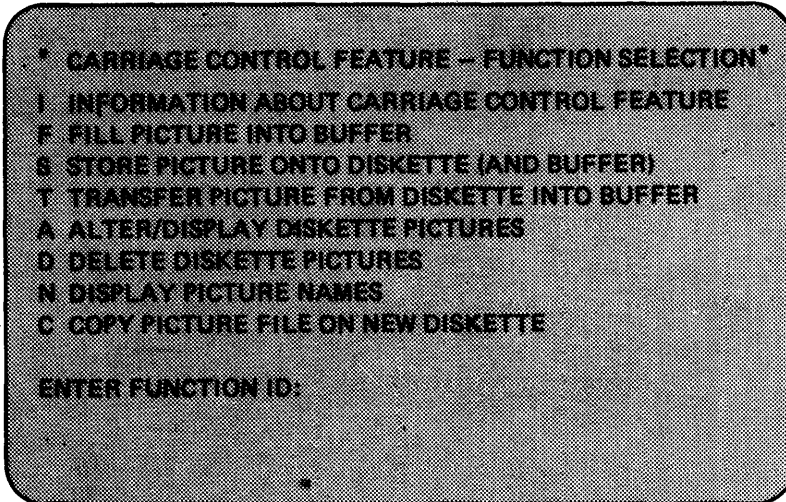
Each display appears only when the applicable lines, start/stop and/or BSC, are installed.

- The ICA line modes normally need be set only at installation time, but can be set at any time. They have to be set if the customer program does not make use of the Set Line Mode command.
- The specifications are permanently stored after ENTER is pressed, but cannot be displayed again. For this reason record your line mode specifications on the Line Mode Recording Sheet which is in the console file door pocket.
- If changes are made to any specifications, all other specifications have to be re-entered.
- All specifications for the ICA lines are permanently stored after the last entry (the last YES) is made and ENTER is pressed, but the line modes do not become effective then. The message LINE MODES BECOME EFFECTIVE WITH IMPL OR POWER ON appears.

Note: *The items of the displays are explained in detail in the section entitled 'Specifying ICA Line Modes'. A further description of the ICA line mode displays is given in System/370 Model 115 Functional Characteristics, GA33-1510, see "ICA Line Mode (E)" under "Operator Console" in the chapter "System Control".*

1403/3203 Carriage Control Feature Display

Carriage Control Feature – Function Selection



You need this display only when:

- A 3203 Printer is on the system
- The program to be run on the 3203 was originally written for the 1403.

In these cases you must transfer the information punched on the 1403 carriage control tape into the 3203 forms control buffer, unless this information is already available in the system.

Note: You cannot specify a channel for the last line on the form (end of sheet) as is possible on the 1403 printer

To select the carriage control feature display:

1. Key F on the mode select display.
2. Press ENTER.

The carriage control display offers you the eight options shown above. These options are described on the following pages. If you want brief instructions on how to use the display, select I and press ENTER. The display shown on the following page appears.

The carriage control display is available only when the 1403/3203 carriage control feature is installed in the system and the control diskette is in place. If the main storage dump display is available, the 1403/3203 carriage control display is *not* available.

1403/3203 Carriage Control Feature Display (continued)

Information about Carriage Control Feature

INFORMATION ABOUT CARRIAGE CONTROL FEATURE
 ENTER ANY CHANNEL NO. THEN A COLDN, THEN ONE OR MORE LINE NUMBERS, EACH SEPARATED BY A COMMA.
 EXAMPLE: C01:2,18,50 CONTINUE WITH NEXT CHANNEL (SEPARATED FROM THE LAST LINE NO BY AT LEAST ONE BLANK) OR PRESS ENTER. CHANNELS 1-12 ARE ENTERED AS C01-C12. ONE LINE MUST HAVE C01. THE LAST LINE NUMBER REPRESENTS END OF SHEET. DO NOT GIVE DIFFERENT CHANNELS TO THE SAME LINE. ERROR EXAMPLE: C02:8 C04:8,12 C06:8,17. ALLOWED IS C02:8 C02:7,9 C02:18

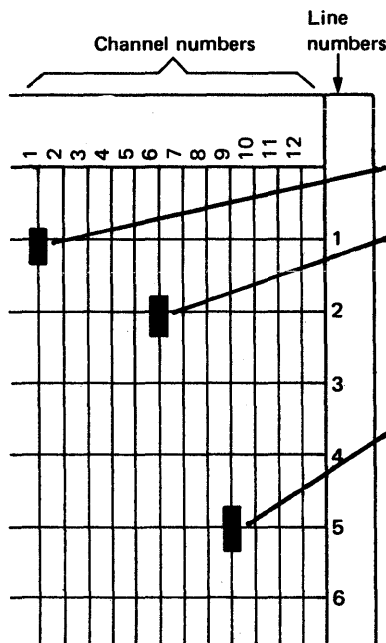
PRESS ENTER FOR FUNCTION SELECTION

Read the above display for an understanding of how to load the 3203 carriage control buffer.

Example

The information from the 1403 carriage control tape shown below on the left must be transferred to the 3203 carriage control buffer. First key in F. The screen is blank except for the heading **WRITE PICTURE TO BE STORED INTO BUFFER** and you can enter the codes as shown below. Loading can be done even if the 3203 is not ready.

Sample of a carriage control tape from the 1403 printer. The channel and line numbers are typed into the display as shown on the right



Write Picture to be Stored into Buffer

WRITE PICTURE TO BE STORED INTO BUFFER

C01:1 C06:2 C09:5, 72

PICTURE STORED, PRESS CANCEL

Note: The 'end of sheet' line number must always be added as the last and highest line number.

Allowable entries are channels 1 through 12 and lines 1 through 192. Up to 166 channel-line locations can be entered. When you press ENTER, the information is transferred to the carriage control buffer of the 3203 but is not permanently stored on the diskette.

1403/3203 Carriage Control Feature Display (continued)

Messages

NO LINE GIVEN FOR CHANNEL 1

Enter a line number for channel 1

LINE NUMBER ENTERED MORE THAN ONCE

Delete any line entered for more than one channel.

INCORRECT CHANNEL FORMAT

Check:

1. That channels have been entered correctly as C01, C02, and so on.
2. That a space is entered before each new channel.
3. That no channel number is higher than C12.

INCORRECT LINE FORMAT

Check:

1. That colons and commas are correctly entered as described in the display, "Information about Carriage Control Feature".
2. That only lines 1-192 have been specified.

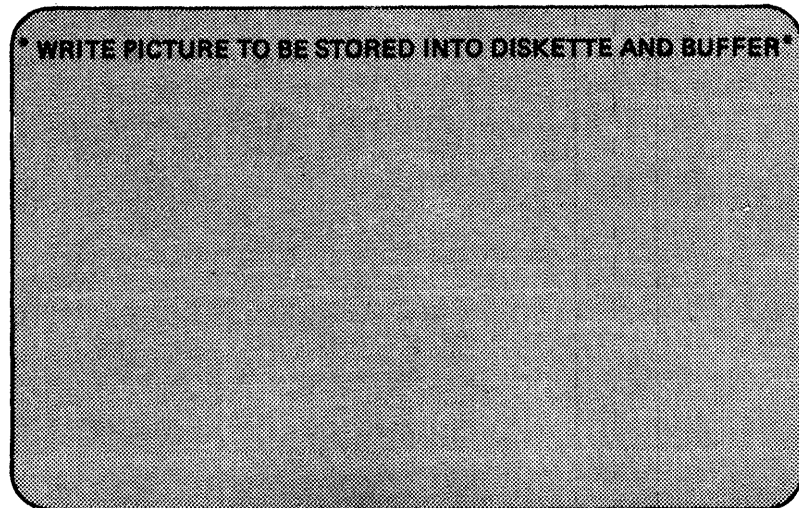
LINE NUMBER BEHIND END OF SHEET

Check that no line has a higher number than the last line entered.

After a correction, press ENTER again.

1403/3203 Carriage Control Feature Display (continued)

Write Picture to be Stored into Diskette and Buffer



To select this option, key S into the 1403/3203 carriage control feature display. The procedure is the same as for "Fill Picture into Buffer", except that the carriage control information is stored permanently on the console diskette, as well as being transferred to the buffer if required.

Up to 50 pictures can be stored on the diskette

Messages

NO SPACE ON DISKETTE

Press ENTER. Delete unwanted carriage control information (see option D) to make space.

PICTURE IS TOO LARGE, ENTER NEW

Enter a new picture of not more than 36 data bytes.

ENTER NAME (2 CHARACTERS)

Enter a two-character name.

NAME DUPLICATE OR INVALID

You have pressed ENTER without typing a name, or you have chosen a name already on the diskette. Enter a name which is not on the diskette.

PICTURE STORED, TRANSFER INTO BUFFER (Y OR N)?

Press Y to store the information into the carriage control buffer, otherwise press N.

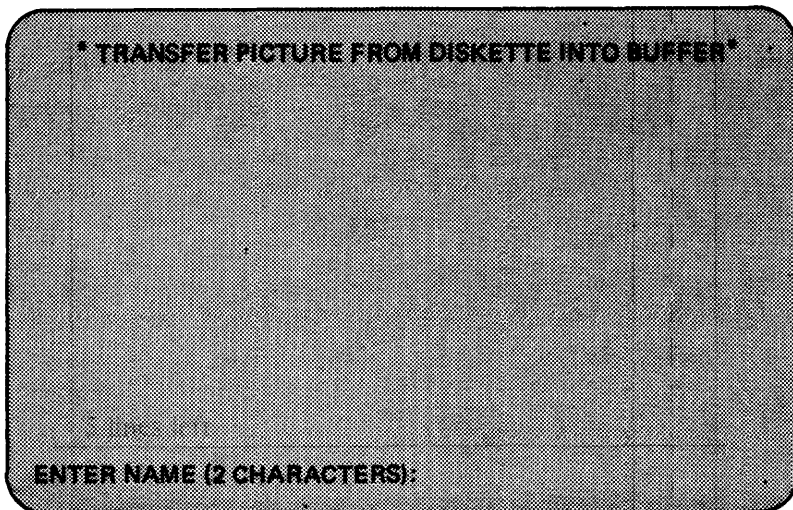
FURTHER STORE REQUIRED (Y OR N)?

Press Y if you want to store another picture, otherwise press N.

Commas and colons do not count as data bytes

1403/3203 Carriage Control Feature Display (continued)

Transfer Picture from Diskette into Buffer



To select this option, key T into the 1403/3203 carriage control feature display. You can now transfer information from the diskette to the carriage control buffer of the 3203 by entering a two-character name. This name must correspond to an entry already made on the diskette.

See option S

When you have keyed-in this name and pressed ENTER, the channel information appears on the screen and is also transferred to the 3203 carriage control buffer.

Messages

PICTURE NOT FOUND

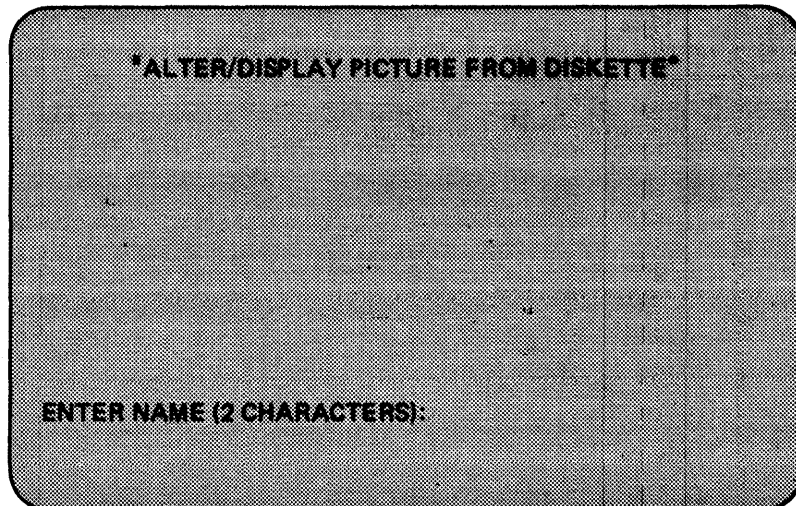
Enter a name which is recorded on the diskette.

PICTURE STORED

Press CNCL.

1403/3203 Carriage Control Feature Display (continued)

Alter/Display Picture from Diskette



See option S

To select this option, key A into the 1403/3203 carriage control feature display. Channel information appears on the screen when a two-character name is entered. This name must be the name of an entry already made on the diskette.

Messages

PICTURE NOT FOUND
Enter a valid name.

NAME DUPLICATE OR INVALID
You have pressed ENTER without typing a name. Enter a name which is on the diskette.

ALTERATION REQUIRED (Y OR N)?
Enter Y if you want to change channel information, or enter N if you want to check the information.

PRESS CANCEL
Pressing CNCL brings the operating system picture to the screen.

REPLACE PICTURE (Y OR N)?
Press Y to put the picture back onto the diskette, otherwise press N. After N the following message appears:

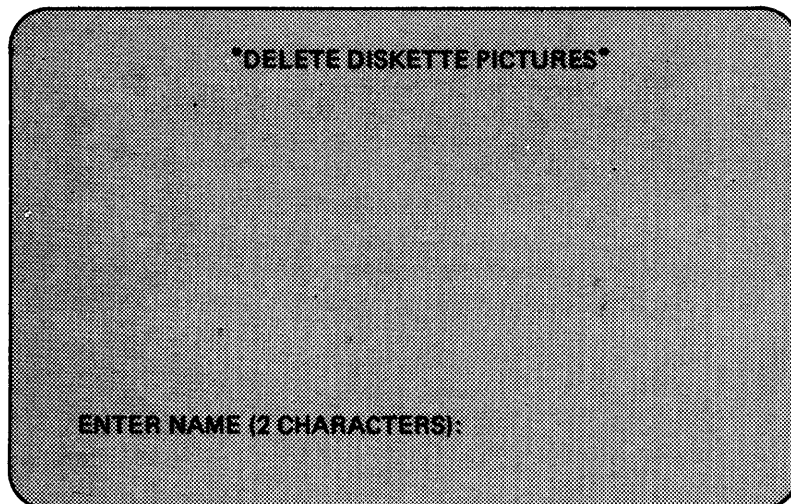
NEW NAME (Y OR N)?
If a new name is to be given to the channel information, press Y and enter a new two-character name, otherwise press N.

If a new name is given, the channel information will be available with the old and new name

TRANSFER INTO BUFFER (Y OR N)?
Press Y to transfer the picture into the 3203 forms control buffer and onto the diskette. Press N to store the picture onto the diskette only, with a new name.

1403/3203 Carriage Control Feature Display (continued)

Delete Diskette Pictures



To select this option, key D into the 1403/3203 carriage control feature display.
To delete channel information, key in the name and press ENTER. Only one name
can be entered at a time.

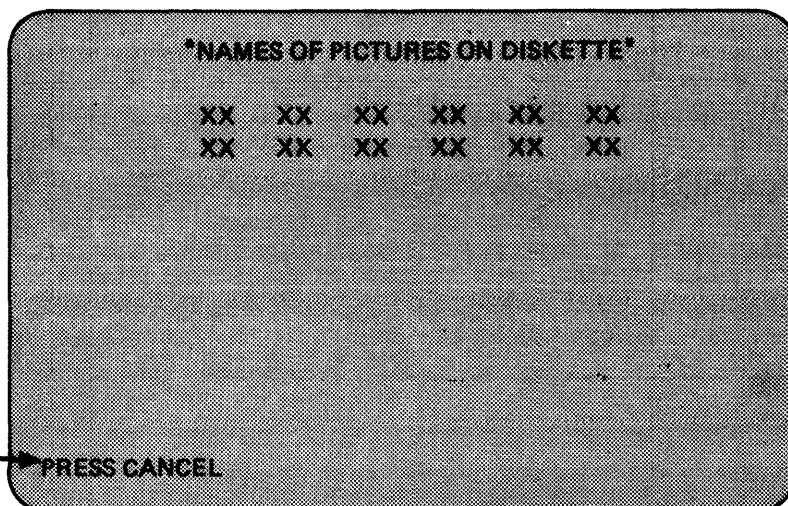
Messages

PICTURE DELETED
Press CNCL.

PICTURE NOT FOUND
Enter a valid name.

1403/3203 Carriage Control Feature Display (continued)

Names of Pictures on Diskette

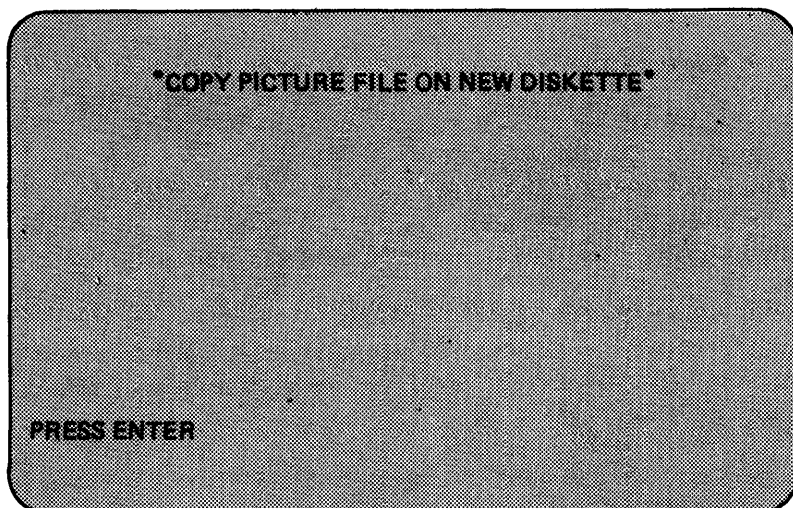


Press the CNCL key to wipe out the display

To select this option, key N into the 1403/3203 carriage control feature display. The names of all channel information stored on the diskette are displayed.

1403/3203 Carriage Control Feature Display (continued)

Copy Picture File on New Diskette



To select this option, key C into the 1403/3203 carriage control feature display. Follow the messages on the screen to copy the file of channel information onto a new diskette.

The new diskette must have the 1403/3203 carriage control feature

Messages

CHANGE DISKETTE AND PRESS ENTER

When you have followed this message the file is copied.

WRONG DISKETTE, PRESS ENTER

You have installed an invalid diskette, that is, one without the carriage control feature. After you have pressed ENTER, the mode selection display appears, and F PRINTER FORMS is missing. Repeat the operation, using a valid diskette.

PICTURE FILE STORED, PRESS ENTER

After ENTER has been pressed, the mode selection picture is displayed.

Model 115 Procedures

Operator Console

Mode Selection

If you enter characters other than hexadecimal digits, such characters (for example L, Q, R) are translated into their assigned hexadecimal codes and these are used as addresses.

ICA Line Modes Display

There are two ICA line mode displays:

1. Line modes for ICA-start/stop lines.
2. Line modes for ICA-BSC lines.

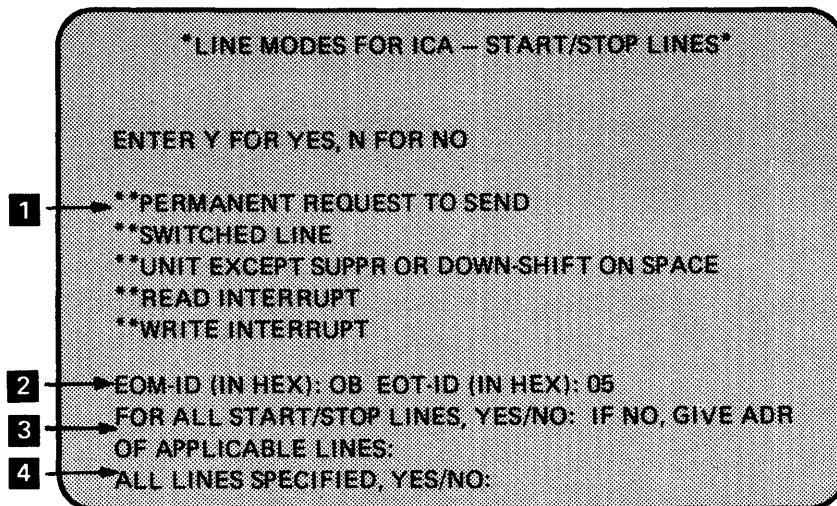
Each display appears only when the applicable lines, start/stop and/or BSC, are installed.

- The ICA line modes normally need be set only at installation time, but can be set at any time. They have to be set if the customer program does not make use of the Set Line Mode command.
- The specifications are permanently stored after ENTER is pressed, but cannot be displayed again. For this reason record your line mode specifications on the Line Mode Recording Sheet which is in the console file door pocket.
- If changes are made to any specifications, all other specifications have to be re-entered.
- All specifications for the ICA lines are permanently stored after the last entry (the last YES) is made and ENTER is pressed, but the line modes do not become effective then. The message LINE MODES BECOME EFFECTIVE WITH IMPL OR POWER ON appears.

Note: *The items of the displays are explained in detail in the section entitled 'Specifying ICA Line Modes'.*

ICA Line Modes Display (continued)

Line Modes for ICA-Start/Stop Lines.



This display appears only if start/stop lines are installed

The entry N against SWITCHED LINE indicates "leased line"

To select the ICA-line modes display:

1. Key in E on the mode select display.
2. Press ENTER.

1 Key in Y for yes, or N for no, as applicable. Each time Y or N is entered, the cursor moves down.

2 The EOM and EOT identifier characters apply only to World Trade leased telegraph lines and can be ignored if there are no World Trade leased telegraph lines.

← "World Trade leased telegraph lines," are European leased, point-to-point, single current, telegraph lines

These lines have pre-selected (default) values. These values can be changed:

- The values refer to the entire line group.
- There may be two groups;
 - Group 1 – line addresses 20 to 27.
 - Group 2 – line addresses 28 to 2F.
- Only down-shift (LTRS) characters can be used as identifiers.
- Must consist of two hexadecimal characters.

3 If the answer is N, the addresses of those lines to which the mode applies must be given. Each address must consist of two hexadecimal characters, and may be in any order. Entering a period after the last address moves the cursor to ALL LINES SPECIFIED.

4 If the answer to all lines specified is Y, the ICA BSC lines display appears after ENTER is pressed.

If the answer is N, pressing ENTER causes all the N and Y specifications to be wiped from the screen (they are stored). You can then specify the next line or line group. Eventually the answer to the last line will be Y, and after you have pressed ENTER, the ICA BSC lines display will appear.

ICA Line Modes Display (continued)

Line Modes for ICA-BSC Lines

1200 = 1200 bps
 600 = 600 bps
 HALF-SPD = Half of the normal speed for self-clocked modems with two speeds
 Switching from normal to half, or half to normal, speed for self-clocked modems with two speeds, can also be performed via in-line tests (see page 84)

When using ASCII code the station address must have bit 0 set to zero (i.e. a character from 20 to 7F)

LINE MODES FOR ICA – BSC LINES

<p>1 ENTER Y FOR YES, N FOR NO</p> <p>1 **PERMANENT REQ TO SEND</p> <p>**SWITCHED LINE</p> <p>**NEW SYNC</p> <p>**SWEDISH OR UK MODEM</p> <p>**EIB MODE</p> <p>**TRANSPARENT MODE</p> <p>**ASCII CODE</p> <p>3 FOR ALL BSC LINES' YES/NO: IF NO, GIVE ADDRESSES OF APPLICABLE LINES:</p> <p>4 ALL LINES SPECIFIED, YES/NO:</p>	<p style="text-align: right;">*SPEED SELECT*</p> <p>**1200</p> <p>**600</p> <p>**HALF-SPD</p> <p style="text-align: right;">STATION ADDRESS (HEX)</p>
--	--

When ICA start/stop lines are installed the LINE MODES FOR ICA-BSC LINES display is obtained as instructed on Page 31.

When no ICA start/stop lines are installed the LINE MODES FOR ICA-BSC LINES display is obtained by:

1. Keying E on the mode select display.
2. Pressing ENTER.

- 1** A Y for yes, or an N for no must be entered in each field. As each field is filled, the cursor moves to the next field.
- 2** A Y must be keyed in for the required speed.
- 3** If the answer is N give the addresses in hexadecimal characters.

4 If the answer to ALL LINES SPECIFIED is Y, pressing ENTER causes the message LINE MODES BECOME EFFECTIVE WITH IMPL OR POWER-ON to be displayed.

If the answer is N, pressing ENTER causes all the N and Y specifications to be wiped from the screen (they are stored). You can go ahead and specify the next line or line group. Eventually the answer to the last line will be Y, and after you have pressed ENTER the message LINE MODES BECOME EFFECTIVE WITH IMPL OR POWER ON appears.

ICA-Line Mode Errors

Logical errors are not rejected. Examples of such logical errors are:

- Specifying a leased line although a switched line is installed.

Formal errors are rejected with INVALID CHARACTER.

Note: You cannot answer Y to:

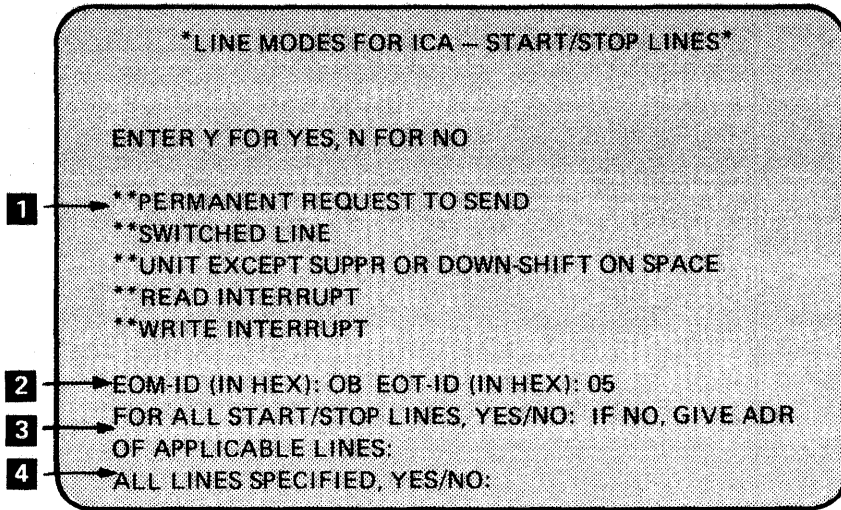
- Both switched line and new synch.
- Both ASCII code and transparent mode.
- More than one speed.

If you do, the message EXCLUSIVITY ERROR will appear, and the cursor marks the first contradictory Y. If you select more than one speed SELECT ONE SPEED appears.

All the specifications for the ICA and BSC lines are stored. After the last entry (the last YES) is made, the message LINE MODES BECOME EFFECTIVE WITH IMPL OR POWER ON appears.

ICA Line Modes Display (continued)

Line Modes for ICA-Start/Stop Lines.



This display appears only if start/stop lines are installed

The entry N against SWITCHED LINE indicates "leased line"

To select the ICA-line modes display:

1. Key in E on the mode select display.
2. Press ENTER.

1 Key in Y for yes, or N for no, as applicable. Each time Y or N is entered, the cursor moves down.

2 The EOM and EOT identifier characters apply only to World Trade leased telegraph lines and can be ignored if there are no World Trade leased telegraph lines.

"World Trade leased telegraph lines," are European leased, point-to-point, single current, telegraph lines

These lines have pre-selected (default) values. These values can be changed:

- The values refer to the entire line group.
- There may be two groups;
 - Group 1 – line addresses 20 to 27.
 - Group 2 – line addresses 28 to 2F.
- Only down-shift (LTRS) characters can be used as identifiers.
- Must consist of two hexadecimal characters.

3 If the answer is N, the addresses of those lines to which the mode applies must be given. Each address must consist of two hexadecimal characters, and may be in any order. Entering a period after the last address moves the cursor to ALL LINES SPECIFIED.

4 If the answer to all lines specified is Y, the ICA BSC lines display appears after ENTER is pressed.

If the answer is N, pressing ENTER causes all the N and Y specifications to be wiped from the screen (they are stored). You can then specify the next line or line group. Eventually the answer to the last line will be Y, and after you have pressed ENTER, the ICA BSC lines display will appear.

Model 115 Procedures

Operator Console

Mode Selection

ICA Line Modes Display (continued)

Line Modes for ICA-BSC Lines

1200 = 1200 bps
600 = 600 bps
HALF-SPD = Half of the normal speed
for self-clocked modems
with two speeds

Switching from normal to half, or
half to normal, speed for self-clocked
modems with two speeds, can also be
performed via in-line tests (see page 84)

When using ASCII code the station
address must have bit 0 set to zero
(i.e. a character from 20 to 7F)

LINE MODES FOR ICA -- BSC LINES	
ENTER Y FOR YES, N FOR NO	*SPEED SELECT*
1 **PERMANENT REQ TO SEND	**1200
**SWITCHED LINE	**600
**NEW SYNC	**HALF-SPD
**SWEDISH OR UK MODEM	STATION ADDRESS (HEX)
**EIB MODE	
**TRANSPARENT MODE	
**ASCII CODE	
3 FOR ALL BSC LINES' YES/NO: IF NO, GIVE ADDRESSES OF APPLICABLE LINES:	
4 ALL LINES SPECIFIED, YES/NO:	

When ICA start/stop lines are installed the LINE MODES FOR ICA-BSC LINES display is obtained as instructed on Page 31.

When no ICA start/stop lines are installed the LINE MODES FOR ICA-BSC LINES display is obtained by:

1. Keying E on the mode select display.
2. Pressing ENTER.

1 A Y for yes, or an N for no must be entered in each field. A blank means no. As each field is filled, the cursor moves to the next field.

2 A Y must be keyed in for the required speed.

3 If the answer is N give the addresses in hexadecimal characters.

4 If the answer to ALL LINES SPECIFIED is Y, pressing ENTER causes the message LINE MODES BECOME EFFECTIVE WITH IMPL OR POWER ON to be displayed.

If the answer is N, pressing ENTER causes all the N and Y specifications to be wiped from the screen (they are stored). You can go ahead and specify the next line or line group. Eventually the answer to the last line will be Y, and after you have pressed ENTER the message LINE MODES BECOME EFFECTIVE WITH IMPL OR POWER ON appears.

ICA-Line Mode Errors

Logical errors are not rejected. Examples of such logical errors are:

- Specifying a leased line although a switched line is installed.
- Giving the address of a non-existent line.

Formal errors are rejected with INVALID CHARACTER.

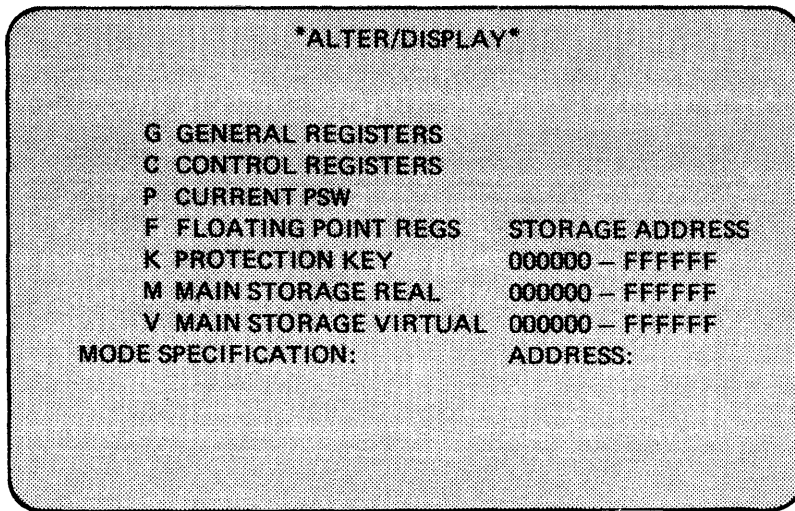
Note: You cannot answer Y to:

- Both switched line and new synch.
- Both ASCII code and transparent mode.
- More than one speed.

If you do, the message EXCLUSIVITY ERROR will appear, and the cursor marks the first contradictory Y. If you select more than one speed SELECT ONE SPEED appears.

All the specifications for the ICA and BSC lines are stored. After the last entry (the last YES) is made, the message LINE MODES BECOME EFFECTIVE WITH IMPL OR POWER ON appears.

Alter/Display Displays



If the floating point feature is not installed, F will not appear on the display

If you have a display, selected from the alter/display set, and then press MODE SEL, the alter/display picture will appear. To get the mode select picture you have to press MODE SEL again

START must be pressed after any alter/display operation. To return the screen to the operating system, CNCL has to be pressed

If you press the CNCL key, the last picture of the operating system comes back, but the machine does not start. Press START to continue processing

To select the alter/display display:

1. Key A on the mode select display.
2. Press ENTER.

The alter/display picture shows a set of those parts of the CPU which can be displayed and altered. This display allows you to select one of the set.

1. Key in the selector character.
2. The address must be given for the protection key and the main storage displays.
3. Press ENTER.

When a display from the repertoire is chosen, the contents of the registers, the PSW, and the main storage, are shown in hexadecimal or binary digits.

To change one, or any number, of these digits, move the cursor under the first digit to be changed, and key in the new data. The new data appears on the line below the old data until ENTER is pressed.

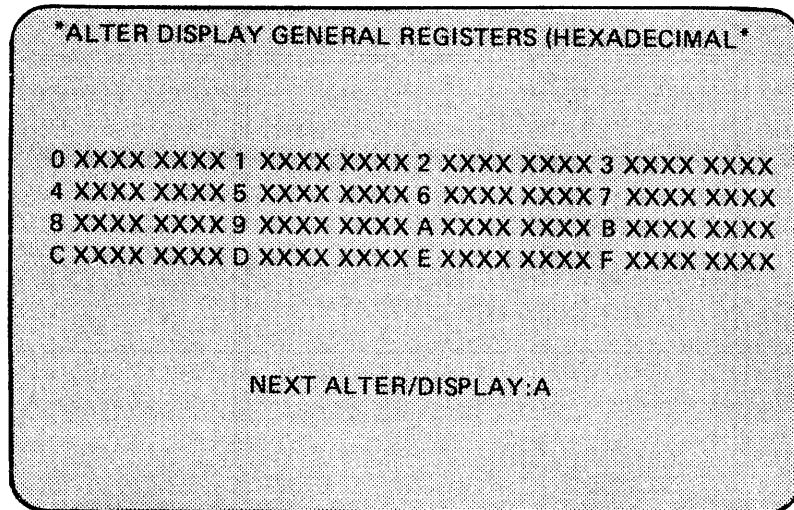
Before ENTER is pressed, you can still change your input by using the cursor keys and entering the changes in the usual way. As soon as ENTER is pressed, the new data jumps up to replace the old.

The display remains on the screen and the cursor is at the next alter/display line. Because there is an A (for alter/display) on this line, you need only enter F (for floating point registers), or P (for PSW) and so on.

- When a wrong character (either a non-hexadecimal or a non-binary, as the case may be) is entered, INVALID CHARACTER appears. The cursor marks the first invalid character.

Alter/Display Displays (continued)

General Registers

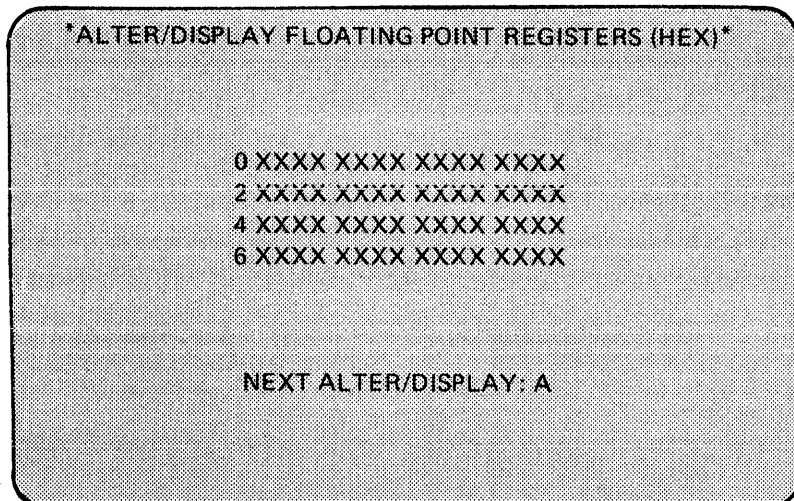


To select the general registers display:

1. Key G on the alter/display picture.
2. Press ENTER.

All 16 general registers appear at once. Each X represents a hexadecimal digit.

Floating Point Registers



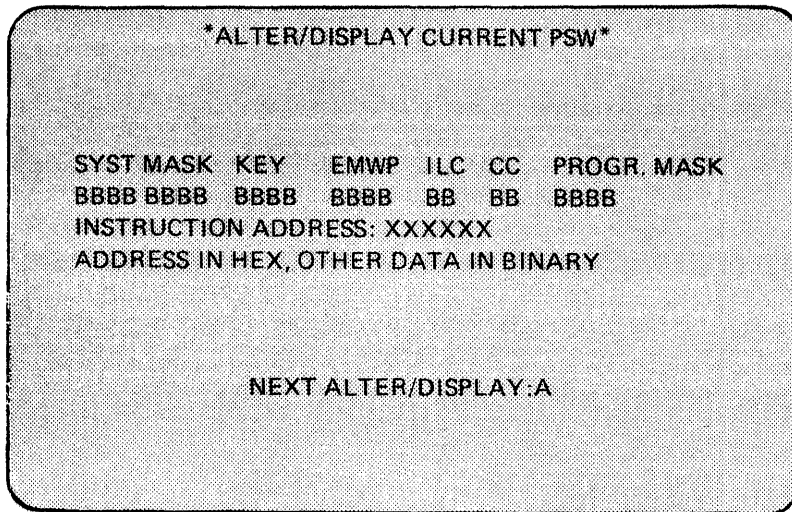
To select the alter/display floating point registers (hexadecimal) display.

1. Key F on the alter/display picture.
2. Press ENTER.

All the floating point registers appear at once. Each X represents a hexadecimal digit.

Alter/Display Displays (continued)

Current PSW



If IPL-ERROR is displayed on line 13, perform RESET CLEAR or RESET NORMAL before displaying the current PSW

If logical errors are made while altering the current PSW, the errors are not rejected and the PSW is loaded with the errors. The following are logical errors:

- If a 1 is entered instead of a zero into certain areas of the EC mode PSW, EC-PSW ERROR, appears when the PSW is stored
- If in BC mode, the addresses exceed the storage size, INVALID ADDR LOADED appears but the address is still loaded into the PSW. If the program uses an invalid address the message PSW ADR ERROR appears on line 13

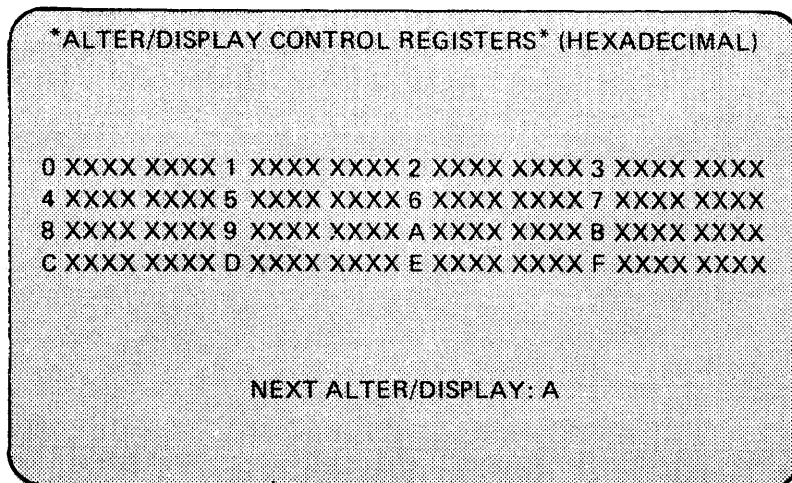
To select the alter/display current PSW display:

1. Key P on the alter/display picture.
2. Press ENTER.

The current PSW is displayed in binary notation, except for the instruction address which is hexadecimal. BC (basic control) or EC (extended control) mode is indicated in the machine status area, line 14, and in the E-bit in the PSW.

- BC Mode: The system is in basic control mode when the E-bit is zero.
- EC Mode: The system is in extended control mode when the E-bit is 1.

Control Registers (Hexadecimal)



To select the alter/display control registers display:

1. Key C into the alter/display picture.
2. Press ENTER.

All the control registers appear at once. Each X represents a hexadecimal digit.

Model 115 Procedures

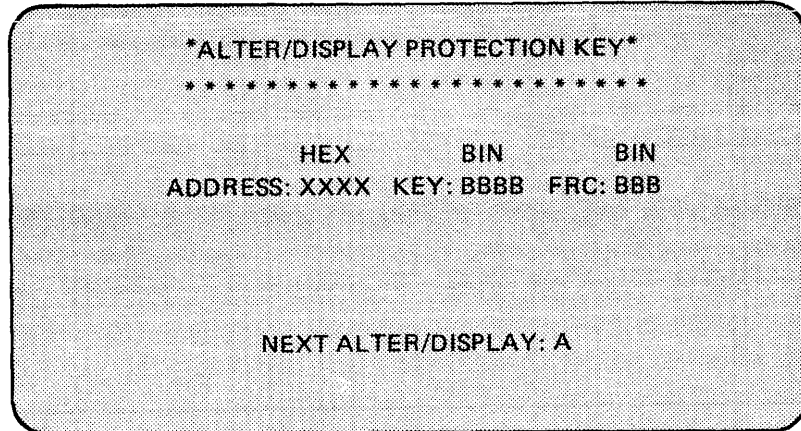
Operator Console

Mode Selection

Alter/Display Displays (continued)

Protection Key

INVALID ADDRESS appears if the address is larger than the storage size. The address has to be keyed in with leading zeros.



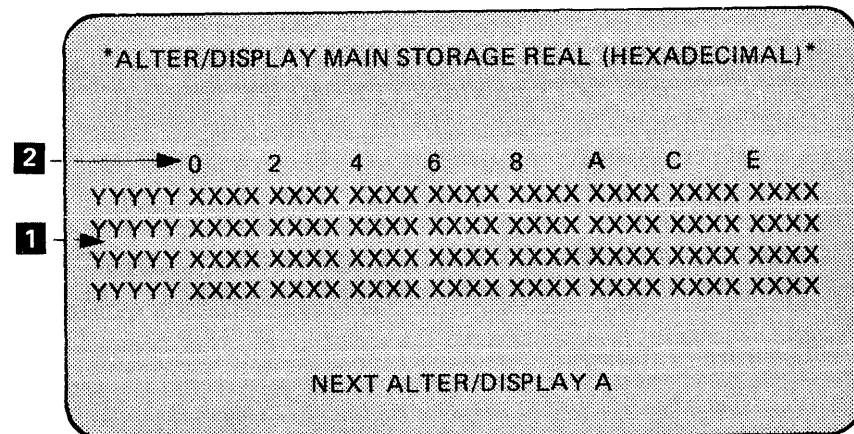
To select the alter/display protection key display:

1. Key K on the alter/display picture.
2. Key in the main storage address in hexadecimal.
3. Press ENTER.

In the protection key picture:

- The address is in hexadecimal.
- The key is in binary.
- The fetch protection (F), the reference (R), and the change (C) bits are in binary.

Main Storage Real (Hexadecimal)



To display 2314 buffers perform system reset first

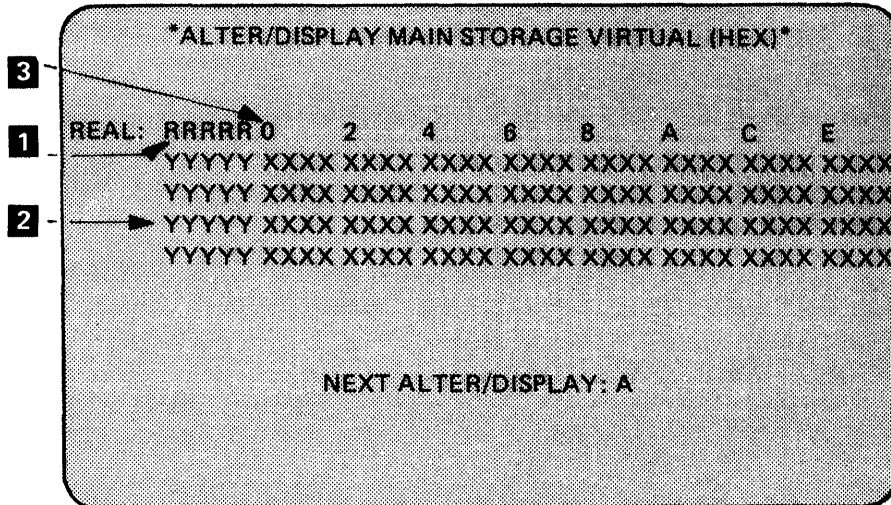
To select the alter/display main storage real:

1. Key M on the alter/display picture.
2. Key in the main storage address in hexadecimal.
3. Press ENTER.

The display shows 32 halfwords of main storage at once. Each X represents a hexadecimal digit. **1** The Y characters represent in hexadecimal, the main storage address without its low order digit. **2** The missing low order digit of the address is shown above each leftmost byte of each halfword.

Alter/Display Displays (continued)

Alter/Display Main Storage Virtual (Hexadecimal)



To select the alter/display main storage virtual display:

1. Key V on the alter/display picture.
2. Key in the address.
3. Press ENTER.

The display shows 32 halfwords of main storage at once.

- 1** The R characters represent in hexadecimal, the physical equivalent of the virtual address underneath.
- 2** The Y characters represent the virtual storage address without its low order digit.
- 3** The missing low order digit of the address is shown above each leftmost byte of each halfword.

If one of the messages:

- OUTSIDE PAGE TABLE
- OUTSIDE SEGMENT TABLE
- PAGE ENTRY INVALID
- ADDRESSING EXCEPTION
- SEGMENT ENTRY INVALID
- SPECIFICATION EXCEPTION
- ADDRESS NOT TRANSLATABLE

appears on the screen, the main storage section of the display does not appear.

ADDRESS NOT TRANSLATABLE
 means that you are in BC mode

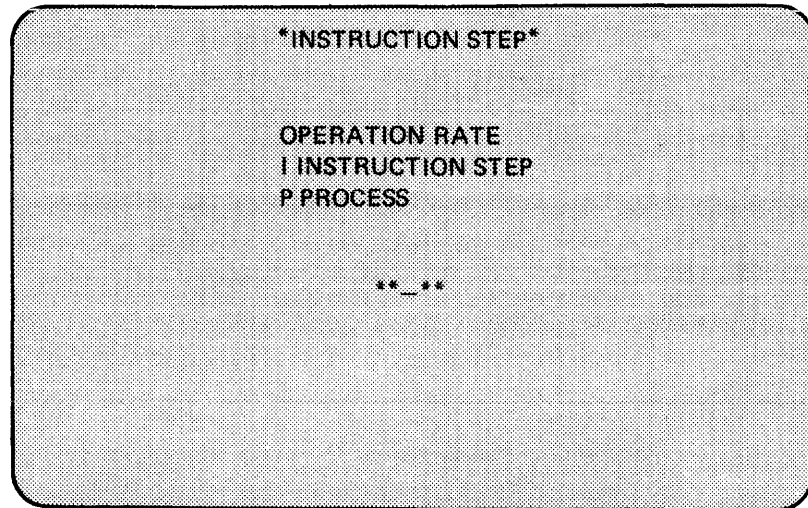
Model 115 Procedures

Operator Console

Mode Selection

Instruction Step Display

Instruction step mode is canceled by any maintenance display



To select the instruction step display:

1. Key I on the mode select display.
2. Press ENTER.

INSTRUCTION STEP offers two modes.

- I INSTRUCTION STEP. If I is entered into the Instruction step display and then ENTER is pressed, one instruction is executed each time START is pressed. The new data can be seen as soon as the stop occurs. Line 14 (in the machine status area) shows the address, and the data at this address. As soon as START is pressed the screen is returned to the operating system and operating messages can be traced with each step. Instruction step mode is indicated by I-STEP on line 15 (in the machine status area).
- P PROCESS Entering P terminates instruction step mode.

At this stage another manual operation can be performed. If alter/display is selected, the changes in main storage can be observed because the alter/display displays remain on the screen after START has been pressed

Press START to continue processing

Restart

If RESTART is selected while the machine is in the check-stop state, the mode select picture remains on the screen

To select the restart operation:

1. Key P on the mode select display.
2. Press ENTER.

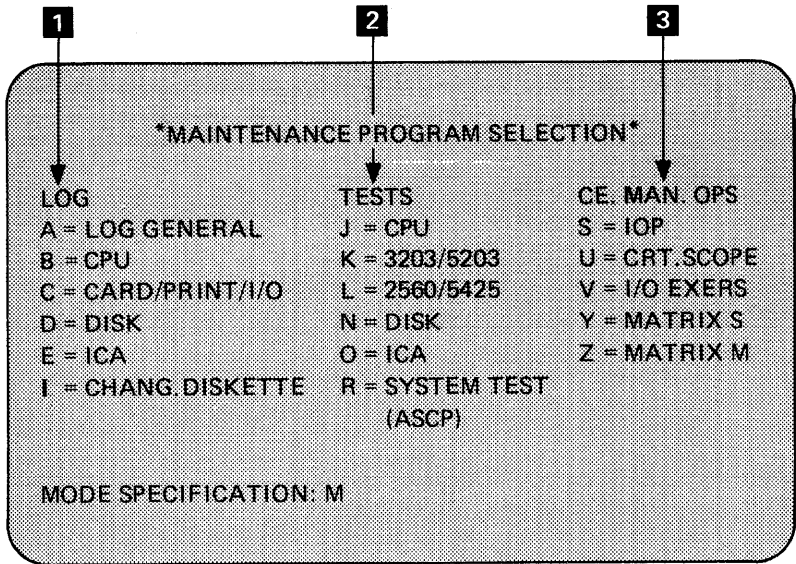
There is no display for this operation. As soon as ENTER is pressed, the screen returns to the control of the operating system. This operation is used to load a new PSW from storage location zero. Processing then continues under the control of the now current PSW. RESTART is effective in both the running and the stopped states of the CPU.

Note:

- RESTART does not cause RESET.
- RESTART is not effective in the check-stop state.

Maintenance Displays

Maintenance Selection



The automatic system checkout program (ASCP) is on the ASCP diskette:

1. The diskettes have to be exchanged.
2. I has to be entered into the maintenance display.
3. R has to be entered into the maintenance display.

When changing from the control diskette to the diagnostic diskette, enter I. This allows the diskettes to be changed without a new IMPL

To select the maintenance selection display:

1. Key M on the mode select display.
2. Press ENTER.

1 Log information can be used when errors occur, you can quickly find out which general area of the system is affected. This information can be given when you call the CE for assistance.

2 Micro tests are used only by the CE.

3 CE manual operations are used only by the CE.

In most circumstances you will need only the last log analysis display. To obtain this display, key MAB on the mode select display and press ENTER.

After a maintenance display MAN, CHECK-STOP, ADR, and DATA indicators do not show the status as it was before the maintenance display. Updating of the status only occurs as soon as the next operation is attempted. Operations such as start and restart cannot be performed when the system is in the check-stop state, but you have no indication of a malfunction except for the missing response. Perform normal system reset to get the machine status.

Note: *The machine status cannot be seen during maintenance operations. The fact that no status area is shown has no influence. After running a micro test, IMPL has to be pressed.*

Test displays give clear instructions on how to select test details and when to change diskettes.

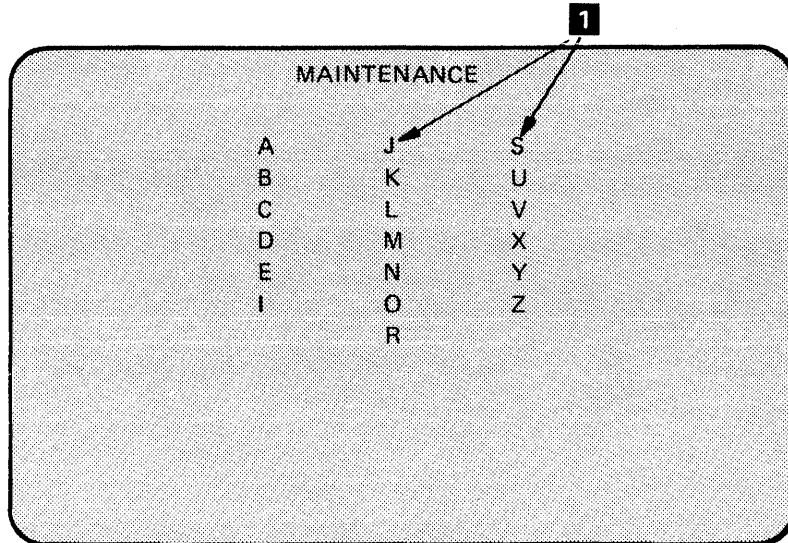
Operator Console

Mode Selection

Log Analysis Displays

These displays are accessible only by the CE **1**

In most circumstances the operator will only enter MAB into the mode selection display. This causes the last log analysis display to appear. If a last log analysis is not available, the last log display appears. The rest of the displays are normally used by the CE



Log Analysis Displays

A

General Log Analysis Programs. These programs provide displays for the:

- System overall logs
- The last log display.

The logs are a guide to any parts of the system that may need attention.

B

CPU Log Analysis Programs. These programs provide log and analysis displays for the:

- SVP
- MSC
- Tape adapter
- Interface
- MIP or IPU
- IOPs
- MPX channel

C

Card/Print I/O Log Analysis Programs. These programs provide log and analysis displays for the:

- 5425 MFCU
- 2560 MFCM
- 3203 printer
- 5203 printer

D

Disk Log Analysis Programs. These programs provide log and analysis displays for the:

- Direct disk attachment
- Disks.

E

ICA Log Analysis Programs. These programs provide log and analysis displays for the:

- Integrated communications adapter.

After a maintenance display the address compare, check control, and instruction step modes are reset to off

Store Status

There is no display for STORE STATUS.

To store the status:

1. Key S on the mode select display.
2. Press ENTER.

The following are stored in main storage:

CPU Timer
Clock Comparator
The current PSW
Floating Point Registers
Control Registers
General Registers.

After ENTER has been pressed:

- The mode select display remains on the screen and STATUS STORED appears.
- The system goes into the stopped state.
- The S has disappeared from the mode specification field, so this field is free and another operation can be specified, or the screen can be returned to the operating system by pressing CNCL.

The message STATUS STORED appears

It is possible to look at the stored status via alter/display

The status is usually stored before a stand-alone dump program is loaded

Save Usage Counters

There is no display for SAVE USAGE COUNTERS.

To select the save usage counters operation:

1. Key U on the mode select display.
2. Press ENTER.

This operation saves the usage counters of all disk drives. The operation should always be performed before you turn the power off so that the information can be used by the CE for maintenance. The message COUNTER SAVED appears for each counter that is recorded.

Note: Do not attempt the save usage counters operation while TEST is displayed on line 13 on the screen.

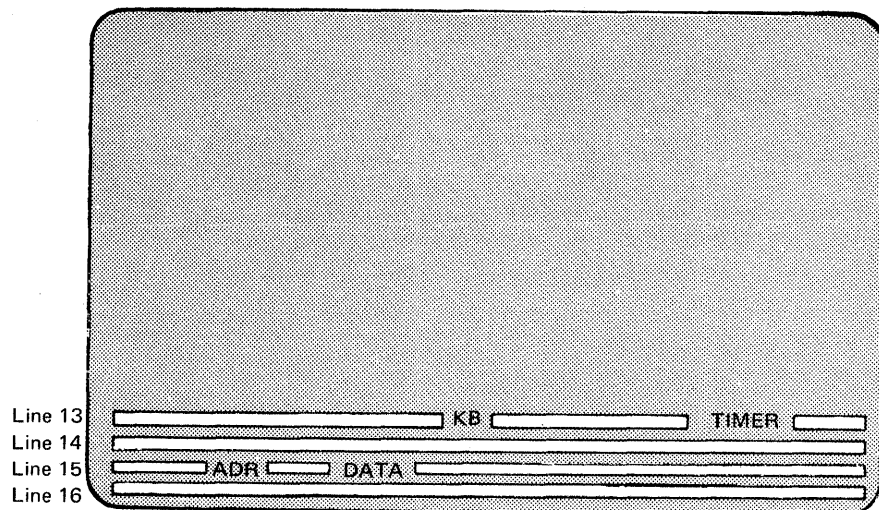
Do not save the usage counters while the system is in a check control mode

Operator Console

Machine Status Display

Machine Status Display

- Consists of the last four lines of the screen.
- Has a permanent display and a number of variable displays.
- Is a protected area.
- Appears at all times *except* during maintenance displays.



Line 13 _____ KB _____ TIMER _____
 Line 14 _____
 Line 15 _____ ADR _____ DATA _____
 Line 16 _____

This field appears only when:

- The console printer is installed
- The console printer requires attention

Display Repertoire

Line 13	CHECK-STOP NO. PSW-LOOP SYS MAN WAIT TEST LOAD IPL-ERROR NO. EC PSW ERROR PSW ADR ERR	KB: PROCEED INHIBIT LOCK REQ	CNSL-PRTR	TIMER: OFF ON
Line 14	ADR COMP REAL ADR XXXXXX	TYPE: I-COUNT DATA STORE ANY I/O	ACT: SYNC STOP	I-STEP
Line 15	EC VIRT- BC DAT REAL-ADR: XXXXXX	DATA: XXXX	CHK-CTL: I/O STOP HARD STOP COMPATIBLE	
Line 16	CE Information			

Machine Status Display (continued)

Line	Field	Legend	Meaning	Comments
13	MODE (Does not appear on screen)	SYS	The system usage meter is running	
		MAN	The 3115 has been stopped by: <ul style="list-style-type: none"> ● Pressing STOP ● Manual operations ● A stop caused by instruction step mode, or address compare mode 	MAN does not appear when the system is running, in the wait state (unless STOP is pressed), or in the check-stop state. After a maintenance display MAN does not show the status as shown before the display
		WAIT	The wait bit is on in the current PSW	WAIT does not appear when a PSW looping error has occurred. The address can be seen by displaying the PSW
		TEST	TEST is caused by one of the following: <ul style="list-style-type: none"> ● Instruction step mode is set ● Address compare mode is set ● Any check control mode is set ● An in-line test is running 	
		LOAD	Appears from the time the load operation started until a valid PSW is loaded	
	ERROR (Does not appear on screen)	CHECK-STOP NO.	A check-stop has occurred. A check-stop number from 0 to 9 or the following special characters are displayed: NO., :, @, /, =	The address can be seen by displaying the PSW. After a maintenance display, CHECK-STOP does not show the status as shown before the display
		PSW LOOP	The program continually loops to the same invalid PSWs	Perform system reset
		IPL ERROR NO.	A valid PSW cannot be loaded for such reason as device not ready, wrong address, wrong or invalid interrupt	Load from another device or correct the program. If an IPL error number is displayed, go to page 73 for details
		PSW ADR ERROR	The instruction address in the current PSW is not an address in main storage	A correct program has to be loaded
		EC-PSW ERR	The load process ended with an attempt to load an invalid PSW	A correct program has to be loaded
	KB	PROCEED	The keyboard can be used to enter data	
		INHIBIT	An attempt was made to enter data into a protected area of the screen	Press KEYBD RESET to enable the keyboard
		LOCK	The system has locked all keys that could interfere with the current operation <i>Note:</i> If you are using the 1052 command set, LOCK on the screen is normal. PROCEED comes onto the screen when a read enquiry command is given, or during a manual operation	
		REQ	The request key has been operated and the request has been accepted	PROCEED appears

Machine Status Display (continued)

Line	Field	Legend	Meaning	Comments	
13 (cont'd)	CNSL PRTR	CNSL PRTR	Only appears when: <ul style="list-style-type: none"> ● A console printer is installed ● The printer's supply of forms is exhausted, or its cover is open ● The console printer was not correctly set by system reset, or IMPL 		
	TIMER	ON or OFF	The timer is enable or disabled		
14	ADR COMP	REAL ADR	Indicates the search address, which is a real address (not virtual)		
	TYPE	I-COUNT DATA STORE ANY I/O	The type of comparison to be made		
	ACT	SYNCH STOP	(Action) The type of action to be performed when the address match occurs		
	I-STEP	I-STEP	Instruction step made has been set		
15	CONTROL MODE (Does not appear on screen)	EC	(Extended control mode) Bit 12 of the current PSW is set		
		BC	(Basic control) Bit 12 of the current PSW is zero		
	ADDRESS AND DATA	DAT	The DAT bit in the current PSW is on		
		VIRT	The system was operating in dynamic address translation mode when the system stopped		
		REAL	The system was not operating in dynamic address translation mode when the system stopped		
		ADR	The storage address of the next instruction to be processed is indicated	After a maintenance display, ADR and DATA indicators do not show the status as it was before the display	
		DATA	The halfword stored at the main storage location indicated by the address field is shown		
		CHK-CTL	HARD STOP	A check stop takes place immediately when a machine check occurs	Logs are kept waiting
	I/O STOP		A check stop takes place immediately when a limited channel logout occurs		
	COMPATIBLE		A check stop takes place when a machine check interruption or a limited channel logout occurs		

Machine Status Display (continued)

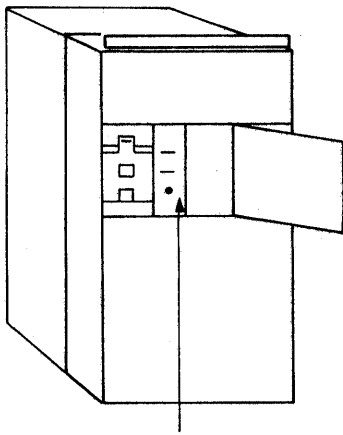
Line	Field	Legend	Meaning	Comments
16	LOG MESSAGES			A log message is shown every time a log is recorded. The log messages listed here are examples, and not the complete set
		3203 LOG	A printer error is being logged	
		2560 LOG	An error in the MFCM is being logged	
		IOP LOG	An IOP error is being logged	
		COUNTER SAVED	A usage counter for a disk drive is being recorded because you have performed the 'save usage counters' operation. The message appears for each counter	
		LOG OVERFLOW	The log area for a given device is full. The device, for example the 3340, is shown	Log information on the diskette has to be printed, then erased. Ask the CE for details of what to do for your system
		LOG WAITING	'Hard stop' is set and a log is waiting ('hard stop' prevents logging)	Press MODE SEL, and enter KN
		LOG PENDING, CHANGE DISKETTE	The diskette inserted in the console file has no space for logs	Insert the system diskette
	DAMAGE MESSAGES			These messages rarely appear and they usually require CE attention
		COMMUNICA- TION ERROR	There is a communication problem between the SVP and another subprocessor	Press CNCL
		LOG ERROR	An attempt to log an error was unsuccessful	
		33FD LOG ERROR	The log identifier could not be obtained from the diskette	
		LOG AREA DEFECTIVE	The diskette is partially defective	
		INVALID LOG CALL, IOP BUSY	There is a microprogram error in an IOP	
		MIP/IPU NOT STOPPED	The MIP/IPU did not stop as required	Press CNCL (this will usually overcome the problem)

Note: On the left-hand side of line 16 is an identification number (1DXXXX) that tells the CE which microprogram is running. The number changes automatically, and freezes when there is a malfunction.

Model 115 Procedures

Operator Console

Usage Meters

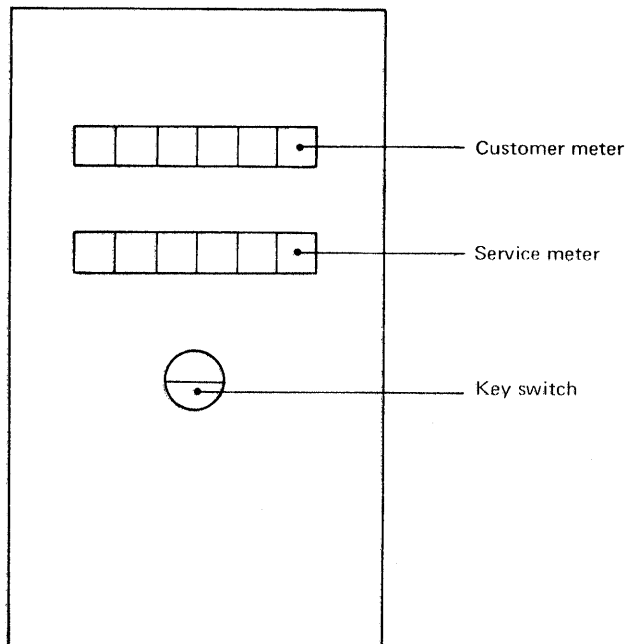


Usage meters

Usage Meters

Two direct reading usage meters record operating time. One meter records customer operating time and the other records service time. The position of the key switch determines which of the two meters is to record operating time. Your IBM service representative has the key for this switch. Whenever he is performing scheduled or unscheduled maintenance in the CPU, he sets the switch to cause the service meter to run.

The meters record CPU operating time. The meters run for manual store and display operations because these operations start the CPU clock.



Console File

The console loads microprogram or diagnostic programs into the system. It is also used by the system to store logs. The microprogram diagnostic programs and logs are stored on lightweight magnetic disk cartridges (diskettes).

There are three types of diskettes:

- The control diskette
- The diagnostic diskette
- The ASCP diskette.

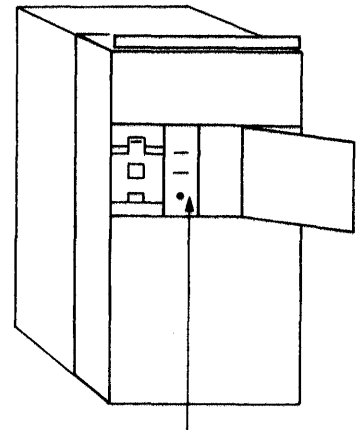
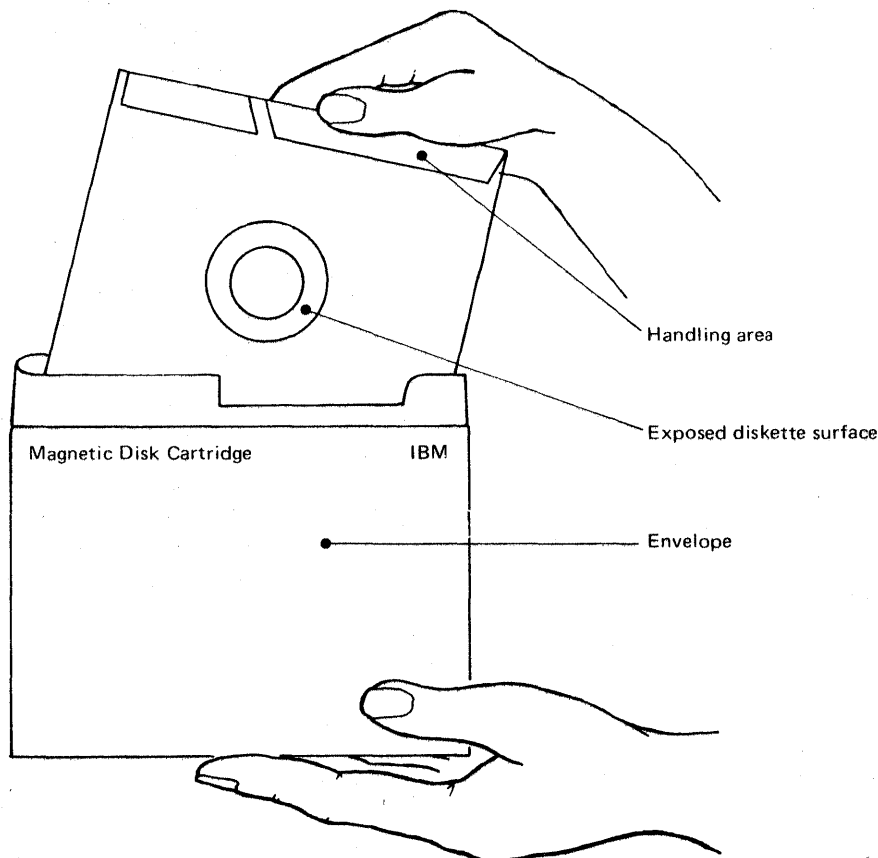
Magnetic Disk Cartridge

Because the magnetic disk cartridge (diskette) contains information that is vital to system operation, it must be properly safeguarded.

Avoid:

- Rough handling of the diskette. Never write on or mark the diskette.
- Localized pressure on any part of the diskette.
- Strong, direct sunlight on the diskette.
- Attempts to clean the diskette in any way.
- Exposure of the diskette to magnetic fields. Keep away from all metal objects.
- Touching of exposed diskette surfaces. Use the handling area.

If a magnetic disk cartridge is damaged, inform the CE.



Console file

The Control Diskette is used for normal operation

The Diagnostic Diskette is used for loading CE-tests

The ASCP diskette is used for loading the ASCP

OPERATOR ACTIONS

This chapter deals with actions that you have to perform, or might have to perform, to operate the System /370 Model 115.

This chapter contains:

Preparing the System

Deals with normal preparation of this system, such as switching on power and loading the initial program.

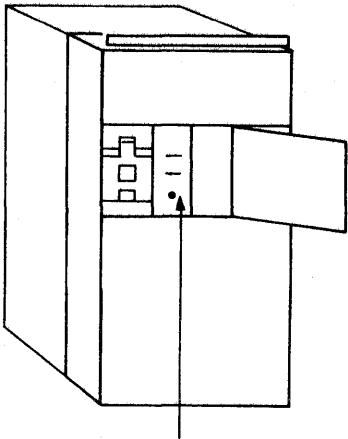
Handling Unexpected Situations

Deals with relatively unusual procedures, such as instruction stepping and fault recovery.

Model 115 Procedures

Operating Actions

Preparing the System



Console file

If a diskette has been exposed to temperatures outside the machine's environmental range, allow 5 minutes before use.

When receiving diskettes, check for carton and diskette damage. Save the carton for storing a diskette and for possible diskette shipment at some future date.

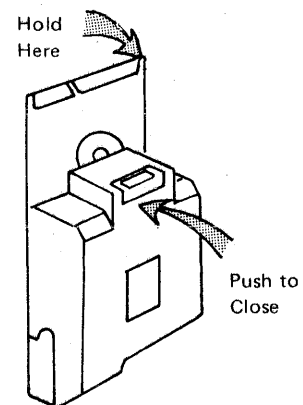
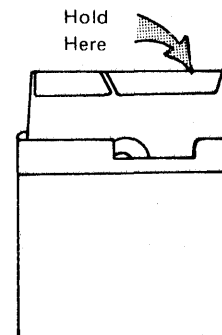
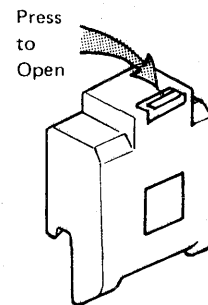
Preparing the System

CAUTION

Always check that the diskette is undamaged before you use it; if it is damaged, do not use it but inform the CE.

Inserting the Magnetic Disk Cartridge (Diskette) into the Console File

1. Open the Console File Door.
2. Open the mounting plate.
3. Remove the diskette from its envelope; grasp the cartridge by the white label and remove.
4. Insert the diskette by lowering it squarely until it is stopped by the locating surfaces.
5. Close mounting plate carefully. The centering cone must slide freely into the center of the diskette. If not, check that the diskette is seated against the locating surfaces and that the diskette is undamaged.
6. Return the empty diskette envelope to a clean storage area.

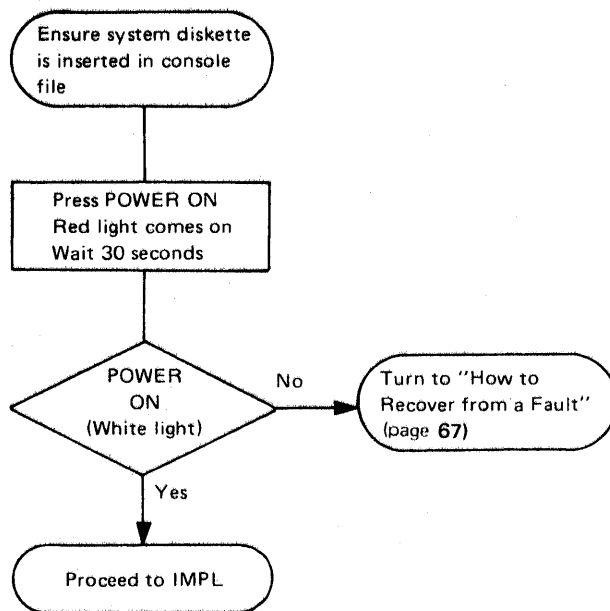


Switching Power On/Off

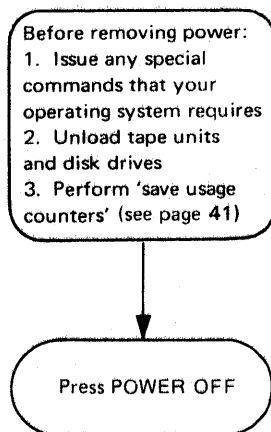
DANGER

Before switching on power, ensure that no person is exposed to risk and that all equipment covers are shut.

Switching Power On



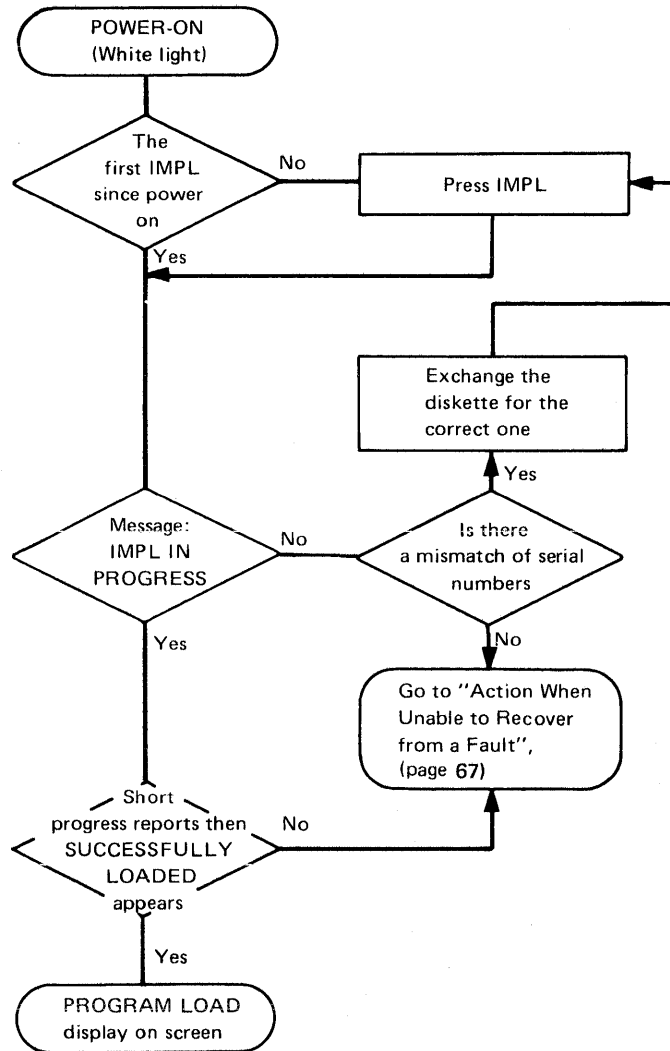
Switching Power Off



The power on key turns from white to red, and then goes out. If the TH or PWR light is on, press POWER CHECK RESET

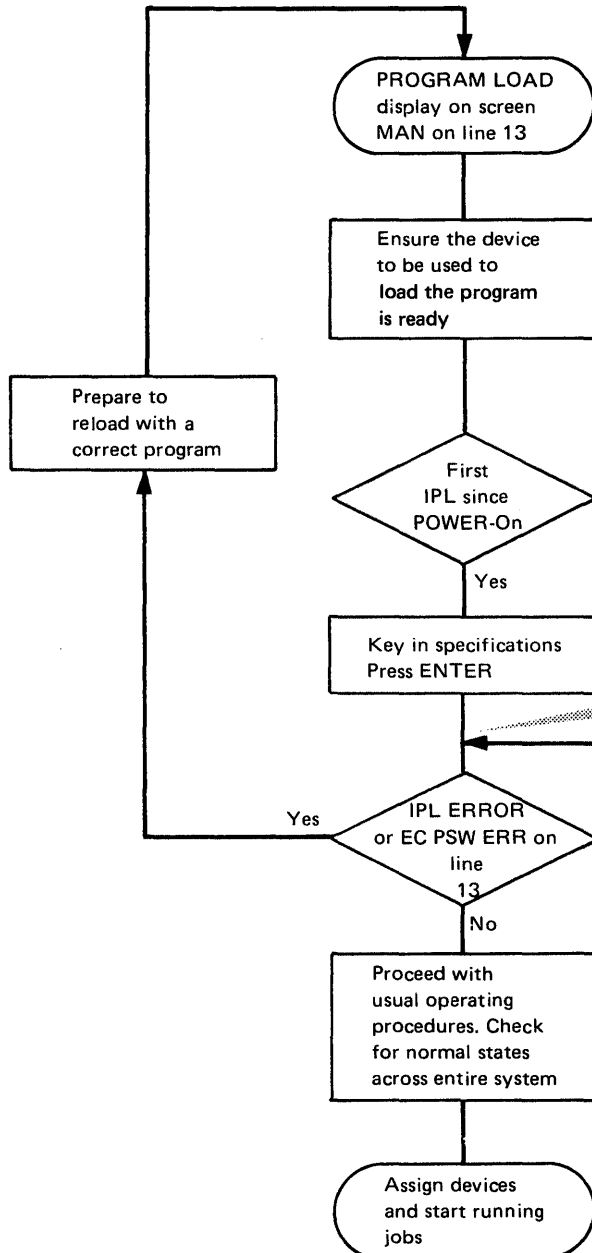
Loading the Microprogram (IMPL)

- The microprogram controls CPU operations and must be loaded into control storage before any other program can be loaded.
- The microprogram is recorded on the control diskette.



Initial Program Loading (IPL)

- The initial program loading (IPL) procedure causes the operating system to be loaded.
- The IPL procedure can also be used for loading stand-alone programs.



If this is not the first IPL since power-on, you get the program load display by:

- Pressing MODE SEL
- Keying in L
- Pressing ENTER

The specifications from the last IPL appear in the display
 A description of entries into the IPL display are given on page 25

If the specifications are to remain the same; if not, key in new specifications and press ENTER

LOAD appears on line 13 from the moment ENTER is pressed, until a valid PSW is loaded

In the case of an unusual situation such as SVP light on, or CHECK-STOP on line 13 turn to 'Action When Unable to Recover from a Fault' (page 67)

- If IPL is repeated and is unsuccessful, press CNCL to allow for logging
- If continuous logging occurs, repeat IMPL and continue. If the problem occurs again, call the CE

Operating Actions
Preparing the System

Checking Out the System Using ASCP

A line printer is the most suitable output device

- The Automatic System Checkout Program (ASCP) tests and reports on the condition of the CPU and I/O devices as a system. During testing, the system is kept on the threshold of overrun.
- Each device that is ready before the ASCP program is run is automatically recognised and tested.
- No other programs can be run when the ASCP is in use.
- The ASCP program is provided on the ASCP diskette.

CAUTION

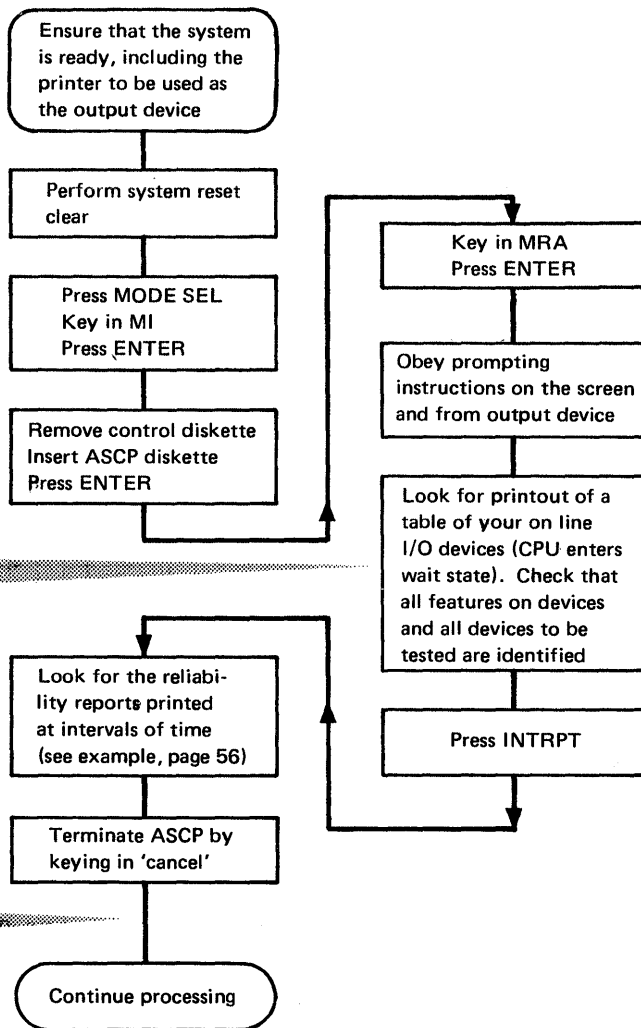
The ASCP can destroy data. To prevent loss of data when running ASCP, mount scratch tapes and scratch disks.

If 3410/3411 is to be tested, make this device ready before loading with the ASCP diskette

Example of printout on page 55

Keep a copy of the printout for the CE

It is not necessary to reload the microprogram when the ASCP run is completed. You can continue with IPL as long as the system does not require immediate maintenance



Checking Out the System Using ASCP (continued)

Example of printout of on-line I/O devices (unit availability table).

UNIT AVAILABILITY TABLE						
UNIT	UNIT	ADDRESS	TEST			
TYPE	CLASS	CUU	LEVEL	FEATURES		
5425	RD	00000D	0			
3203	PR	00000E	0	NAT. ATT. UCS XX 132 POS		
3340	DS	000130	0	CE PACK		
3411	TP	000205	0	9 TRK, DUAL DENSITY		
CONFIGURATION COMPLETE						
TO PROCEED PRESS INTERRUPT OR TYPE GO						

Notes on Unit Availability Table Example: The unit class abbreviations shown in the table have the following meanings—

- RD = Card Reader
- PR = Line Printer
- DS = Disk Storage
- TP = Tape Unit.

The assigned test level determines the type of test to be carried out on the device.

Checking Out the System Using ASCP (continued)

Reliability Report Example

REPORT 05 — Number of reports since test began.
 0003 MIN, 30 SEC. — Elapsed time since latest report was given.

```

A REPORT 05 0003 MIN, 30 SEC
=====
      BLOCKS OPERATED FAILED
      I/O      000899 000034
      CPU
B FIXED PT 000173 000000
      FLOAT PT 000152 000000
      DECIMAL 000189 000000
=====
      I/O UNITS   BLOCKS   ACUM NOT
C ADDRESS CLAS OPER FAIL STAT RDY RDY
      00000C RD  0148 0017 0E00  X   *UNIT ERROR*
      000130 DS  0236 0000
    
```

Note: This line indicates the failing device. The information on this line should be given to the dispatcher when calling for service

ADDRESS	Unit address of the device
CLAS	Denotes the class of the unit (TP=Tape)
OPER	Indicates the number of I/O blocks run by this unit
FAIL	Number of failures for the unit
ACUM STAT	Total status accumulated by the unit since the last report
NOT RDY	Indicates a change of unit status to not ready
RDY	Indicates a change of unit status to ready
CHAN ERROR	Error against the channel
C U ERROR	Error against the control unit
UNIT ERROR	Error against the unit

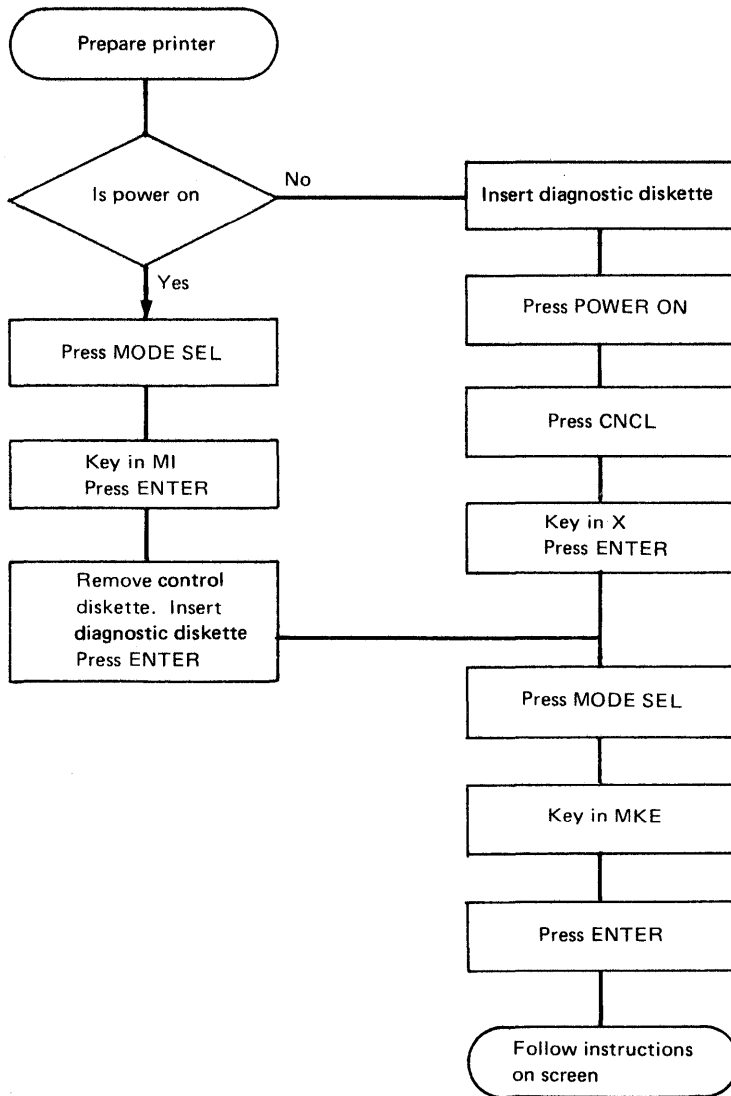
A Section shows total number of I/O blocks that have been operated since the latest report was given. Also given is number of blocks in this total that failed.

B Section shows number of operations and failures against each class of CPU test.

C Section shows information about the I/O units (see chart).

Cleaning the Print Train/Chain on the Line Printer

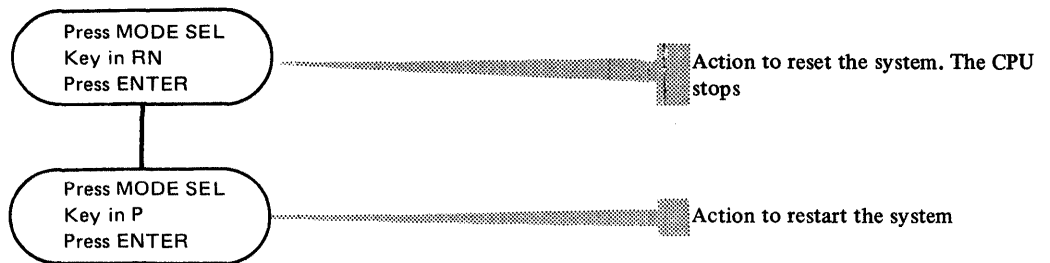
The print train/chain on the 3203 or 5203 printer can be cleaned by using a program located on the diagnostic diskette. While the program is running, instructions for the operator appear on the screen. The printer prints 12 times on the same line and then makes a single space. This is done thirty times.



Handling Unexpected Situations

Resetting the System – Normal Reset (Program Reset)

The normal reset, also called the 'program reset' does not affect the values of the:



Note: The difference between a normal system reset and a normal load is that

- A. The CPU timer and clock comparator are:
 - Both set to zero in a normal load
 - Both remain unchanged in a normal system reset.
- B. The control registers are:
 - Initialized in a normal load
 - Unchanged in a system reset.

- Perform normal system reset before displaying or dumping the 2314 buffers
- System reset does not turn off the following modes:
 - Instruction step
 - Check control
 - Address compare
 - 1403/3203 carriage control
- If SYSTEM RESET CHECK appears, call the CE.

Operator Actions

Handling Unexpected Situations

Resetting the System – Clear Reset

The reset action caused by CLEAR is the same as occurs during power-on except that the TOD clock remains unchanged

When the specifications are not the same as for the previous load, see the IPL description (page 25)

- System reset does not turn off the following modes:
 - Instruction step
 - Address compare
 - Check control
 - 1403/3203 carriage control
- If SYSTEM RESET CHECK appears, call the CE

Clear reset is normally used only by the CE, but may be used by the operator if a machine error is suspected.

A clear reset clears to zero the values of the:

- Current PSW
- CPU timer
- Clock comparator
- General registers
- Floating point registers
- Main storage
- Keys in main storage.

- Initializes the control registers
- Resets the channels and the CPU
- Wipes out any 2314 buffers that have been assigned.

Press MODE SEL
Key in RC
Press ENTER

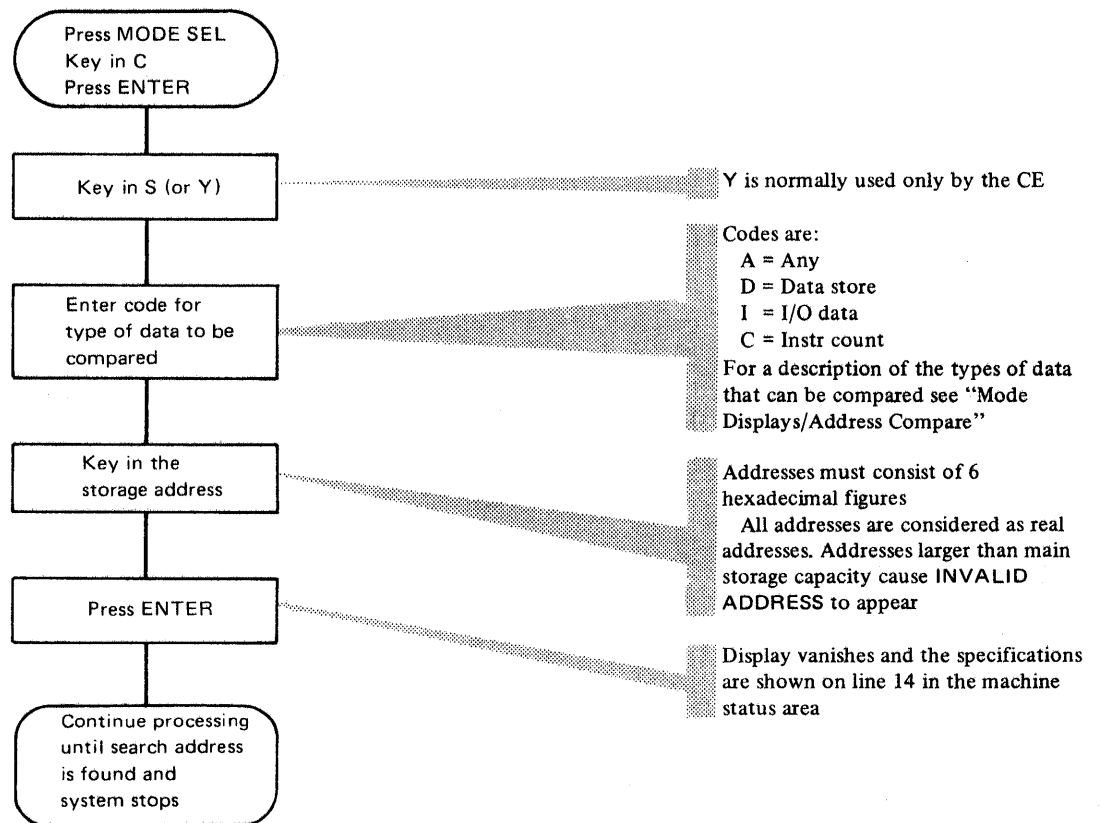
Note: *System reset also occurs as part of IPL.*

Comparing Addresses

- Use the address comparison procedure when instructed by the programmer. In this procedure, the CPU: (1) compares main storage addresses with an address that you specify, (2) achieves a successful match when these addresses are equal and certain prerequisite conditions are satisfied, and (3) completes the current instruction, then stops.

- Address compare mode can be turned off only by pressing MODE SEL and entering CP or by pressing POWER OFF

Setting Address Compare Mode



Model 115 Procedures

Operator Actions

Handling Unexpected Situations

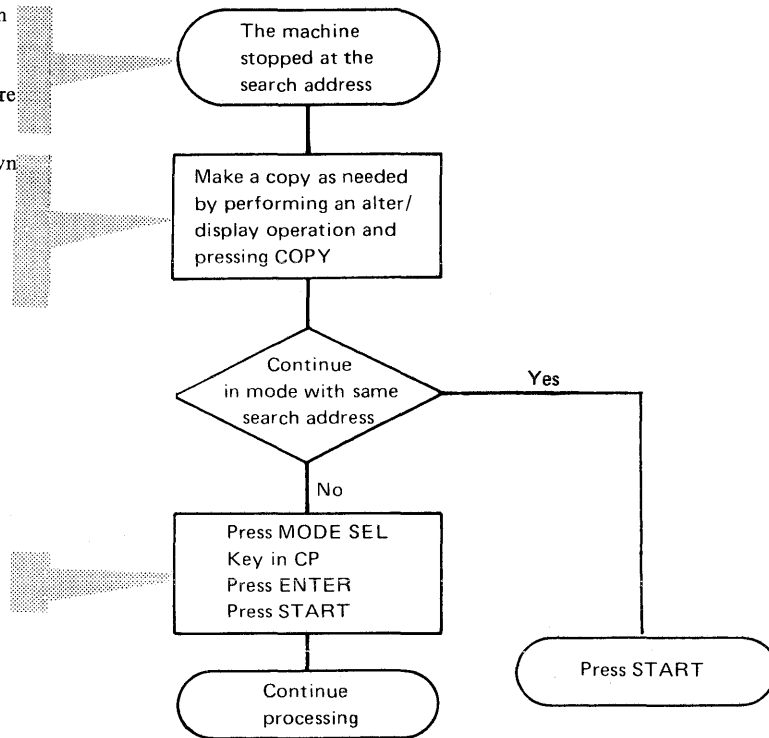
Comparing Addresses (continued)

Cancelling Address Compare Mode

- The last operating message stays on the screen
- MAN appears
- The addresses on lines 14 and 15 are the identical

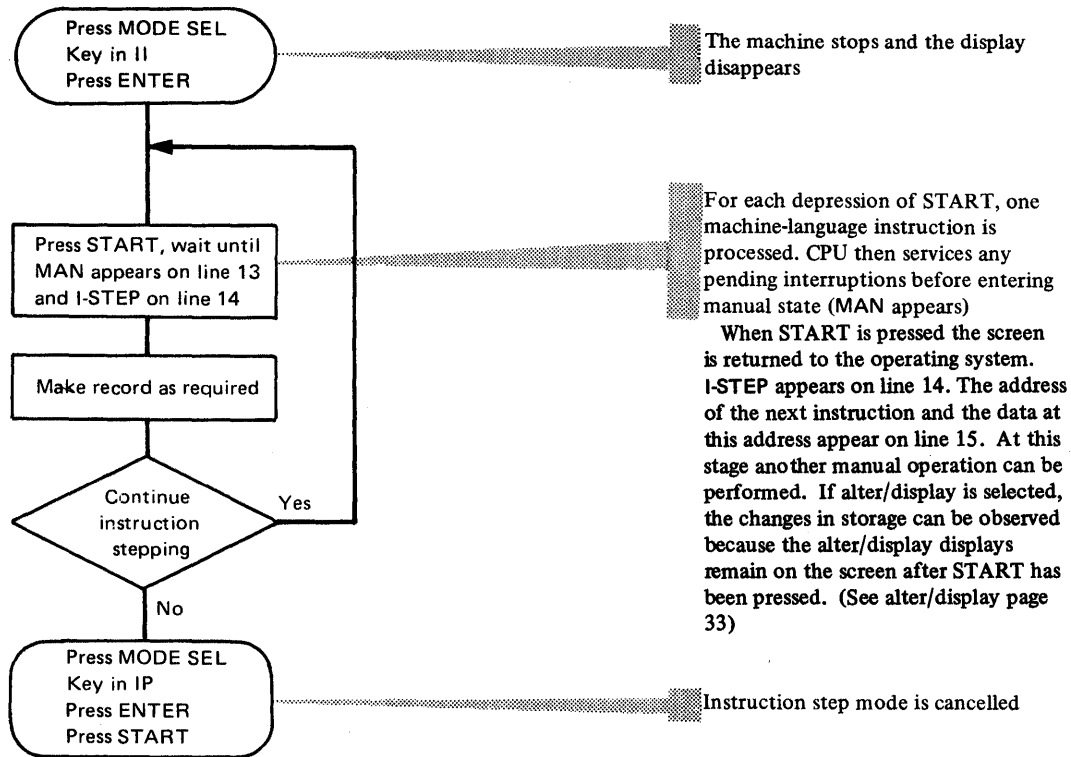
The data at the search address is shown on line 14, but because the machine status area cannot be copied by pressing COPY, an alter/display operation has to be performed (see page 33)

Stop on Address Compare mode is cancelled



Instruction Stepping

- Use instruction stepping, when required by the programmer, to assist program debugging or to outline an unintentional loop in a program.
Looping is usually exhibited by the SYS indicator being on continually and the apparent lack of I/O activity.



Model 115 Procedures

Operator Actions

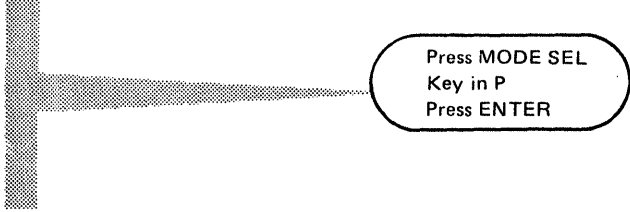
Handling Unexpected Situations

Restarting

- Use the restarting procedure for those stand-alone programs that require it. Refer to the operating instruction for these programs.
- Restart is not effective if the machine is in the check-stop state, and if restart is attempted, the mode select picture remains on the screen.

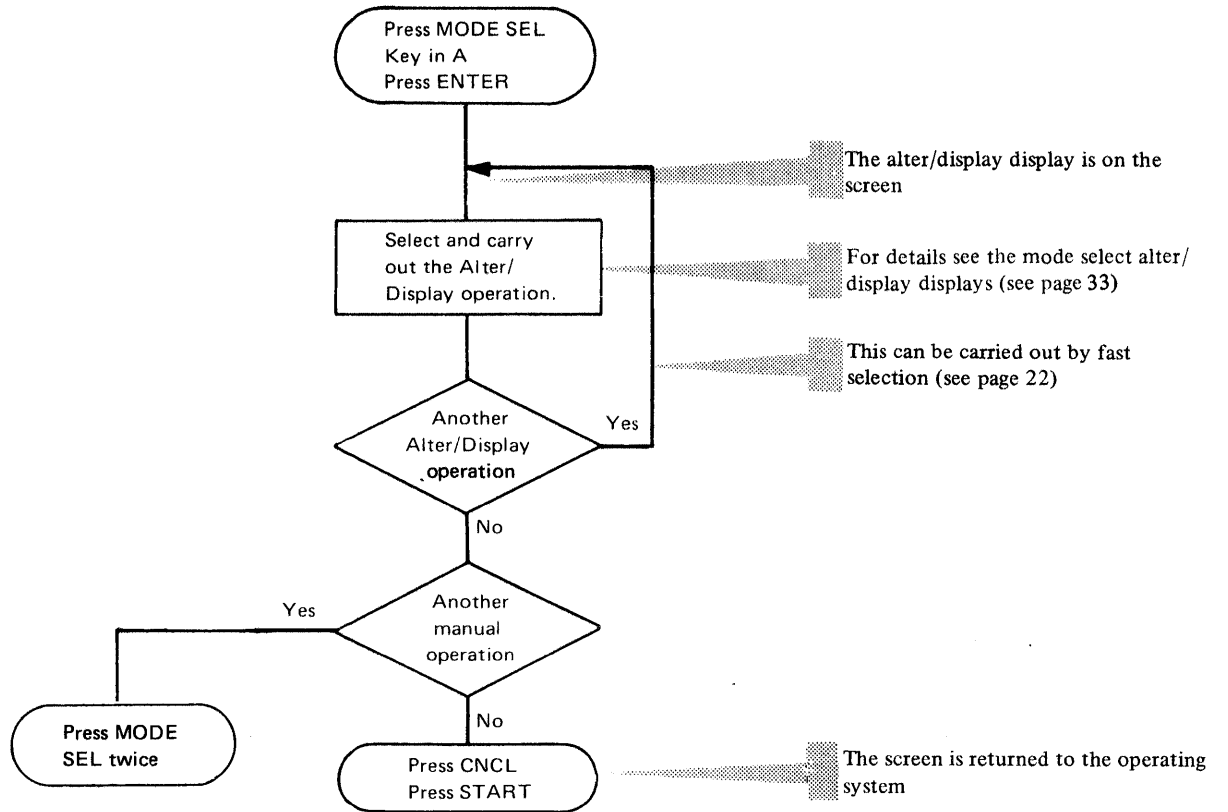
Current PSW is replaced by PSW from main storage location zero. A change from the stopped to the operating state occurs. Instruction processing begins under control of the now-current PSW

The display is returned to the operating system



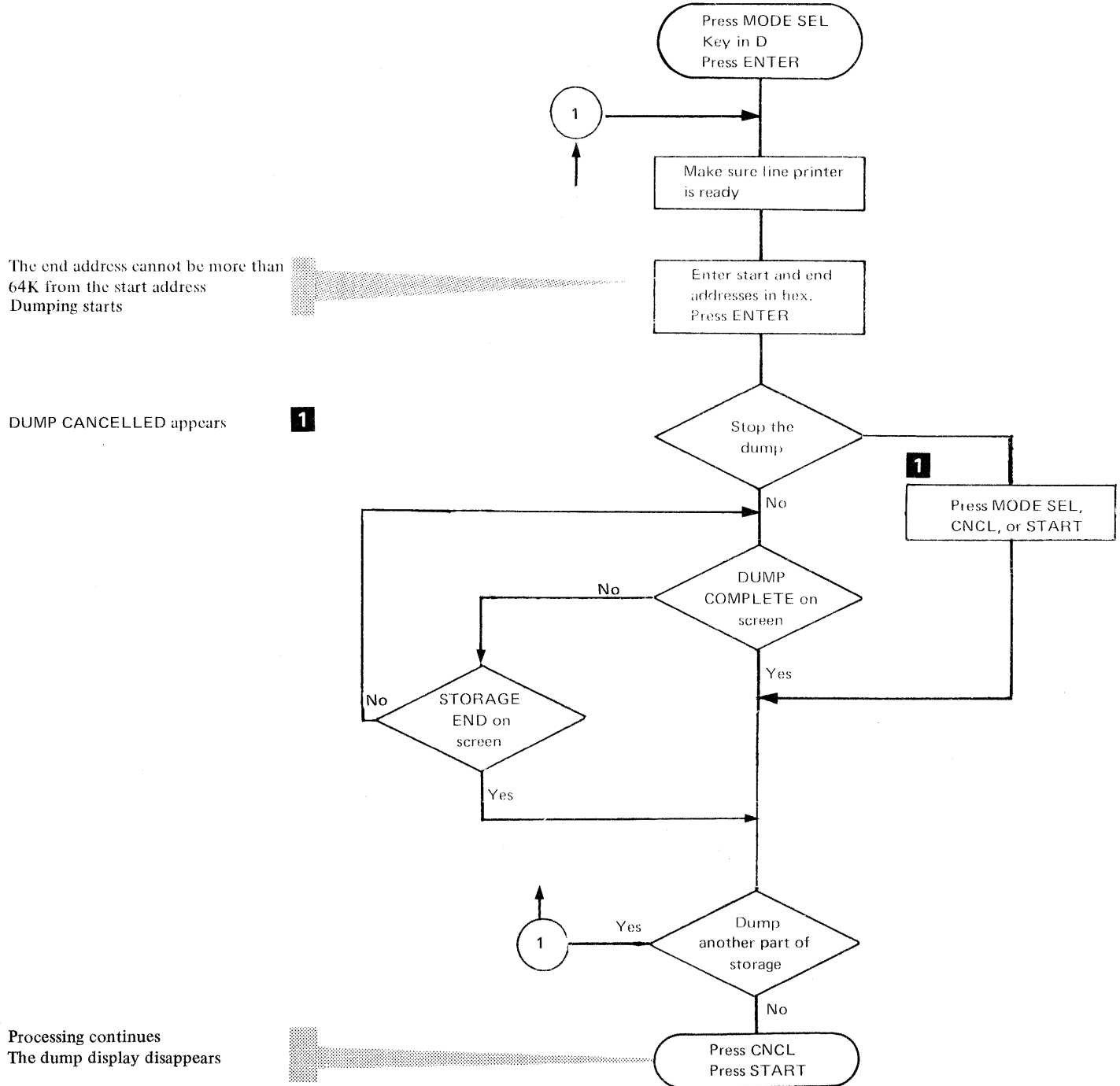
Press MODE SEL
Key in P
Press ENTER

Altering and Displaying



Model 115 Procedures
 Operator Actions
 Handling Unexpected Situations

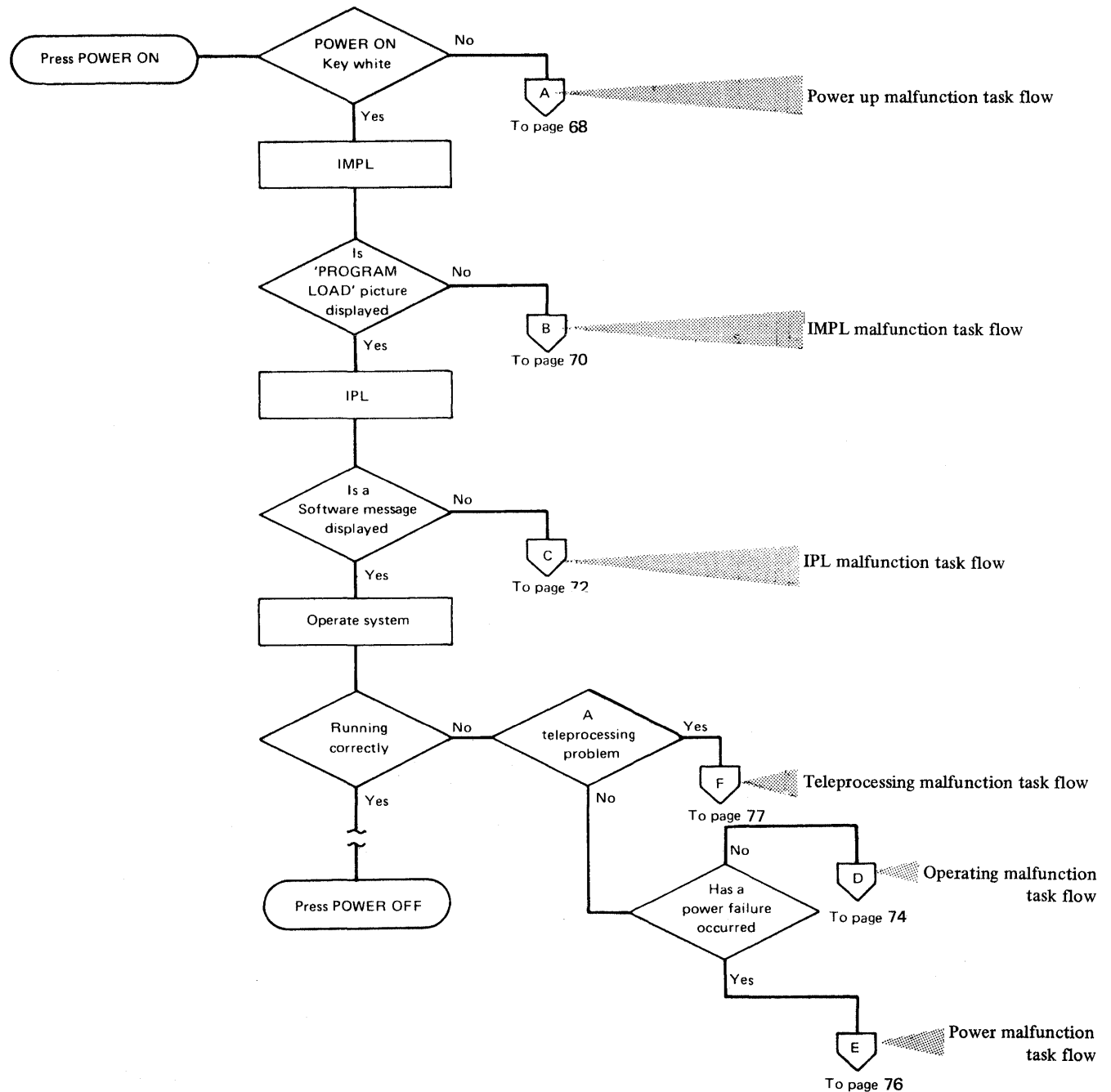
Dumping Main Storage



Action when Unable to Recover from a Fault

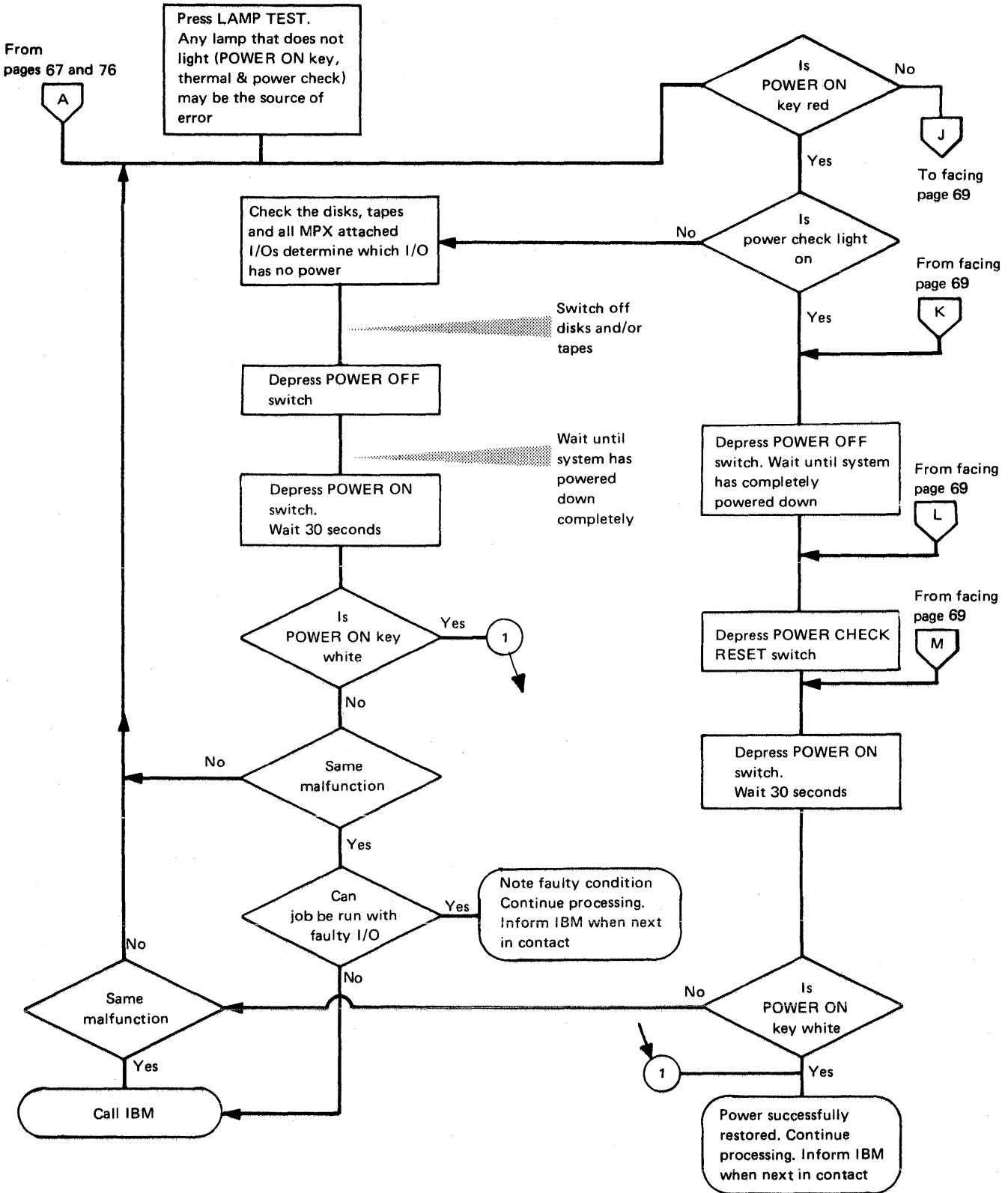
You can reduce your system down time by accurately communicating certain key information when calling for service. This key information facilitates despatch of the correct CE, when necessary, and the CE can provide the required spares.

When you are unable to recover from a fault, gather the key information you need by carefully following the procedure given below.

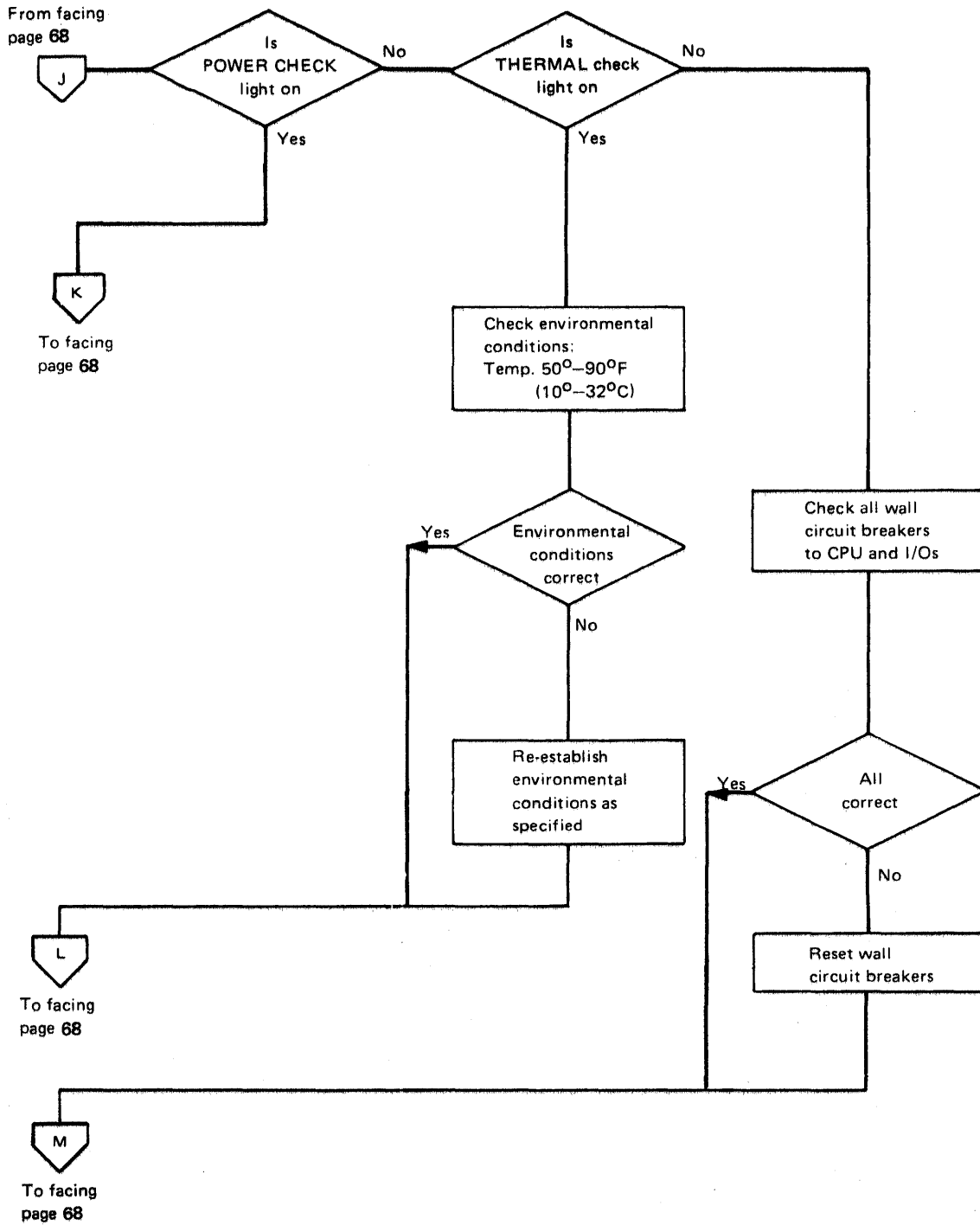


Model 115 Procedures
Operator Actions
Unable to Recover from a Fault

Power Up Malfunction Task Flow



Power Up Malfunction Task Flow (continued)

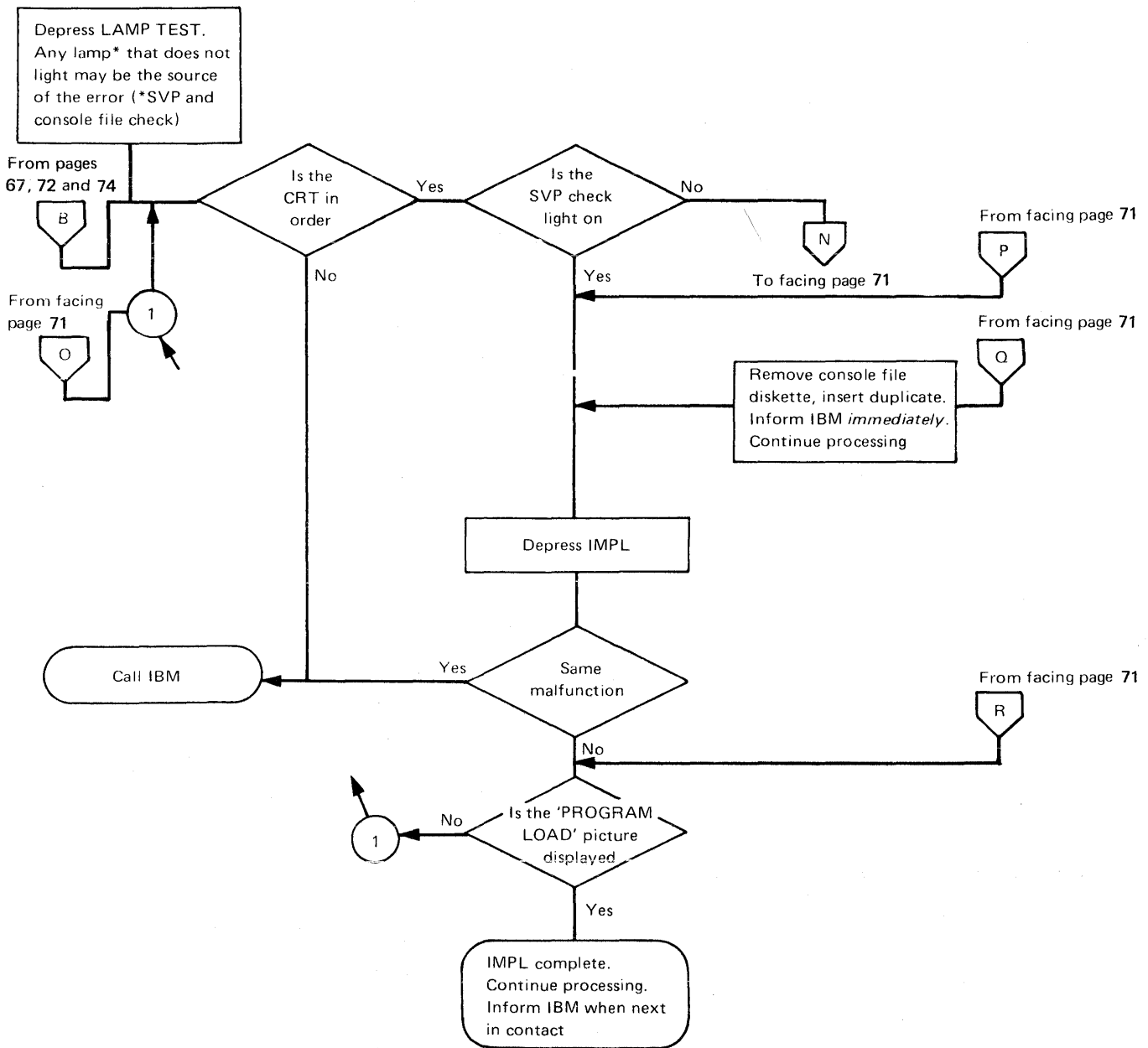


Model 115 Procedures

Operator Actions

Unable to Recover from a Fault

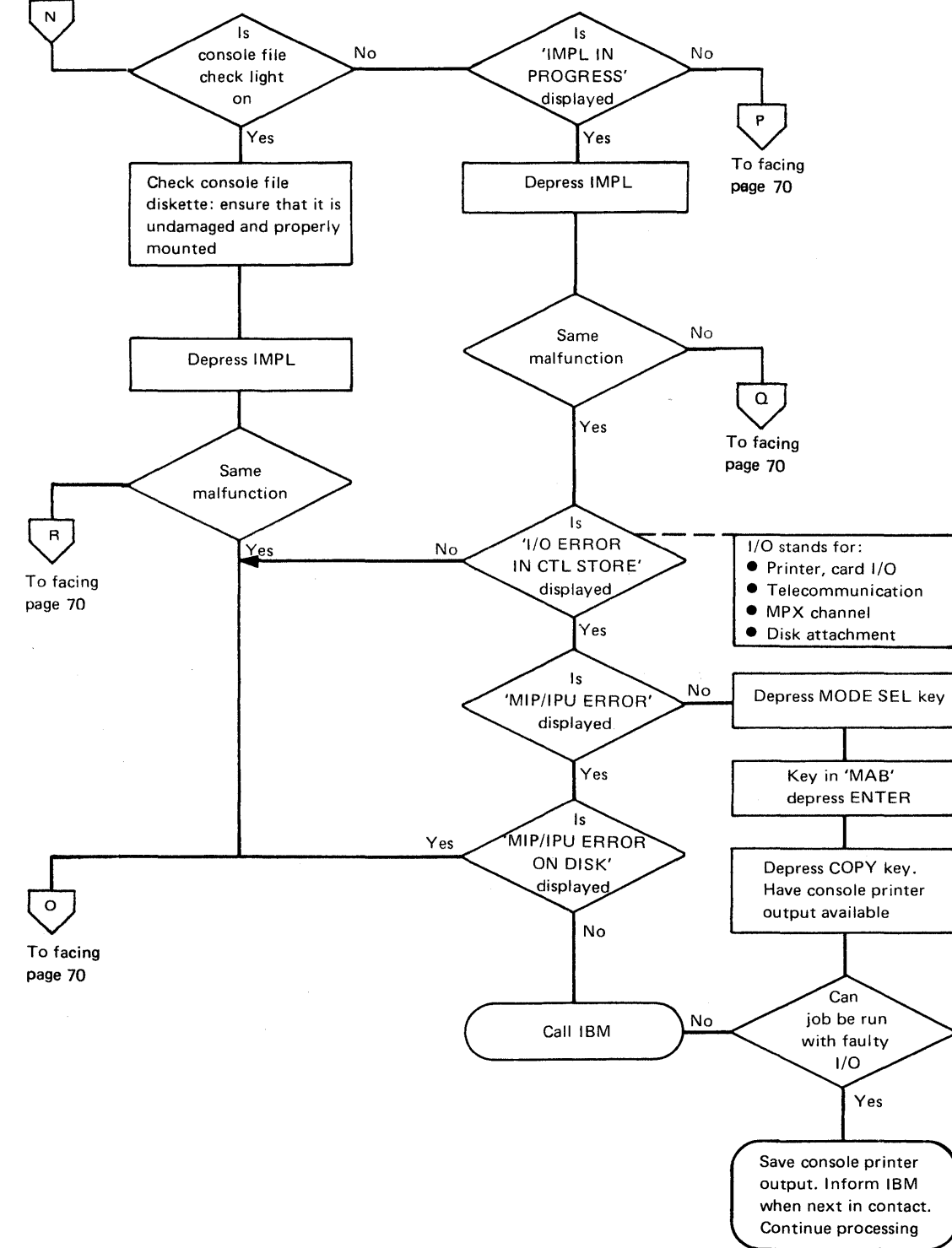
IMPL Malfunction Task Flow



Model 115 Procedures
Operator Actions
Unable to Recover from a Fault

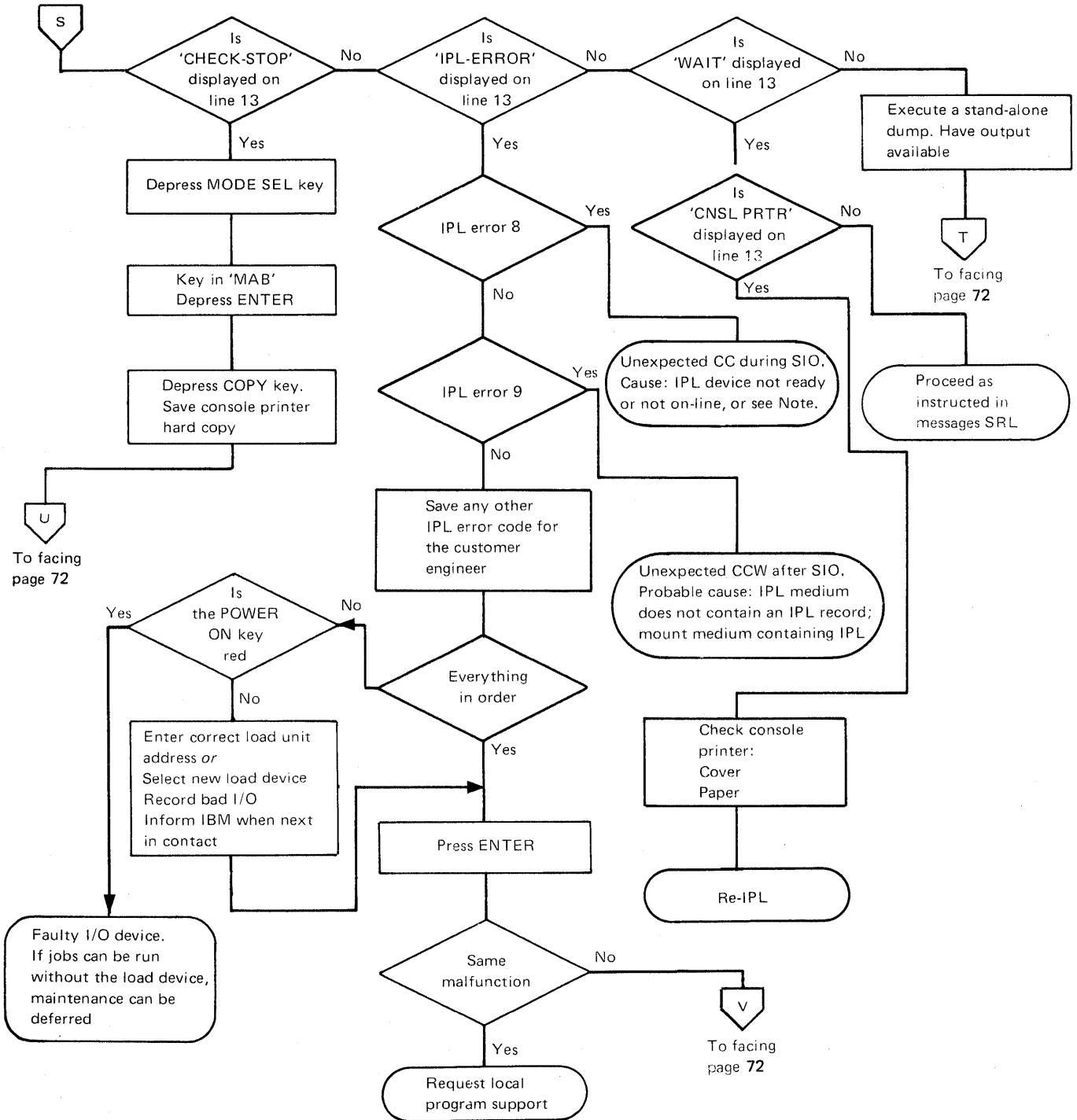
IMPL Malfunction Task Flow (continued)

From facing page 70



IPL Malfunction Task Flow (continued)

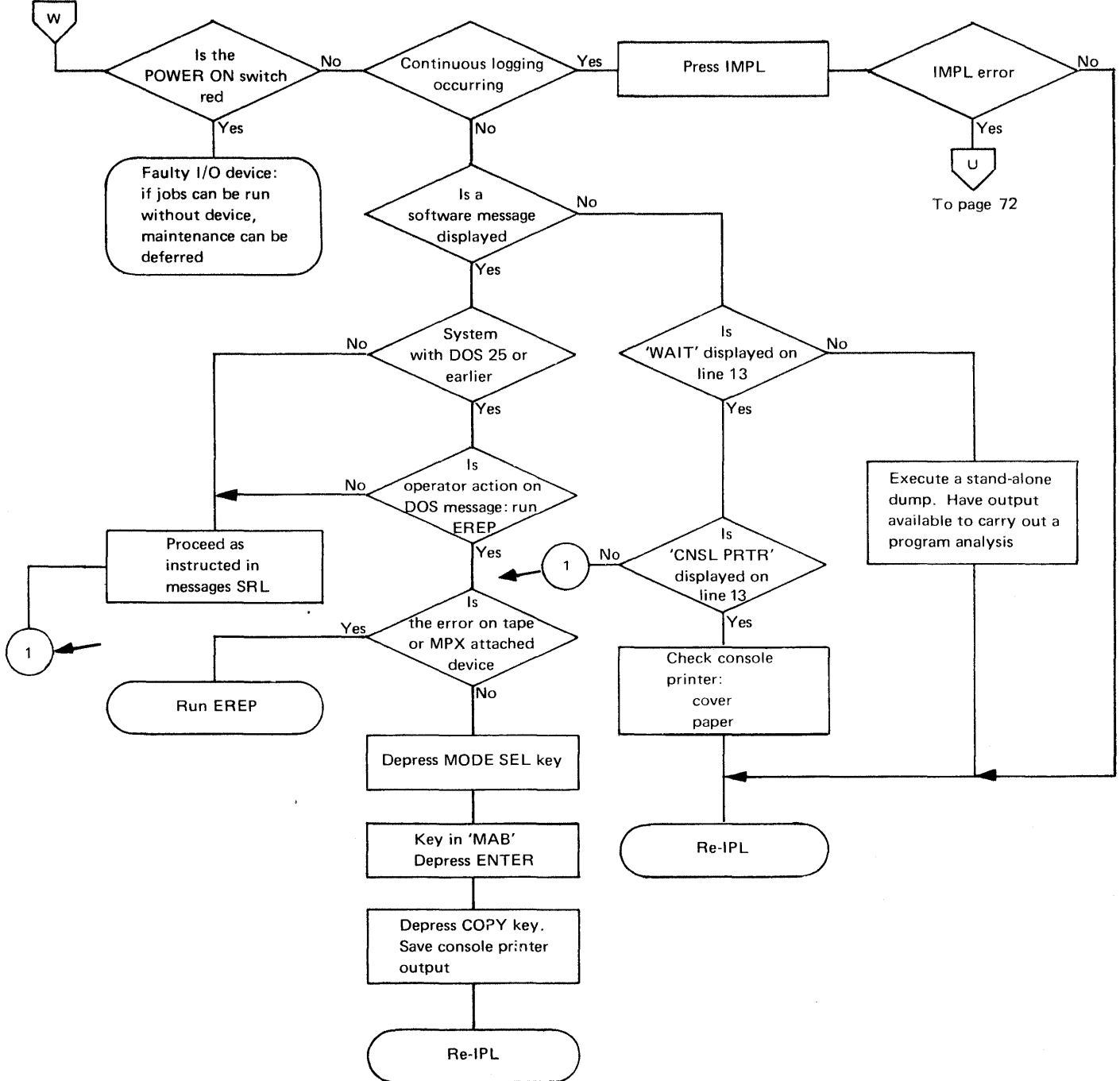
From facing page 72



Note: If the 3340 has the string-switch feature installed, IPL error 8 may also be caused by a pending Disk Ready Interrupt on the other CPU sharing the same 3340 string. This interrupt occurs if the other CPU is also a 3115-2 or 3125-2, and if the load picture or the maintenance picture is on the screen. In this case CANCEL should be pressed on the CPU sharing the string and then IPL retried on the CPU being used.

Operating Malfunction Task Flow (continued)

From facing page 74



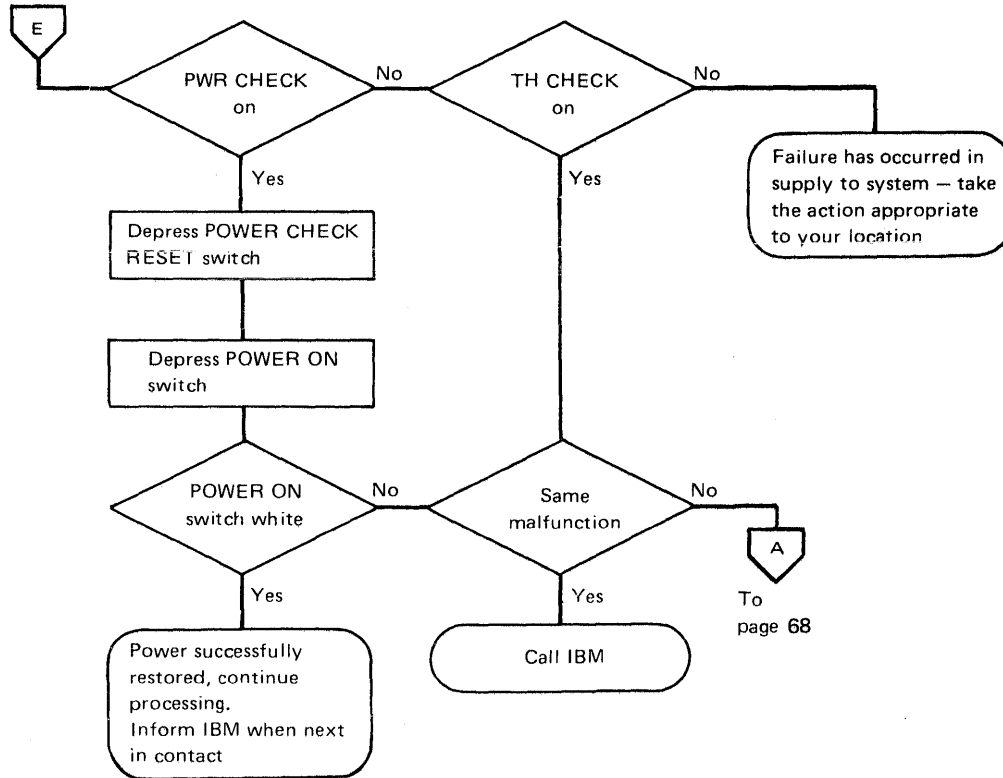
Model 115 Procedures

Operator Actions

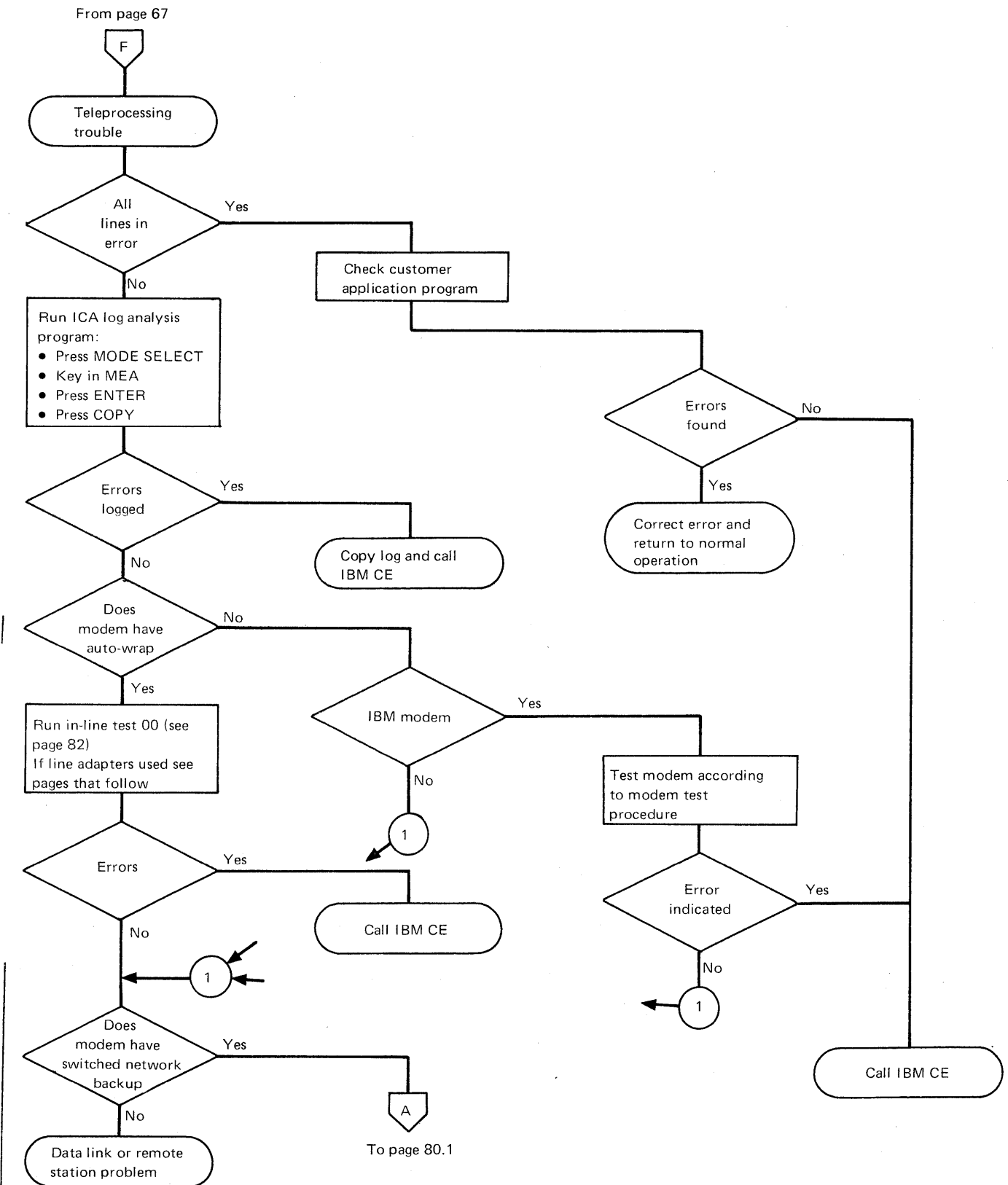
Unable to Recover from a Fault

Power Malfunction Task Flow

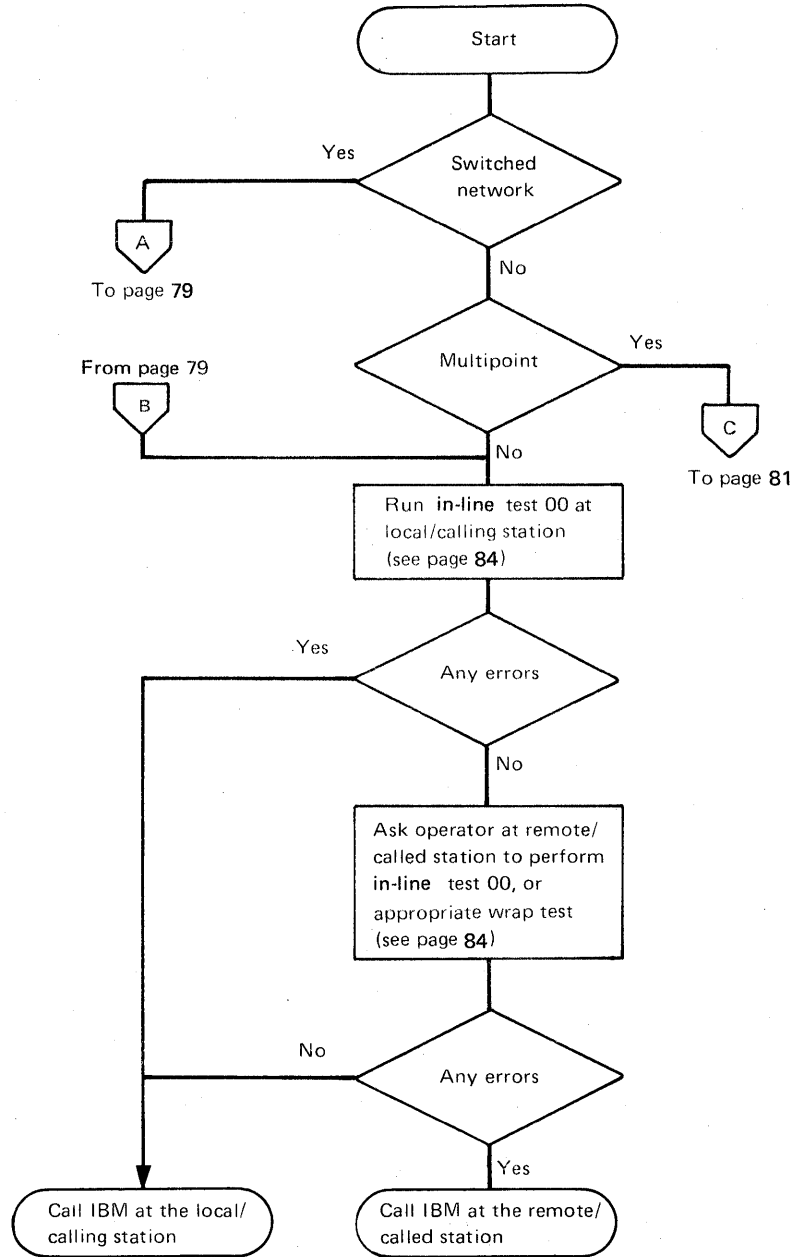
From page 67



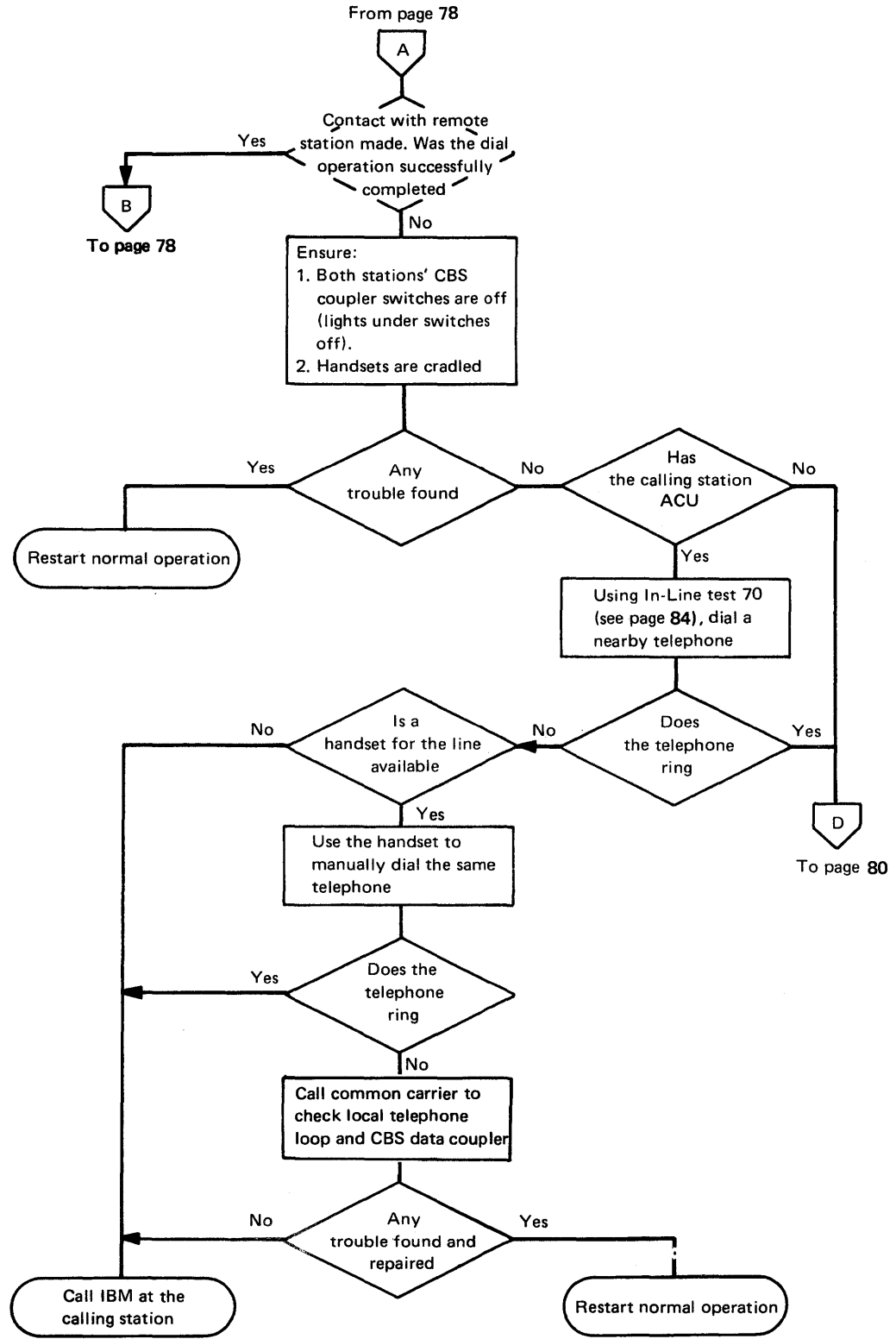
Teleprocessing Malfunction Task Flow



Teleprocessing Line Adapter Malfunction Task Flow

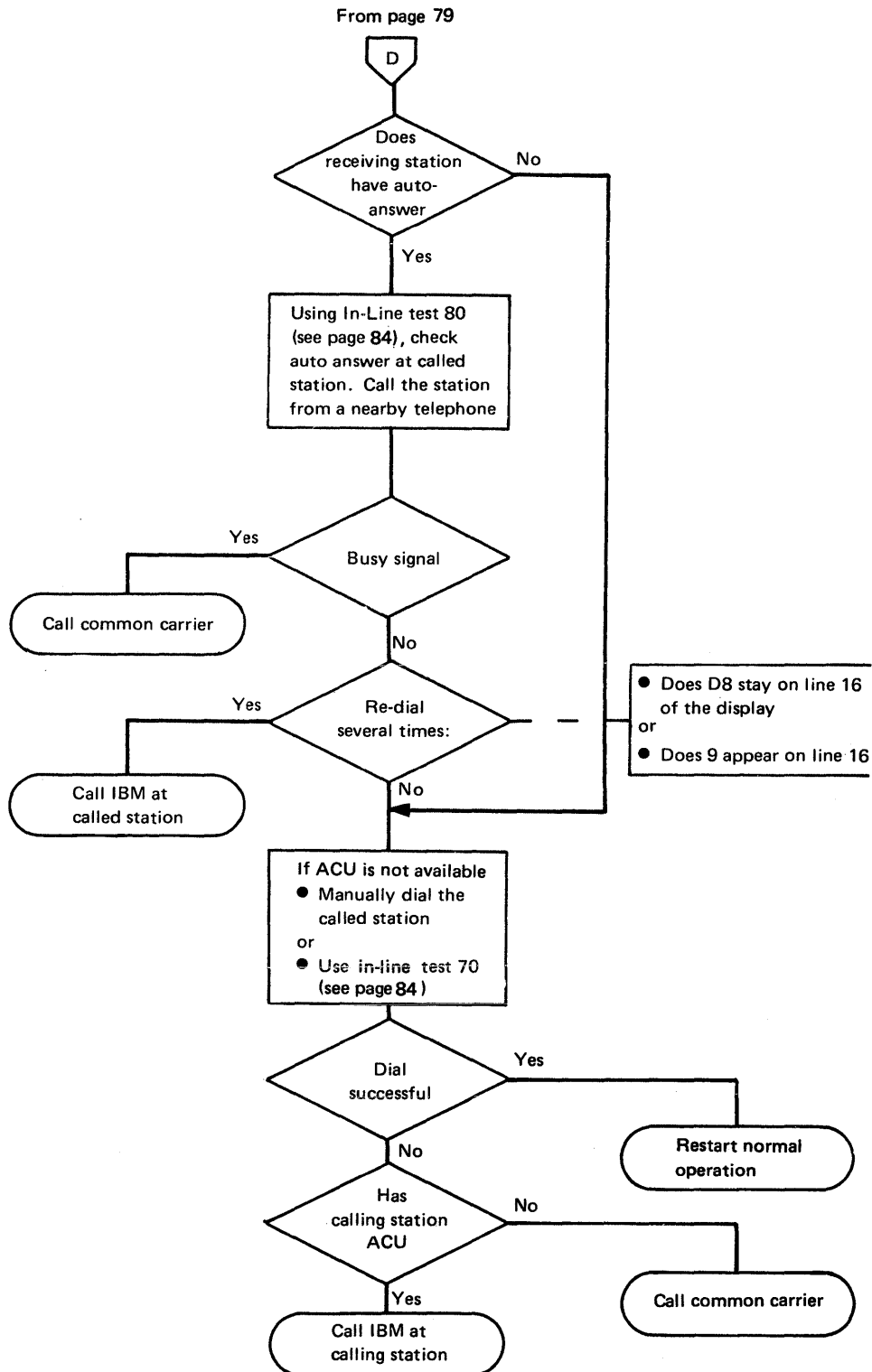


Teleprocessing Switched Network Malfunction Task Flow



Model 115 Procedures
Operator Actions
Unable to Recover from a Fault

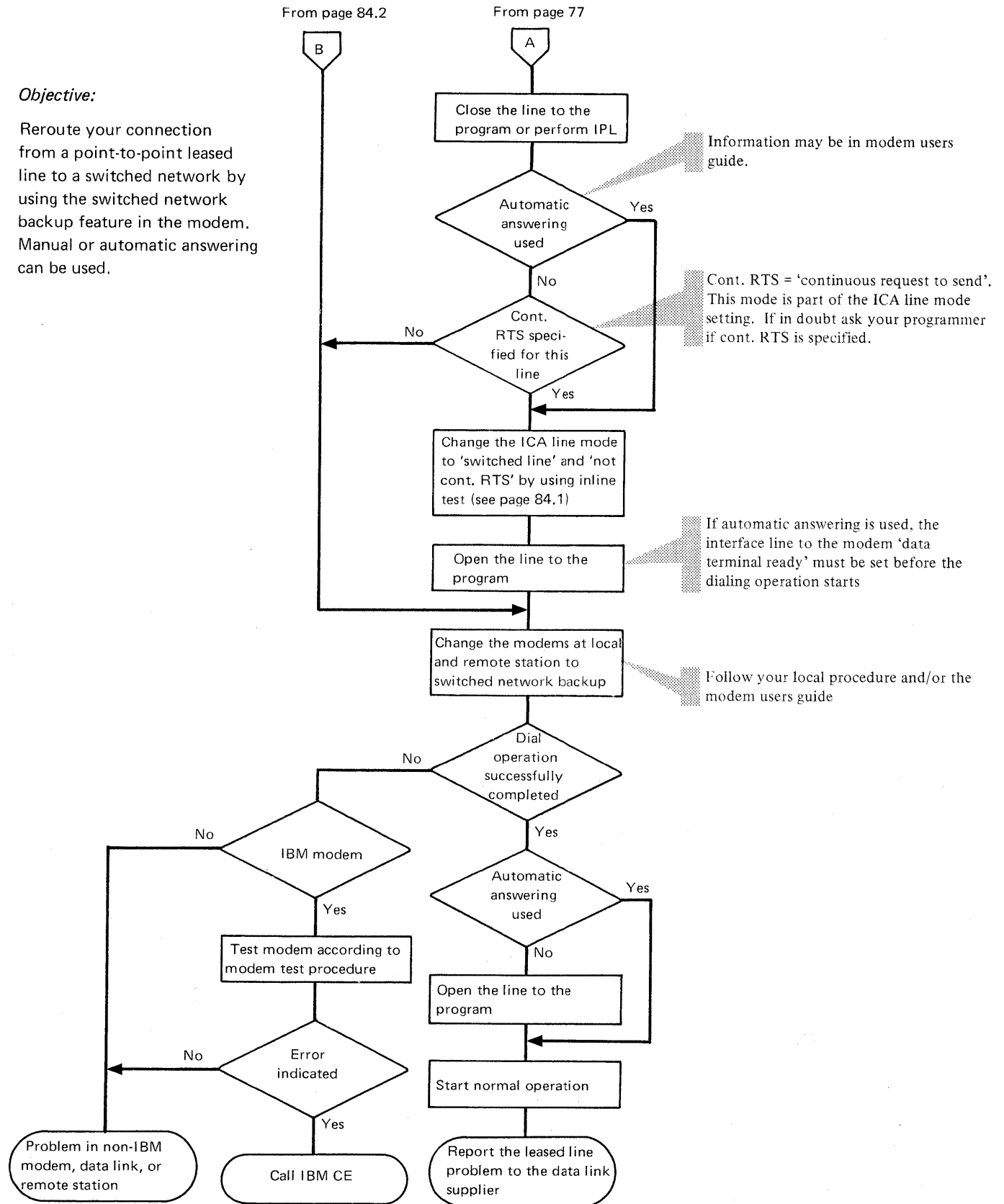
Teleprocessing Switched Network Malfunction Task Flow (continued)



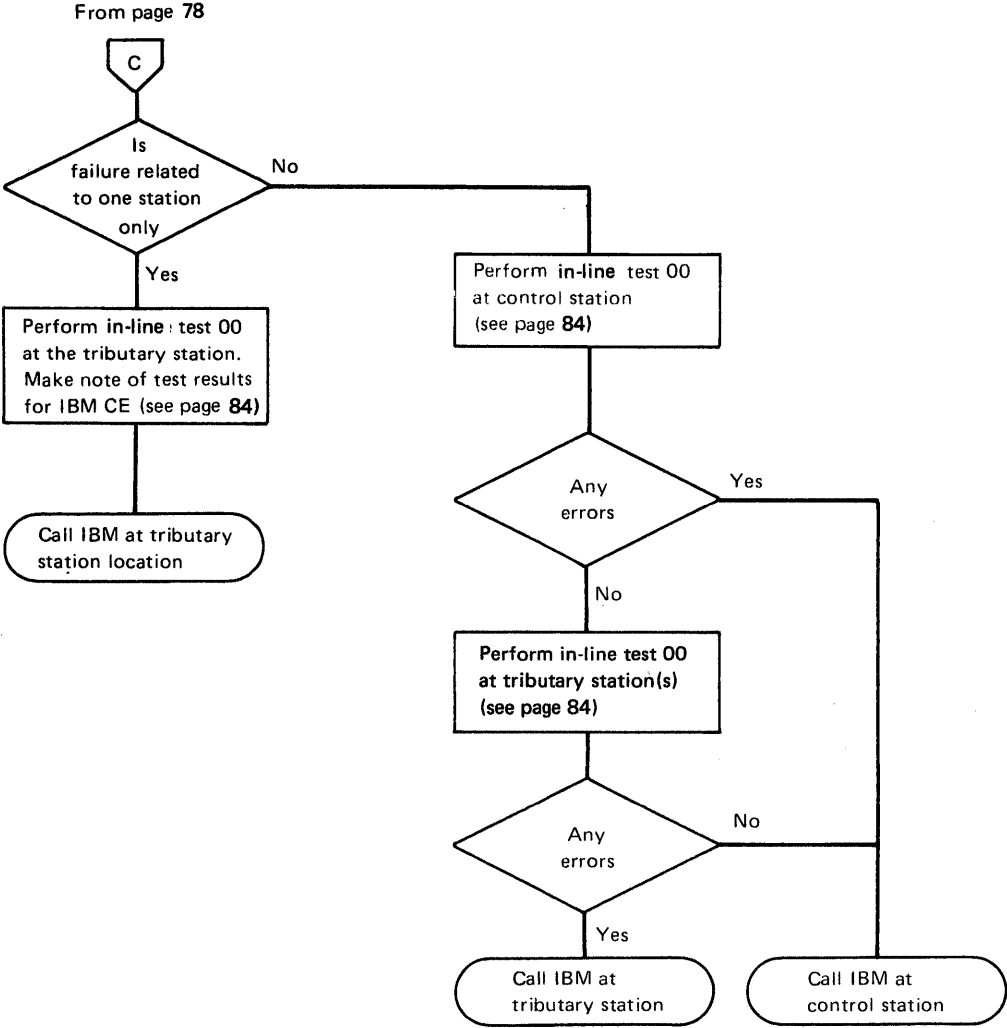
Teleprocessing Switched Network Backup Task Flow

Objective:

Reroute your connection from a point-to-point leased line to a switched network by using the switched network backup feature in the modem. Manual or automatic answering can be used.



Teleprocessing Multipoint Malfunction Task Flow



Operator Actions

Unable to Recover from a Fault

ICA In-Line Tests

ICA INLINE TEST AND CONTROL

<p>00=WRAP LINE 10=DEACTIVATE LINE *20=SEND MARK *30=MONITOR MARK 40=ACTIVATE LINE *50=SEL NORM SPEED *51=SEL HALF SPEED (*XX+BSC ONLY)</p>	<p>60=ENABLE LINE *70=DIAL TEST *71=DIAL + SEND MARK *72=DIAL + STAY ENABLED *80=AUTO ANSWER TEST *81=ANSWER + MON MARK *82=ANSWER + STAY ENABL 90=XMIT CHARACTERS</p>	<p>MODES: S=START TEST L=LOOP TEST P=STOP TEST</p>
---	--	---

ENTER TEST: I?

The ILT key must be pressed each time an ICA in-line test or control procedure is performed.

Pressing the ILT key causes the 'in-line tests' display to appear.

Note: *Operating system messages are stored while the ILT displays are on the screen. The messages re-appear when ENTER is pressed.*

To select an in-line test or control procedure:

1. Key in I?
- The display above appears.
2. Key in the test number.
3. Key in the selector character for the mode.

The modes:

S = START TEST. The test is started and run once.

L = LOOP TEST. This mode is used by the CE only.

P = STOP TEST. This mode is used by the CE only.

4. Select the required line. Lines 20–2F are asynchronous. Lines 30–34, are BSC lines.

Note: *Only the dial test (70) requires a data entry, otherwise press ENTER.*

5. Data has to be specified for the dial test. The data format for this depends upon:

- a. Characters 0–1: The number (in hexadecimal) of the digits to be dialled.
 - b. Characters 2–16: The digits to be dialled.
6. Press ENTER. Except in the case of dial test (70) ENTER can be pressed after step 4.

The test will now run, and the screen is returned to the operating system.

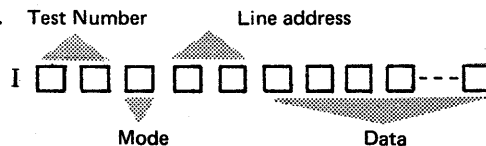
Customer programs can now be run. TEST appears on line 13 of the screen until the test is completed.

Fast Selection. A method of fast selection can be used to carry out an in-line test or control procedure.

1. Press ILT.

2. Key in

3. Press ENTER.



The ILT key and display are described on page 16

Example:

The last line of the display

ENTER TEST: I?

becomes

ENTER MODE: 100

The last line

ENTER MODE: 100

becomes

ENTER LINE 100S

The last line

ENTER LINE: 100S

becomes

ALTER DATA: 100S30

Example:

ALTER DATA: I70S30041234

The number has 4 digits

The number to be dialled

ICA In-Line Tests (continued)

Messages

Messages from the in-line test routines appear on the second half of line 16 of the screen. The message consists of the test parameters as entered by the operator, plus a message code.

While the test is running, TEST appears on line 13, and the message code OK appears on line 16 as long as no error is detected.

When the test finishes TEST disappears and the test message code appears. The message OK means that the test or control procedure was successful. Any other code indicates an error condition.

Message Codes

TEST ID	CODE	MEANING*
Any test	A1	Invalid test or test only allowed for BSC.
	A2	Invalid line address
	A3	Line not installed
	B0	Line busy — Command active
	BB	BSC high speed active — ICA busy
	OK	Successful operation
00	D1	Incorrect modem response
	D3	
	D5	
	D7	
	E5	Incorrect status of received data
	E7	
	70	A6
D3		Abandon call and retry
D0		Incorrect modem response
D1		
D2		
D4		
D5		
D6		
D7		
D8		
80	D8	Waiting for call
	D9	Call arrived — Incorrect modem response

* Where no meaning is given, the code is meant for the CE.

Model 115 Procedures

Operator Actions

Unable to Recover from a Fault

ICA In-Line Tests (continued)

Control Procedures and Tests

Note:

1. Before starting an in-line test or control procedure ensure that the line to be tested will not be accessed by the user program during the test.
2. If you decide to make any changes during teleprocessing operations inform the operator at the remote station *before* you make the changes.

Control procedures

40 ACTIVATE LINE

The activate line command restores a de-activated line to normal status. This control must be issued after a speed select operation.

50 SELECT NORMAL SPEED

This command increases transmission speed from 600 to 1200 bits per second.

51 SELECT HALF SPEED

This command decreases transmission speed from 1200 to 600 bits per second.

The line speed select commands control the speed of BSC lines that use internal (business machine) clocking. They may be used to change the speed specified in the ICA line command (see page 32) without re-IMPL. However the speed change is only effective until:

- New IMPL
- or
- Power off.

After a line speed select command
Activate Line (40) must be performed

Tests

00 WRAP TEST

Each wrap test consists of a sequence of routines. Each routine tests a simple function of the modem.

70 DIAL TEST

The dial test checks the auto call feature of an IBM line adapter.

When you dial a telephone situated near the system, the ring signal means that the dial operation was successful. The test finishes with the message D3.

If you dial a system that is able to give an answer tone (equipped with auto answer), a successful test ends with the message OK.

80 AUTO ANSWER TEST

The auto answer test checks the auto answer feature of an IBM line adapter. The tests display message code D8 (waiting for call) until a call arrives. A successful test changes the message to OK, but an unsuccessful test changes the message to D9.

ICA In-Line Tests (continued)**Bypassing a Faulty Line by Backup from the Switched Network**

ICA INLINE TEST AND CONTROL		MODES:
*B2=DISPLAY SPEED	*73=DIAL SLOW	DIAL=S ONLY
&B6=DISPL WTTY EOM	*74=FORCE CALL REQ	WRAP=S OR L
&B7=DISPL WTTY EOT	*75=RESET AUTO CALL	XMIT=S OR L
&B8=DISPL RD/WR INT	(=CE ONLY)	P=STOP TEST
B9=DISPL TRIB STN	(=BSC ONLY)	
BB=DISPLFEATURE	91=200 MS DELAY BETWEEN BURSTS	
C0=SET LINE MODE	92=XMIT AND STAY ENABLED	
(&=S/S ONLY)	93=XMIT WITH DELAY, STAY ENABLED	

When a failure occurs on a line and the modem has the switched network backup feature (BSC only, see page 80.1) try to reroute your connection over the switched network. First display the three bytes of information, called the mode bytes, which are stored in the system. (Skip this step if the contents of the mode bytes are known.) Then modify one of these bytes (the feature byte) to conform with the needs of the switched network. The procedure is:

Displaying the Mode Bytes**Byte 1**

1. Press ILT key.
2. Key I?? into the in-line test display. The display above appears.
3. Key in:
 - a. The test number B2 (to display the BSC speed byte).
 - b. The mode selector character S.
 - c. The address of the faulty line.
4. Press ENTER.

The system displays BSC mode byte 1 (speed byte).

Bytes 2 and 3

Repeat the above procedure twice, using in step 3a the test numbers BB and B9 instead of B2. BSC mode bytes 2 (feature byte) and 3 (station address byte) will be displayed in turn.

Note the contents of all three bytes.

Modifying the Feature Byte

1. Press ILT key.
2. Key I?? into the in-line test display. The display above appears.
3. Key in:
 - a. The test number C0 (to modify a mode byte).
 - b. The mode selector character S.
 - c. The address of the faulty line.
4. Enter byte 1 (displayed in step 3c above). This byte is not modified.

Example of mode bytes stored in system:

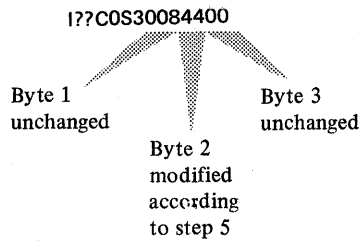
	Byte 1	Byte 2	Byte 3
	08	84	00

Example of displaying BSC mode bytes:

1. ENTER DATA: I??B2S30
MESSAGE: I-B2-S-30: 08
2. ENTER DATA: I??BBS30
MESSAGE: I-BB-S-30: 84
3. ENTER DATA: I??B9S30
MESSAGE: I-B9-S-30: 00

Operator Actions

Unable to Recover from a Fault



5. Enter a modified byte 2 as follows. (Only the first character of the byte must be changed. The second character must be reentered as it is.)

First character of existing BSC mode byte 2

0 or 8

First character of new byte 2 to be entered

4

6. Enter byte 3 unchanged.
7. Press ENTER.

Activating Line for Normal Operation

1. Press ILT key.
2. Key in:
 - a. 1.
 - b. Test number 40 (to activate line).
 - c. Mode selector character S.
 - d. Address of line. Example: 140S30.
3. Press ENTER.
4. Press CANCEL or MODE SEL to be prepared for start of customer program.
5. Continue at B on page 80.1.

Note: A new IMPL, IPL, or system reset will restore the mode bytes to their original status.

APPENDIX

This appendix deals with items that supplement the main information in the manual, and contains:

1. *Attachment Features* Provide information about CPU-integrated attachment and adapter features.
2. *Restart Procedures* For the IBM 2560.
3. *Restart Procedures* For the IBM 5425.
4. *Conversion Tables* Binary to Hexadecimal to Decimal Table
Powers Table
Abbreviated EBCDIC Table.

Attachment Features

This section deals with the CPU-integrated adapters and attachment features of the System/370 Model 115. These features eliminate the need for control units for certain devices. Operating procedures for these devices are the same as procedures for when the device is attached to a control unit. These features are:

Direct disk attachment	Integrated card I/O attachment or multiplexer channel
Magnetic tape adapter	Integrated communications adapter (ICA).
Integrated console printer attachment	
Integrated printer attachment	

Direct Disk Attachment

There are no operator handling procedures required for the direct disk attachment.

The IBM 3340 Disk Storage and Control, Model A2, and IBM 3340 Disk Storages, Models B1 or B2, are attachable to the direct disk attachment. For handling descriptions see *Introduction to IBM 3340 Disk Storage*, GA26-1619. On a 3340 with the string-switch feature installed, if one or both CPUs sharing the same 3340 string is a 3115-2 or 3125-2, an unexpected WAIT may occur after a pack change. When the new pack becomes READY and the 3115 screen is not in normal operation, the other CPU gets into WAIT. Pressing CANCEL on the console keyboard returns the normal screen picture to this CPU, and the other CPU continues to operate.

Magnetic Tape Adapter

There are no operator handling procedures for the magnetic tape adapter.

Two types of magnetic tape subsystem can be attached to the magnetic tape adapter:

- IBM 3411 Magnetic Tape Unit and Control, Model 1, 2, or 3, and IBM 3410 Magnetic Tape Units, Models 1, 2, or 3 (for operating procedures, see *IBM 3410/3411 Magnetic Tape Subsystem Component Description Manual*, GA32-0022); or
- IBM 3803 Tape Control, Model 3, and IBM 3420 Magnetic Tape Units, Models 3 or 5 (for operating procedures, see *IBM 3803/3420 Magnetic Tape Subsystems*, GA32-0020).

Integrated Console Printer Attachment

There are no operator handling procedures for the integrated console printer attachment.

The IBM 5213 Printer, Model 1, is attachable to the integrated console printer attachment. For a detailed description of handling procedures see *IBM 5213 Printer Component Description*, GA34-0001.

Integrated Communications Adapter

The only operator handling procedures required for the integrated communications adapter are those which are described under ICA Line-Modes, page 30 of this manual.

Operating procedures for modems attachable to the ICA are described in manuals for that specific device. See *IBM System/360 and System/370 Bibliography*, GA22-6822 for a listing of these manuals.

Attachment Features (continued)

Integrated Printer Attachment

The IBM 3203 Printer, Model 1 or 2, or the IBM 5203 Printer, Model 3, is attachable to the integrated printer attachment. For a description of 3203 operator handling procedures see *3203 Printer Component Description and Operating Procedures*, GA33-1515.

Integrated Card I/O Attachment

There are no handling procedures required for the integrated card I/O attachment. The IBM 2560 MFCM or the IBM 5425 MFCU are attachable to the integrated card I/O attachment.

2560 MFCM: For a detailed description of operator handling procedures see *IBM 2560 Multifunction Card Machine Component Description and Operating Procedures*, GA26-5893.

5425 MFCU: For a description of operator handling procedures see *IBM System/370: 5425 Multi-Function Card Unit Programmer's Reference Manual and Operator's Guide*, GA21-9167.

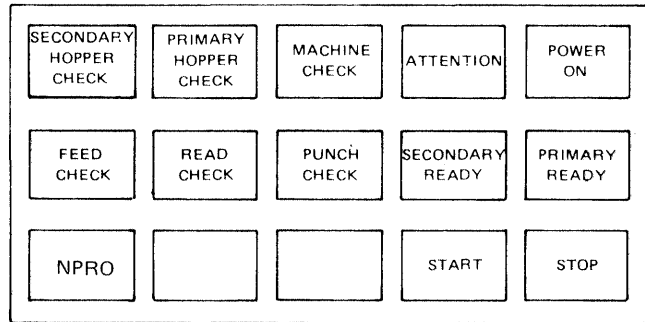
There are also a number of restart procedures which are given as operator codes. These codes are added to the end of operating messages. A list of these operator codes and restart procedures is given in **this Appendix**.

Restart Procedures for the IBM 2560 Multi-Function Card Machine (MFCM)

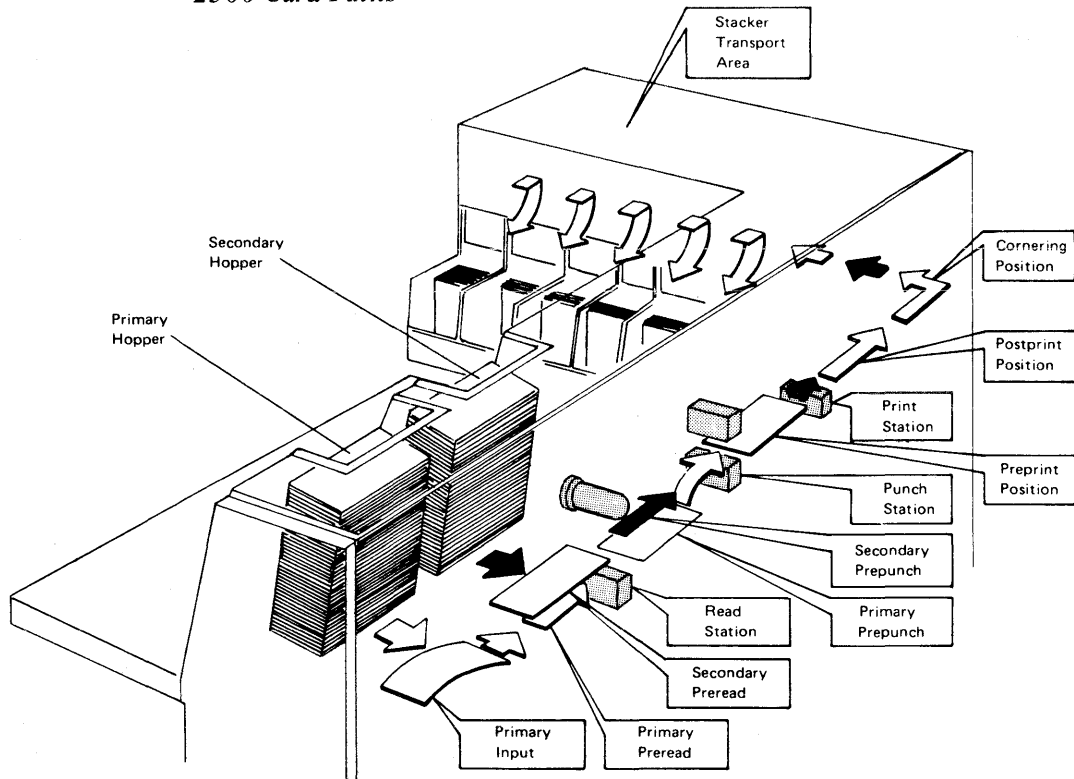
The IBM 2560 Multi-Function Card Machine (MFCM) can be attached to the System/370 Model 115 via the Integrated Card I/O Attachment. Restart procedures for the MFCM are given in the following pages. A detailed description of operator handling procedures is given in *IBM 2560 Multi-Function Card Machine Component Description and Operating Procedures*, GA26-5893.

Note: The restart procedures apply only when program temporary fix (PTF) 5745-03155-3 for DOS release 29, or PTF 5745-02269-3 for DOS release 30 is installed.

2560 Operator's Controls



2560 Card Paths



Restart Information

For the 2560 the error messages provided by the operating system have been extended by a restart information field. This field is present only when a permanent error that requires operator action occurs on the 2560.

The information needed to restart after an error is displayed on the operator's console display screen. The following are typical examples of error messages:

1. BG 0P08A INTERV REQ SYS010=00D
2. BG 0P20A ERR ON REC SYS010=00D
CCSW=001000000004000000 CCB=020118 RS=500
SNS=0
3. BG 0P10A EQUIP CHK SYS010=00D
CCSW=010000000006000000 CCB=0201E8 RS=230
O=3RC=01
SNS=10008A10011181
4. BG 0P10A EQUIP CHK SYS010=00D
CCSW=010000000006000000 CCB=0201E8 RS=430
O=3R W
SNS=55000A1001
5. BG 0P08A INTERV REQ SYS010=00D
CCSW=0110020CA80E000000 CCB=020118 RS=440
O=3R
SNS=44018A300333

Note: In the text for the procedures, the first part of the text explains the error information given by the operating system and the second part describes the restart routines.

Operation in Error

0 = 3RC = 05

The first character defines the operation in error. The characters have the following meanings:

- 1 = Read primary
- 2 = Read secondary
- 3 = Punch primary
- 4 = Punch secondary
- 5 = Print.

In this example, the operation in error was a primary punch

R = The punch operation will be retried

The third character defines the card column in error:

C = nn

When this field begins with a 'C' the numeric value 'nn' indicates the first card column that is in error (read or punch errors). In this example the first column in error is column 05.

W

When this field contains a 'W' alone, the data printed by the previous write command may be invalid.

W = nn

In place of the code 'C', the code 'W' may appear when an error comes up during punching and printing (which can run in parallel). The 'W' shows that the data printed by the previous write command may be invalid, whereas the numeric value 'nn' indicates the first failing card column of the punched card

Restart Code

RS = 230

The first digit defines:

- 0 = Intervention required
- 1 = Data check
- 2 = Equipment check
- 3 = Cover interlock check
- 4 = Feed check/machine check
- 5 = Error on recovery

The second digit tells you how many cards to put back into the primary hopper. In this example, three cards are to be put back

The third digit tells you how many cards to put back into the secondary hopper. In this example, no cards are to be put back

See also the information given later in this appendix in the section "Restart Procedures — A. Error in Normal Operation".

Note: For a detailed explanation of the sense bytes refer to the section "2560 Sense Information" under "Input/Output Characteristics" in *IBM System/370 Model 115 Functional Characteristics*, GA33-1514.

Error during Recovery Process

	Description of Error	Device Address	
5 *	BG 0P20A	ERR ON REC	SYS010 = 00D
6	CCSW = 001000000004000000	CCB = 020118	RS = 500
7			
8	SNS = 0		

Restart code

See also the information given later in this appendix in the section "Restart Procedures - B. Error on Recovery".

Ready Status Lost

* BG 0P08A INTERV REQ SYS010 = 00D

This short message means that the 2560 has lost the ready state.

See also the information given later in this appendix in the section "Restart Procedures - C. Ready Status Lost".

Restart Procedures

A. Error in Normal Operation

1. Remove the card decks from the hoppers.
2. Remove and save all cards from all stackers.
3. Clear card path with NPRO, or manually if the cards are jammed.
4. Repunch any damaged cards.
5. Evaluate the 'operation in error' field:

Read Code (1 or 2): Verify, for validity and off-punching, the data in the cards that were run out or removed.

Punch Code (3 or 4 followed by R): The card in process at the time of failure for the specified feed is not punched or may be invalid. This card will be repunched by the system during the restart operation. If pre-punched cards are being used, replace the invalid card with a new card that contains the pre-punched information.

Punch Code (3 or 4 without R): The last card punched for the specified feed is valid and will not be punched by the system.

Print Code (5): The print operation will be retried.

Note: A 'W' in the restart message means that data from the print operation preceding the failing operation may be missing or invalid. The affected card will, in most cases, be at the postprint station and will be the first card out on NPRO. In some cases it may have already been stacked. It will be up to the operator to get this card, check it and manually interpret it if necessary, as the print operation will not be retried.

6. Place the cards removed from the 2560 during the NPRO operation into the hoppers from which they came. The restart code in the restart message tells you how many cards to place into the hopper. If a number in the restart code differs from the number of cards you have removed from a given path (primary or secondary) ignore that number in the restart code and replace only the available cards.

Notes:

1. If the 'last card condition' is on, that is, if the unit exception bit (bit 39) is set in the CSW, fewer cards are in the card path than the restart code indicates. In this case, insert up to three cards behind the base card of the hopper deck.
2. For a punch operation:
 - a. When the restart field contains an 'R', the punching for the last card punched will be retried.
 - b. When the restart field does not contain an 'R', the last card punched for the specified feed is valid and will not be punched by the system.
7. Place the card decks removed from the hoppers into the hoppers from which they came.
8. Place the cards removed from the stackers into the stackers from which they came.
9. Press the 2560 start key.
10. Check for proper printing if a 'W' appeared in the 'operation on error' message.

B. Error on Recovery

BG OP20A ERR ON REC SYS010=00D
CCSW=001000000004000000 CCB=020118 RS=500

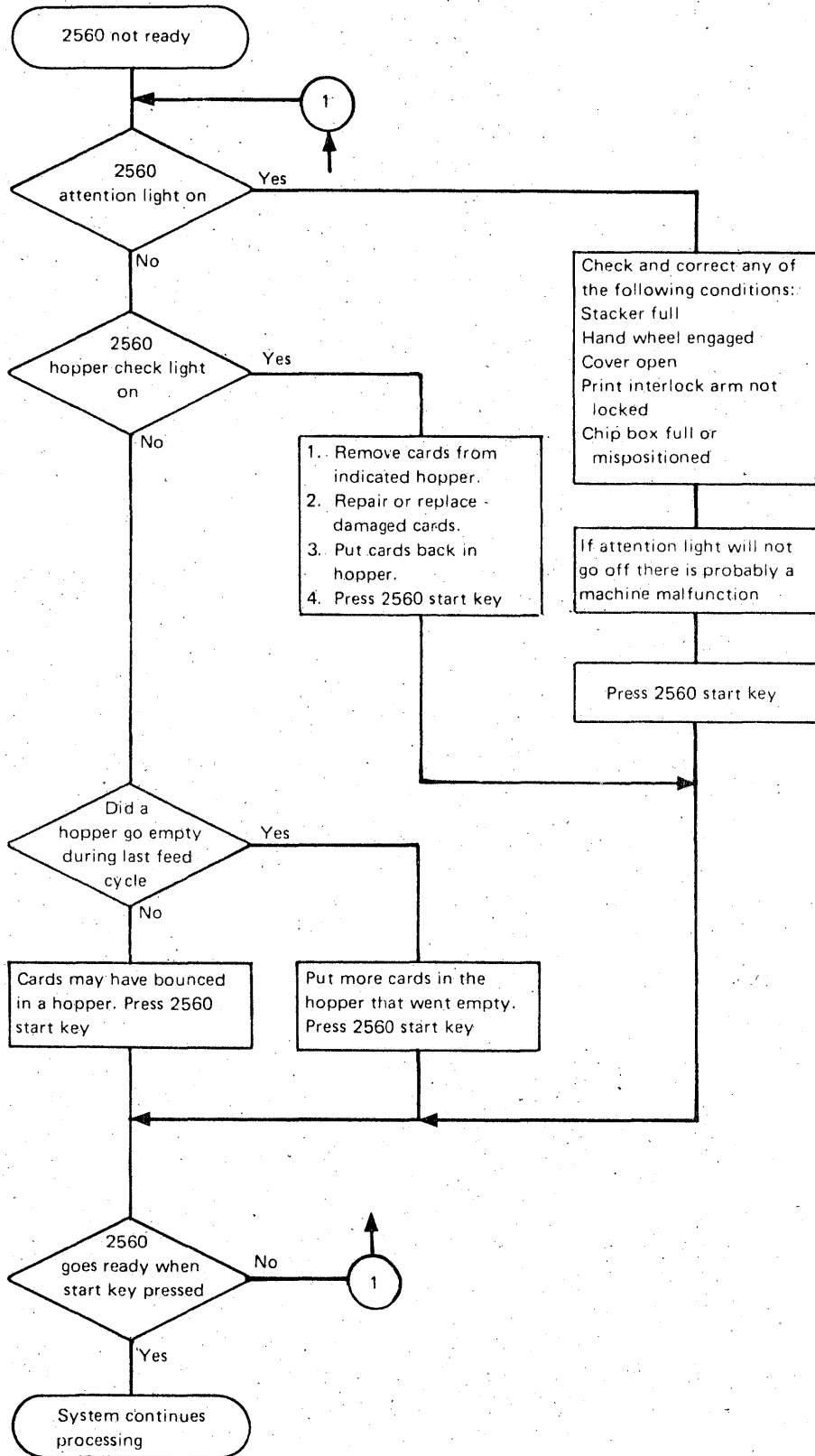
An 'error on recovery' is an error which occurs during a restart operation. The error can be caused by:

1. A feed check or a machine check.
2. An empty hopper. Either hopper that is ready can cause the error, even one that is not currently in use. Such errors are sometimes caused by not running out the cards at the end of the previous job.

If an error on recovery occurs, repeat the restart procedure that you have just carried out. If the error was caused by an empty hopper, put up to three cards behind the last card of the hopper deck (or decks) before you repeat the restart procedure.

C. Ready Status Lost

* BG 0P08A INTERV REQ SYS010 = 00D

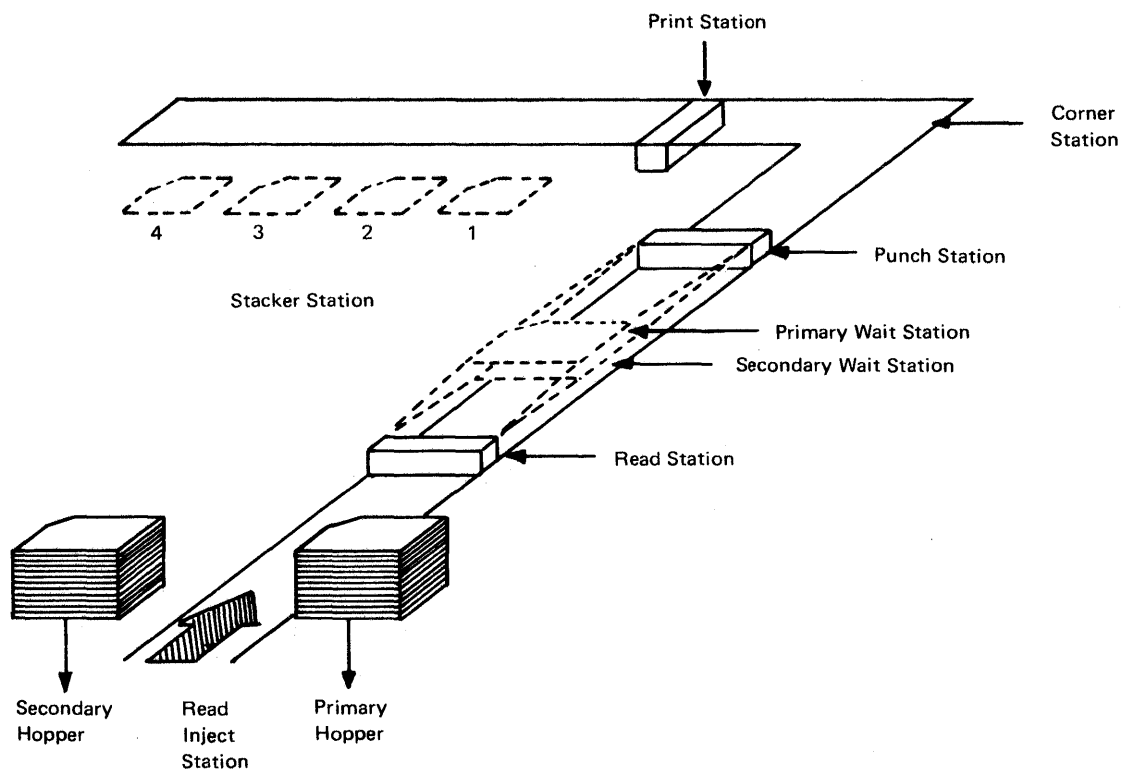


The information on pages 97-104
has now been deleted. Page 105
follows

Restart Procedures for the IBM 5425 Multi-Function Card Unit (MFCU)

The IBM 5425 Multi-Function Card Unit (MFCU) can be attached to the System/370 Model 115 via the integrated card I/O attachment. Restart procedures for the MFCU are given in the following pages. A detailed description of operator handling procedures is given in *IBM System/370: 5425 Multi-Function Card Unit Programmer's Reference Manual and Operator's guide, GA21-9167*.

5425 MFCU Card Paths



Restart Information Field

In the case of the IBM 5425 (MFCU) the error messages provided by the operating system are extended by the "Restart Information Field". This field is present only when a permanent error that requires operator action occurs on the 5425.

There are four formats, each depending on the type of check.

Feed check format:

RS = H S N =

Read equipment check format:

RS = H C =

Punch equipment check format:

RS = H S

All other checks format:

RS = H

The restart code (RS) numbers are:

- 00 Not ready
- 10 Read check
- 12 Read check and print check
- 20 Punch check
- 21 Punch check and read check
- 22 Punch check and print check
- 23 Punch check, read check and print check
- 30 Print check
- 40 Hopper check
- 42 Hopper check and print check
- 50 Feed check
- 51 Feed check and hopper check
- 54 Feed check and punch check
- 55 Feed check, hopper check and punch check

60 Error on recovery
When the second digit is any number other than 0, a second, simultaneous check has occurred.

Legend:

Indicates a number

RS Indicates the beginning of the restart information field.

H Indicates the hopper field. The number given is that of the affected hopper.

S Indicates the stacker field. The number given is that of the affected stacker.

N Indicates the number of cards involved in the feed check.

C Indicates the column field. The number given is that of the affected column(s) where the first read check occurred.

After pressing NPRO the cards in the primary and secondary feed paths enter stacker 1. Normally stackers 1 and 2 are used for the primary feed path, and stackers 3 and 4 for the secondary feed path.

Operator Restart Instructions

CODE	Procedure
00	<p>DEVICE NOT READY</p> <p>Reasons for not-ready can be:</p> <ul style="list-style-type: none"> Specified feed not ready Hopper empty Stacker full Chip box full or out Cover open Stop key pressed <ol style="list-style-type: none"> 1. Determine the cause of the not-ready message by inspecting the indicators at the MFCU operators panel, then correct the condition 2. Press the MFCU start key to continue the job. If the specified feed is not ready, press MFCU stop key then the start key
10	<p>READ CHECK</p> <ol style="list-style-type: none"> 1. Press MFCU stop key 2. Lift the cards in the hopper indicated in the error message and press the NPRO key. One card is fed into stacker 1. If the NPRO key does not work, remove the card manually 3. Ensure that this card was placed in hopper correctly, and was not off-punched, or damaged. If card is off-punched or damaged, re-punch card. Place card ahead of deck in specified hopper 4. Press MFCU start key to continue the job
12	<p>READ CHECK AND PRINT CHECK</p> <ol style="list-style-type: none"> 1. Press MFCU stop key 2. Mark the last card in each stacker being used for output. If in doubt, mark the last card in every stacker 3. Lift the cards in the hopper indicated in the error message and press the NPRO key. One card is fed into stacker 1. If the NPRO key does not work, remove the card manually 4. Ensure that this card was placed in hopper correctly, and was not incorrectly punched or damaged. If card is off-punched or damaged, re-punch card. Place card ahead of deck in specified hopper 5. Press MFCU start key to continue the job 6. Upon completion of the run, identify the output files with 'print check'. The cards to check for print errors are the marked cards and the card immediately preceding each marked card

CODE	Procedure
20	<p>PUNCH CHECK</p> <ol style="list-style-type: none"> 1. Press MFCU stop key 2. Remove the last card from stacker indicated in the error message, mark the card and return it to the stacker 3. Lift the cards in the hopper indicated in the error message and press the NPRO key. One card is fed into stacker 1. If the NPRO key does not work, remove the card manually 4. Place this card under the other cards of the hopper indicated in the error message 5. If blank cards are being punched, press MFCU start key to continue the job 6. If pre-punched cards are being punched, place an additional blank card under all cards in the hopper indicated in the error message 7. Press MFCU start key to continue the job 8. When job is completed, punch and verify the pre-punched information from the marked card into the card immediately following it. Discard the marked card or save for CE
21	<p>PUNCH CHECK AND READ CHECK</p> <ol style="list-style-type: none"> 1. Press MFCU stop key 2. Remove the last card from stacker indicated in the error message, mark the card and return it to the stacker 3. Lift the cards in the hopper indicated in the error message and press the NPRO key. One card is fed into stacker 1. If the NPRO key does not work, remove the card manually 4. Ensure that this card was placed in hopper correctly, and was not off-punched, or damaged. If card is off-punched or damaged, re-punch card. Place card ahead of deck in specified hopper 5. Place an additional blank card under all cards in the hopper indicated in the error message 6. Press MFCU start key to continue the job 7. When job is completed, punch and verify the pre-punched information from the marked card into the card immediately following it. Discard the marked card or save for CE

Operator Restart Instructions (continued)

CODE	Procedure
22	<p>PUNCH CHECK AND PRINT CHECK</p> <ol style="list-style-type: none"> 1. Press MFCU stop key 2. Mark the last card in each stacker being used for output. If in doubt, mark the last card in every stacker. The marked card(s) or each immediately preceding card may be misprinted 3. Remove the last card from stacker indicated in the error message, mark the card and return it to the stacker 4. Lift the cards in the hopper indicated in the error message and press the NPRO key. One card is fed into stacker 1. If the NPRO key does not work, remove the card manually 5. Place this card under the other cards of the hopper indicated in the error message 6. If blank cards are being punched, press MFCU start key to continue the job 7. If pre-punched cards are being punched, place an additional blank card under all cards in the hopper indicated in the error message 8. Press MFCU start key to continue the job 9. When job is completed, punch and verify the pre-punched information from the marked card into the card immediately following it. Discard the marked card or save for CE
23	<p>PUNCH CHECK, READ CHECK AND PRINT CHECK</p> <ol style="list-style-type: none"> 1. Press MFCU stop key 2. Mark the last card in each stacker being used for output. If in doubt, mark the last card in every stacker. The marked card(s) or each immediately preceding card may be misprinted 3. Remove the last card from stacker indicated in the error message, mark the card and return it to the stacker 4. Lift the cards in the hopper indicated in the error message and press the NPRO key. One card is fed into stacker 1. If the NPRO key does not work, remove the card manually 5. Ensure that this card was placed in hopper correctly, and was not off-punched, or damaged. If card is off-punched or damaged, re-punch card. Place card ahead of deck in specified hopper 6. Place an additional blank card under each card in the hopper indicated in the error message 7. Press MFCU start key to continue the job 8. When job is completed, punch and verify the pre-punched information from the marked card into the card immediately following it. Discard the marked card or save for CE
30	<p>PRINT CHECK</p> <ol style="list-style-type: none"> 1. Press MFCU stop key 2. Mark the last card in each stacker being used for output. If in doubt, mark the last card in every stacker 3. Press MFCU start key to continue the job

CODE	Procedure
	<ol style="list-style-type: none"> 4. Upon completion of the run, identify the output files with 'print check'. The cards to check for print errors are the marked cards and the card immediately preceding each marked card
40	<p>HOPPER CHECK</p> <ol style="list-style-type: none"> 1. Straighten and place cards correctly in specified hopper 2. Press MFCU start key to continue the job
42	<p>HOPPER CHECK AND PRINT CHECK</p> <ol style="list-style-type: none"> 1. Press MFCU stop key 2. Mark the last card in each stacker being used for output. If in doubt, mark the last card in every stacker 3. Straighten or place cards correctly in specified hopper 4. Press MFCU start key to continue the job 5. Upon completion of the run, identify the output files with 'print check'. The cards to check for print errors are the marked cards and the card immediately preceding each marked card
50	<p>FEED CHECK</p> <ol style="list-style-type: none"> 1. Open MFCU top cover 2. If the error message indicates a secondary feed check, remove the card from the primary (upper) wait station and place it under the cards (if any) in the primary hopper. If the error message indicates a primary feed check, remove the card from the secondary (lower) wait station and place it under the cards (if any) in the secondary hopper 3. Remove all remaining cards from card feed path starting at the area between hopper and wait station and progressing through punch and print station. Keep cards face down and in order 4. Check number of cards removed with the card number displayed in the error message. If equal go to step 6 5. If the number of cards removed is smaller than the message indicates, remove the number of missing cards from the stacker indicated in the error message and place them on the bottom of the stack of cards removed in step 3 6. Place removed cards under the cards (if any) in the indicated hopper and close MFCU cover 7. Lift cards in primary hopper and press NPRO key to turn off error indicator on MFCU panel. If error indicator does not turn off, raise cards in secondary hopper and press NPRO key. If the NPRO key does not work, check that the card path is clear because a wrongly positioned card can inhibit the NPRO key 8. Press MFCU start key to continue the job

Operator Restart Instructions (continued)

CODE	Procedure
51	<p>FEED CHECK AND HOPPER CHECK</p> <ol style="list-style-type: none"> 1. Open MFCU top cover 2. If the error message indicates a secondary feed check, remove the card from the primary (upper) wait station and place it under the cards (if any) in the primary hopper. If the error message indicates a primary feed check, remove the card from the secondary (lower) wait station and place it under the cards (if any) in the secondary hopper 3. Remove all remaining cards from card feed path starting at area between hopper and wait station and progressing through punch and print station. Keep cards face down and in order 4. Remove the card that has not been ejected from the hopper. This card is either completely or partly located in the hopper 5. Check number of cards removed with the card number displayed in the error message. If equal go to step 6 6. If the number of cards removed is smaller than the message indicates, remove the number of missing cards from the stacker indicated in the error message and place them on the bottom of the stack of cards removed in step 3 7. Place removed cards under the cards (if any) in the indicated hopper and close MFCU cover 8. Lift cards in primary hopper and press NPRO key to turn off error indicator on MFCU panel. If the NPRO key does not work, check that the card path is clear because a wrongly positioned card can inhibit the NPRO key 9. Press MFCU start key to continue the job
54	<p>FEED CHECK AND PUNCH CHECK</p> <ol style="list-style-type: none"> 1. Open MFCU top cover 2. If the error message indicates a secondary feed check, remove the card from the primary (upper) wait station and place it under the cards (if any) in the primary hopper. If the error message indicates a primary feed check, remove the card from the secondary (lower) wait station and place it under the cards (if any) in the secondary hopper 3. Remove all remaining cards from card feed path starting at the area between hopper and wait station and progressing through punch and print station. Keep cards face down and in order. If there is a card in the punch station or corner station, replace it with a blank card or a pre-punched card as required 4. Check number of cards removed with the card number displayed in the error message. If equal go to step 6 5. If the number of cards removed is smaller than the message indicates, remove the missing cards from the stacker indicated in the error message and place them on the bottom of the stack of cards removed in step 3 6. Place removed cards under the cards (if any) in the indicated hopper and close MFCU cover 7. Lift cards in primary hopper and press NPRO key to turn off error indicator on MFCU panel. If error indicator does not turn off, raise cards in secondary

CODE	Procedure
	<p>hopper and press NPRO key. If the NPRO key does not work, check that the card path is clear because a wrongly positioned card can inhibit the NPRO key</p> <ol style="list-style-type: none"> 8. Press MFCU start key to continue the job
55	<p>FEED CHECK, HOPPER CHECK AND PUNCH CHECK</p> <ol style="list-style-type: none"> 1. Open MFCU top cover 2. If the error message indicates a secondary feed check, remove the card from the primary (upper) wait station and place it under the cards (if any) in the primary hopper. If the error message indicates a primary feed check, remove the card from the secondary (lower) wait station and place it under the cards (if any) in the secondary hopper 3. Remove all remaining cards from card feed path starting at the area between hopper and wait station and progressing through punch and print station. Keep cards face down and in order. If there is a card in the punch station or corner station, replace it with a blank card or a pre-punched card as required 4. Remove the card that has not been ejected from the hopper. The card is either completely or partly located in the hopper 5. Check number of cards removed with the card number displayed in the error message. If equal go to step 6 6. If the number of cards removed is smaller than the message indicates, remove the number of missing cards from the stacker indicated in the error message and place them on the bottom of the stack of cards removed in step 3 7. Place removed cards under the cards (if any) in the indicated hopper and close MFCU cover 8. Lift cards in primary hopper and press NPRO key to turn off error indicator on MFCU panel. If error indicator does not turn off, raise cards in secondary hopper and press NPRO key. If the NPRO key does not work, check that the card path is clear because a wrongly positioned card can inhibit the NPRO key 9. Press MFCU start key to continue the job
60	<p>ERROR ON RECOVERY</p> <p>When an error condition occurs during a restart procedure. To recover, re-establish the condition that existed when the restart procedure was started, and then repeat the restart procedure.</p>

Appendix

Specifying ICA Line Modes

Specifying ICA Line Modes

'Start/Stop Lines' Display

Further explanation of the ICA is given in the *IBM System/370 Model 115 Functional Characteristics*, GA33-1510; see "ICA Line Mode (E)" under "Operator Console" in the chapter "System Control".

PERMANENT REQUEST TO SEND*: The response 'yes' applies to a 4-wire leased line, or a full-duplex modem. The send line (or transmit channel) is made permanently active. The response 'no' applies to a switched line (normal telephone line), or a two-wire leased line. The modem is in send (transmit) mode only when a write operation is sent to the remote terminal.

Note: *If 'no' is applied to a four-wire leased line or a full-duplex modem, the operation will be carried out, but slowly.*

SWITCHED LINE*: When working with a modem connected to a normal telephone line with a pushbutton or dial phone answer 'yes'. When working with a modem connected to a permanent line rented from a telephone company answer 'no'. (The line has no dialing facility and goes from the station to one remote location).

UNIT EXCEPTION SUPPRESSION OR DOWN-SHIFT ON SPACE**: Unit exception suppression applies to an IBM 2741 used as a remote terminal, and to a Type 1 terminal control. The response 'yes' prevents a command chain from being broken because of a unit exception.

Down-shift on space applies to telegraph terminals. The response 'yes' causes a shift down to 'letters' mode when a space character is received. The programmer will advise on the correct response.

READ INTERRUPT*: The response 'yes' applies when the program uses the 'break' command which stops transmission by the remote terminal. The response 'no' causes the break command to be rejected.

WRITE INTERRUPT*: The response 'yes' applies when your program accepts a 'break' signal from the remote station. The response 'no' causes the 'break' signal to be rejected.

EOM-ID and EOT-ID**: Do not change these characters unless you are asked to do so by the programmer. When you change them, be sure you use 'letters' characters.

'Line Modes for BSC Lines' Display

PERMANENT REQUEST TO SEND*: As for Start/Stop lines.

SWITCHED LINE*: As for Start/Stop Lines.

NEW SYNC*: The response 'yes' applies when the modem and the remote station have the new sync feature.

SWEDISH or UK MODEM*: The response 'yes' applies when you have a Swedish or English post-office modem. During transmission by the modem, the telephone attached to it cannot be used.

EIB-MODE**: The response 'yes' applies when the program requires the checking for and recording of errors for each transmission block. A 'no' response will cause errors to be recorded only when transmission has been completed.

TRANSPARENT MODE*: The response 'yes' applies when the program sends full EBCDI code (packed decimal, cryptographic data). The 'no' response applies for ASCII code. The programmer will advise you.

ASCII CODE*: The response 'yes' applies when the line code is ASCII. The response 'no' means EBCDIC is used.

SPEED SELECTION**: This applies only when the internal clock feature is installed (when modems without a clock are used). You can select either 1,200 or 600 bits per second. The response 'no' applies for speeds higher than 1,200.

HALF SPEED**: This applies to modems that have their own clock, and when this clock can provide two speeds (for example, 2,400/4,800). The response 'no' causes the higher speed to be used.

STATION ADDRESS**: This applies if yours is a tributary station. The programmer will advise on the address to use. When not applicable enter zeros.

* *You must specify correctly or the operation cannot work.*

** *The operation can work even if the wrong specifications are given.*

Conversion Tables

Binary to Hexadecimal to Decimal (Integers Only)

Binary	Hex	Decimal				
		16^4	16^3	16^2	16^1	16^0
0001	1	65,536	4,096	256	16	1
0010	2	131,072	8,192	512	32	2
0011	3	196,608	12,288	768	48	3
0100	4	262,144	16,384	1,024	64	4
0101	5	327,680	20,480	1,280	80	5
0110	6	393,216	24,576	1,536	96	6
0111	7	458,752	28,672	1,792	112	7
1000	8	524,288	32,768	2,048	128	8
1001	9	589,824	36,864	2,204	144	9
1010	A	655,360	40,960	2,560	160	10
1011	B	720,896	45,056	2,816	176	11
1100	C	786,432	49,152	3,072	192	12
1101	D	851,968	53,248	3,328	208	13
1110	E	917,504	57,344	3,584	224	14
1111	F	983,040	61,440	3,840	240	15

Procedure for Converting a Binary Number: Using the above table, proceed as follows:

1. Separate the binary number by spacing it into groups of four bits each, starting from the right. If necessary, add leading zeros for leftmost group. Thus:
Binary 110110110 = 0001 1011 0110.
2. Using the first two columns of the table, convert each group of four binary bits into hexadecimal (hex) form. Thus:
Binary 0001 1011 0110 = Hex 1B6.
3. Working from the right, relate bits of the hex number to the associated decimal column. Thus:
6 relates to 16^0 column, B relates to 16^1 column and 1 relates to 16^2 column.
Using bits in the hex column as reference, find the associated decimal part and add decimal parts to get the decimal total. Thus:
Hex 6 = (16^0 column) decimal 6
Hex B = (16^1 column) decimal 176
Hex 1 = (16^2 column) decimal 256

$$\text{Decimal } \underline{438} = \text{Hex } 1B6 = \text{Binary } 110110110$$

Model 115 Procedures

Appendix

Conversion Tables

Powers

Powers of 2

2^n	n
512	9
1,024	10
2,048	11
4,096	12
8,192	13
16,384	14
32,768	15
65,536	16
131,072	17
262,144	18
524,288	19
1,048,576	20
2,097,152	21
4,194,304	22
8,388,608	23
16,777,216	24

Powers of 16

16^n	n
1	0
16	1
256	2
4,536	3
65,096	4
1,048,576	5
16,777,216	6
268,435,456	7
4,294,967,296	8
68,719,476,736	9
1,099,511,627,776	10
17,592,186,044,416	11
281,474,976,710,656	12
4,503,599,627,370,496	13
72,057,594,037,927,936	14
1,152,921,504,606,846,976	15

Abbreviated EBCDIC Table: Capitals and Digits

<i>Hex</i>	<i>Char</i>	<i>Hex</i>	<i>Char</i>	<i>Hex</i>	<i>Char</i>	<i>Hex</i>	<i>Char</i>
C1	A	D1	J	E2	S	F0	0
C2	B	D2	K	E3	T	F1	1
C3	C	D3	L	E4	U	F2	2
C4	D	D4	M	E5	V	F3	3
C5	E	D5	N	E6	W	F4	4
C6	F	D6	O	E7	X	F5	5
C7	G	D7	P	E8	Y	F6	6
C8	H	D8	Q	E9	Z	F7	7
C9	I	D9	R			F8	8
						F9	9

GLOSSARY

This glossary contains technical terms associated with the subject of this publication. A wider and more general range of terms is contained in *IBM Data Processing Glossary*, GC20-1699.

IBM is grateful to the American National Standards Institute (ANSI) for permission to reprint its definitions from the American National Standard Vocabulary for Information Processing (Copyright © 1970 by American National Standards Institute, Incorporated), which was prepared by Subcommittee X3.5 on Terminology and Glossary of American National Standards Committee X3. These definitions are indicated by an asterisk.

Automatic System Checkout Program: A stand-alone program that tests and reports on the reliability of the entire system. Abbreviated to ASCP.

Address Translation: The process of changing the address of an item of data or an instruction from its virtual address to its real storage address. See also *dynamic address translation*.

Basic Control (BC) Mode: A mode in which the features of a System/360 computing system and additional System/370 features, such as new machine instructions, are operational on a System/370 computing system. See also *extended control (EC) mode*.

Control Registers: A set of registers used for operating system control of relocation, priority interruption, program event recording, error recovery, and masking operations.

Control Storage: An area in a subprocessor where the microprogram is stored.

Cursor: A movable marker on the Model 125's video display, used to indicate the position of the next character to be entered on the screen.

* **Dump:** To copy the contents of all or part of a storage, usually from an internal storage into an external storage.

Dynamic Address Translation: (1) The change of a virtual storage address to a real storage address during execution of an instruction. See also *address translation*. (2) A hardware feature that performs the translation.

Enter: In this manual refers to the placing of information into the system by specifying commands, data or addresses at the keyboard, and then pressing the ENTER key. See also *key in*.

Extended Control (EC) Mode: A mode in which all the features of a System/370 computing system, including dynamic address translation, are operational. See also *basic control (BC) mode*.

Hexadecimal: A number system that uses the equivalent of decimal number 16 as a base.

Initial Microprogram Load: The procedure that causes the microprogram to be loaded into control storage. Abbreviated to IMPL.

* **Initial Program Load:** The procedure that causes the initial part of an operating system or other program to be loaded such that the program can then proceed under its own control. Abbreviated to IPL.

* **Initialize:** To set counters, switches and addresses to zero or other starting values at the beginning of, or at the prescribed points in, a computer routine.

Input/output Processor: A subprocessor which, after initiation by the instruction processing unit, exerts complete control over I/O devices by means of its circuitry and microprogram logic, and operates in fully overlapping mode with the instruction processing unit and other input/output processors.

Integrated Adapter (or Attachment): A device which allows I/O devices to be attached to the system without a standard input/output interface.

* **Interrupt:** To stop a process in such a way that it can be resumed.

Key In: In this manual refers to the typing in or keying in of characters by means of the alphameric keys at the keyboard. It does not include pressing the ENTER key. See also *Enter*.

Model 115 Procedures

Main Storage: All program addressable storage from which instructions may be executed and from which data can be loaded directly into registers.

Main Storage Controller: A subprocessor which controls all traffic to and from main storage, and keeps and updates the address registers.

Microinstruction: A basic or elementary machine instruction. Each program, each channel routine, and so on, consists of sequences of microinstructions.

Microprogram: A sequence of microinstructions, also termed a *microroutine*.

Machine Instruction Processor. A subprocessor which fetches instructions from main storage, processes them, and returns the results to main storage. It also analyzes I/O instructions, selects input/output processors, and handles I/O interruptions.

* **Modem:** (MOdulator-DEModulator.) A device that modulates and demodulates signals transmitted over communication facilities.

Multipoint Network: A line or circuit that interconnects several stations in a data communications system.

* **Online:** Pertaining to equipment or devices under control of the central processing unit.

* **Operating System:** Software which controls the execution of computer programs and which may provide scheduling, debugging, input/output control, accounting, compilation, storage assignment, data management, and related services.

Program Status Word: A doubleword in the CPU storage used to control the order in which instructions are executed, and to hold and indicate the status of the computing system in relation to a particular program. Abbreviated to PSW.

Real Address: The address of a location in real storage.

Real Storage: The storage of a System/370 computing system from which the central processing unit can directly obtain instructions and data, and to which it can directly return results.

Service Processor: A subprocessor which loads programs, initializes the system, monitors for and logs errors, and handles the manual control of the system.

Stand-Alone Program: An independent program that does not require an operating system.

Subprocessor: One of a number of independent Model 125 control processors, which have their own clocking devices.

Teleprocessing: The processing of data that is received from or sent to remote locations by way of telecommunication lines.

Tributary Station: In a centralized multipoint data communications system, this is a station, other than the control station, that can communicate only with the control station when polled or selected by the control station.

Typamatic Key: A key that causes a single character entry when briefly depressed, and repetitive character entry as long as the key is held down.

Virtual Address: An address which refers to virtual storage and must, therefore, be translated into a real storage address when it is used.

Virtual Storage: Addressable space that appears to the user as real storage, from which instructions and data are mapped into real storage locations. The size of virtual storage is limited by the addressing scheme of the computing system and by the amount of auxiliary storage available, rather than by the actual number of real storage locations.

BIBLIOGRAPHY

- IBM System/360 and System/370 Bibliography*, GA22-6822,
and associated Technical Newsletters for the editions that are
applicable and current
- Teleprocessing and Data Acquisition Bibliography*, GA24-3089
- A Data Processing Glossary*, GC20-1699
- Introduction to IBM Data Processing Systems*, GC20-1684
- Introduction to IBM 3340 Disk Storage*, GA26-1619
- Operator's Library DOS VS Operating Procedures*, GC33-5378
- IBM System/370 Principles of Operation*, GA22-7000
- IBM 2560 Multi-Function Card Machine Component Description and Operating Procedures*, GA26-5893
- IBM 3203 Printer Component Description and Operating Procedures*, GA33-1515
- IBM 3410/3411 Magnetic Tape Subsystem Component Summary*, GA32-0015
- IBM 3504 and 3505 Card Reader and IBM 3525 Card Punch Subsystem*, GA21-9124
- IBM 5213 Printer Component Description*, GA34-0001
- IBM System/370 5425 Multi-function Card Unit Programmer's Reference Manual and Operator's Guide*, GA21-9167

INDEX

- abbreviations iv
- ACT 44
- action when unable to recover from a fault 67
- address 44
- address compare 24,42
 - after maintenance display 24,40
 - display 24
 - fast selection 22
 - procedure 61,63
- address not translatable 37
- ADR 44
- ADR COMP 44
- alphameric keys 10,11
- alter/display 33
 - control registers 35
 - current PSW 35
 - display 33
 - fast selection 22
 - floating point registers 34
 - general registers 34
 - main storage real 34
 - main storage virtual 37
 - procedure 65
 - protection key 36
 - to cancel displays 19
- ANY 44
- AR 17
- ASCII code 32,108
- ASCP 39,54,55,56
 - definition of 113
 - diskette 39,47,54
- attachment features 86,87
- automatic system checkout program (see ASCP)

- backspace keys 10,12,15
- BC 44
- BC mode 35
 - definition of 113
- binary digits 35
- binary/hexadecimal/decimal 33,111
- BSC lines for ICA 32,82,108
- buffers for 2314 compatibility 23,25,59,60

- cancel key (see cncl)
- cancelling address compare mode 62
- carriage control feature display, 1403/3203 29.1
- CE (see customer engineer)
- CE manual operations 39
- central processing unit
 - photograph of 2
 - recording usage of 46
 - resetting of 23,59,62
 - testing with ASCP 54,55,56
- channels
 - after system reset 23,59,60
 - change diskette 45
 - changing diskettes 39,54
 - changing ICA line speeds 82,84
 - check control 28,43
 - after a maintenance display 28,40
 - compatibility mode 25,28
 - display 28
 - fast selection 22
- check lights 6,9
- check stop 43
- check stop state 28,38,43,44
 - restart after 28
- checking out the system (see ASCP)
- CHK-CTL 44
- clear load (see program load)
- clear reset 23
- clock comparator
 - after system reset 23,59,60
- CNCL key 10,17,19
- CNSL PRTR 44
- command sets 1
- communication error 45
 - ANR 1
 - 1052 1,10,17,43
 - comparing addresses 69
- compatibility check control mode (see check control)
- COMPATIBLE 44
- CONS FILE light 6,9
- console file 47,50
- console keyboard (see keyboard)
- console printer (see 5213 Console Printer)
- continuous logging during IPL 53
- control panel 4
 - layout 6
- control registers
 - after normal load 59
 - after normal system reset 59,60
 - alter/display 35
 - definition of 113
- control storage 52
 - definition of 113
- conversion tables 111
- copy key 10,17
- COUNTER SAVED 45
- current PSW 44
 - after system reset 23,59,60
 - alter/display 35
 - during restarting 64
- cursor 12
- cursor keys 10,12
 - cursor down 13
 - cursor to left 13
 - cursor to new line 13
 - cursor to right 13
 - cursor up 13
 - definition of 113
- customer engineer 39,46,67

- damage messages 45
- DAT 44
- DATA 44
- data entry 12,17
- data store 44
- decimal/binary/hexadecimal 111
- description of choices for ICA
 - line mode displays 110
- diagnostic programs 47
- direct disk attachment 16,86
- diskettes
 - insertion, removal, storage 47,50
 - ASCP 39,47,54
 - control 39,47
 - diagnostic 39,47
 - when dumping storage 29
- displaying 2314 buffers 23,59,60
- DOS 17
- DOS/VS 17
- down-shift on space 110
- dump
 - definition of 113
 - stand-alone program 41
- dump cancelled 66
- dump complete 66
- dumping main storage (see storage dump)
- dumping 2314 buffers 23,59,60
- dynamic address translation 44
 - definition of 113

- EBCDIC table, capitals and digits 111
- EC 44

EC mode 35,113
 EC-PSW error 35,43
 emergency pull switch 6,8
 enter key 10,18
 errors during manual operations
 incomplete entry 21
 invalid character entry 21
 wrong character entry 21

fast selection 22
 ICA 82
 fast selection table 22
 features - attachments 86
 floating point registers
 after system reset 23,59,60
 alter/display 34
 flowchart symbols v
 function keys 10,16,17,18,19

general registers
 after system reset 23,59,60
 alter/display 34

hard stop 44
 hexadecimal/binary/octal 111
 hexadecimal digits 33

ICA 16,19,80
 bypassing faulty line 84.1
 changing line speeds 82,84
 control procedures 16,82-84.2
 in-line tests 16,82-84.2
 line modes 31,32
 display 31
 errors 32
 for ICA-BSC lines display 32
 message codes 83
 self clocked modems 32
 start/stop lines 32

I-count 44
 identification number 45
 ILT
 display 16
 ICA tests 16,82-84.2
 key 10,16

IMPL
 definition of 113
 malfunction task flow 70,71
 procedure 52
 pushbutton 6

IMPL in progress 52
 incomplete entry 19,21
 inhibit 12,19,43
 initial microprogram load (see IMPL)
 initial program loading (see IPL)
 initialize
 definition of 113
 in-line test 16,42,43
 in-line test key (see ILT)
 input/output processor (see subprocessor)
 instruction step 38,42,43
 after maintenance display 38,40
 display 38
 procedure 63
 integrated card I/O attachment 87
 integrated communications adapter (see ICA)
 integrated console printer attachment 86
 integrated printer attachment 87
 intensity knob 4,5
 interrupt key (see intrpt)

interval timer 27
 display 27
 intrpt key 10,18
 invalid addr loaded 35
 invalid address 61
 invalid character 19,21
 invalid log call 45
 I/O 43
 I/O devices 86,87
 testing with ASCP 54,55,56
 I/O stop 44
 IOP busy 45
 IPL
 malfunction task flow 72,73
 procedure 53
 IPL-error 26,43
 I-step 43,44,63

KB 43
 keybd reset key 10,12,17
 keyboard 4,10
 inhibition of 10
 locking of 10
 status of 10

lamp test pushbutton 6,7
 last log analysis 40
 lights (see check lights)
 limited channel logout 44
 line adapter malfunction task flow 77
 line mode recording sheet 30
 line speeds for ICA 82,84
 LOAD 43
 lock key 18,43
 log analysis 39
 card/print I/O log 40
 CPU log 40
 disk log 40
 displays 40
 general log 40
 ICA log 40
 log area defective 45
 log displays (see log analysis)
 log error 45
 log in progress 29
 log information 39,47
 log messages 45
 log overflow 45
 log pending 45
 log waiting 45
 logging during IPL 53

machine check interrupt 44
 machine status area (see video display)
 magnetic disk cartridge (see diskettes)
 magnetic tape adapter 86
 main storage
 after system reset 24,59,60
 controller (see subprocessors)
 definition of 114
 real
 alter/display 37
 definition of 114
 virtual
 alter/display 37
 definition of 114
 maintenance operation 39
 fast selection for 22
 maintenance selection 39
 display 39

- MAN 43,53,62
- manual operations 4,12,16
- message codes for ICA 83
- MFCM 87,88,89
 - card paths 88
 - operator's controls 88
 - restart procedure codes 89
- micro tests 39
- microprogram 47
 - definition of 114
 - loading of 52
- MIP not stopped 45
- mode sel key 10,19
- mode select (see mode sel)
- mode select display 19
- mode selection displays 20
- mode specification 19
- mount control diskette 54
- multipoint malfunction task flow 81

- normal load (see program load)
- normal reset 23,59
- not installed 29

- operating malfunction task flow 74,75
- operating system
 - definition of 114
 - last picture of 19
 - loading 53
 - messages 4,89
 - error messages for the MFCM 89
 - returning the screen to 19
- operator actions 3,49
- operator commands 4
- operator console 1,3,4

- power check reset pushbutton 6,8
- power failure
 - in a control unit 9
 - in CPU 9
- power malfunction task flow 76
- power on
 - procedure 51
 - pushbutton 6,7
- power up malfunction task flow 68,69
- powers of 2 and 16, conversion to decimal 112
- printer, cleaning train/chain 57
- PROCEED 17,43
- program load 25,26
 - clear 25
 - display 25
 - fast selection for 22
 - normal 25
- program reset (see normal reset)
- protected area (see video display)
- protection keys
 - after system reset 23,59,60
 - alter/display 36
- ptr intv req 17
- PSW
 - alter/display current 34
 - definition of 114
 - looping 18
- PSW addr error 35,43
- PSW loop 43

- pushbuttons 7,8
- PWR light 6,9

- REAL 44
- REAL ADDR 44
- real storage (see main storage)
- reliability report example for ASCP 56
- req key 10,17,43
- reset complete 23
- resetting the system 59
- restart 38
 - procedure 64
- restart information field for the MFCM 89
- restart procedure codes for the MFCM 90

- save usage counters 28,41
 - during power off 51
- screen (see video display)
- search address 24,61,62
- select one speed 32
- service processor (see subprocessors)
- service representative (see customer engineer)
- set line-mode command 30
- setting address compare mode 61
- shift keys 11,18
- shift lock key (see lock)
- space bar 10,15
- speed change for ICA lines 84
- stand-alone dump program 41
- stand-alone programs
 - definition of 114
 - loading 53
 - restarting 64
- start key 10,18
 - during I-STEP 63
- start/stop lines for the ICA 32,82
- stop key 10,18,44
- storage address (see search address)
- storage dump 29
 - display 29
 - procedure 66
 - to cancel display 19
- storage end 66
- store status 41
 - before stand-alone dump 41
 - to cancel display 19
- subprocessors
 - definition of 114
 - input/output processor (IOP) 1
 - definition of 114
 - machine instruction processor (MIP) 1
 - definition of 114
 - main storage controller (MSC) 1
 - definition of 114
 - service processor (SVP) 1
 - definition of 114
- successfully loaded 52
- SVP (see subprocessors)
 - light 6,9
- switched network backup task flow 80.1
- switched network malfunction task flow 79,80
- switches (see pushbuttons)
- synch 44
- SYS 43,63
- system overall log 40
- system reset 23
 - display 23
 - to cancel display 19,59,60
- system reset check 23,59,60

- system usage meter 46
- System/360 programs 28

- tabulator keys 10,12
 - left-to-right 15
 - right-to-left 15
- teleprocessing malfunction task flows 77,78,79,80,81
- teleprocessing switched network backup task flow 80.1
- test 16,41,43
- the light 6,9
- timer 43
- TOD clock 25
 - pushbutton 6
- typamatic keys 10,12
 - definition of 114
- type 44

- unit availability table example for ASCP 55
- upper case light 6,9
- usage meters
 - customer, or system 46
 - service 46

- video display 4,5
 - display format 5
 - machine status area 5,42
 - system output area 5
 - machine status area
 - display 42,43,44,45
 - during maintenance displays 39
 - messages for ICA in-line tests 16
 - photograph of 4
 - protected area 12
 - when copying 17
 - returning to the operating system 19
- video screen (see video display)
- VIRT 44
- virtual storage (see main storage)

- WAIT 43

- I052 command set (see command set)
- I052 compatibility mode 1,25
- 1403/3203 carriage control feature display 29.1
- 2314 buffers 25,59,60
- 2314 compatibility mode 25
- 2560 Multi-Function Card Machine (MFCM)
 - Model A1 87,88,89,90
 - card paths 88
 - operator controls 88
 - restart procedure codes 89
 - restart procedures 89
- 3203 Printer, Models 1,2 40
 - cleaning print train 57
- 3340 Disk Storage and Control, Model A2 7,86
- 3340 Disk Storage Models B1 and B2 7,86
- 33FB log error 45
- 3410 Magnetic Tape Unit, Models 1,2,3 86
 - during lamp test 7
- 3411 Magnetic Tape Unit and Control, Models 1,2,3 86
 - during lamp test 7
- 5203 Printer, Model 3 40
 - cleaning print train 57
- 5213 Console Printer, Model 1 1,86
- 5425 Multi-Function Card Unit (MFCU) Models A1, A2 87
 - card paths 105
 - restart codes 107
 - restart information field 106

Operator's Library
System/370 Model 115
Operating Procedures

**READER'S
COMMENT
FORM**

Order No. GA33-1514-0

Your views about this publication may help improve its usefulness; this form will be sent to the author's department for appropriate action. Using this form to request system assistance or additional publications will delay response, however. For more direct handling of such requests, please contact your IBM representative or the IBM Branch Office serving your locality.

Possible topics for comment are:

Clarity Accuracy Completeness Organization Index Figures Examples Legibility

Cut or Fold Along Line

What is your occupation? -----

Number of latest Technical Newsletter (if any) concerning this publication: -----

Please indicate in the space below if you wish a reply.

Thank you for your cooperation. No postage stamp necessary if mailed in the U.S.A. (Elsewhere, an IBM office or representative will be happy to forward your comments.)

Your comments, please . . .

This manual is part of a library that serves as a reference source for systems analysts, programmers, and operators of IBM systems. Your comments on the other side of this form will be carefully reviewed by the persons responsible for writing and publishing this material. All comments and suggestions become the property of IBM.

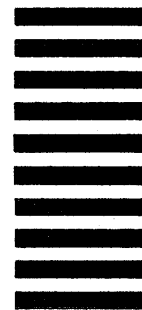
Cut or Fold Along Line

Fold

Fold

First Class
Permit 40
Armonk
New York

Business Reply Mail
No postage stamp necessary if mailed in the U.S.A.



Postage will be paid by:
International Business Machines Corporation
Department 813B
1133 Westchester Avenue
White Plains, New York 10604

Fold

Fold

Operator's Library: System/370 Model 115 Procedures (File No. S370-01) Printed in U.S.A. GA33-1514-0



International Business Machines Corporation
Data Processing Division
1133 Westchester Avenue, White Plains, New York 10604
(U.S.A. only)

IBM World Trade Corporation
821 United Nations Plaza, New York, New York 10017
(International)



Technical Newsletter

This Newsletter No.	GN33-1677
Date	23 April 1976
Base Publication No.	GA33-1514-0, -1
File No.	S370-01
Previous Newsletters	GN33-1603 (for -0 only) GN33-1629 (for -0 only) GN33-1674

IBM Operator's Library, System/370 Model 115 Procedures

© IBM Corp. 1974

This Technical Newsletter provides replacement pages for the subject publication. Pages to be inserted and/or removed are:

85, 86

A change to the text or to an illustration is indicated by a vertical line to the left of the change.

Summary of Amendments

Information has been added about a faster magnetic tape subsystem (comprising a 3803 Tape Control, Model 3, and 3420 Magnetic Tape Units, Models 3 or 5) which can now be attached to the Model 115's magnetic tape adapter.

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



Technical Newsletter

This Newsletter No. GN33-1674
Date 20 February 1976

Base Publication No. GA33-1514-0,-1
File No. S370-01

Previous Newsletters GN33-1603 (for -0 only)
GN33-1629 (for -0 only)

IBM Operator's Library System/370 Model 115 Procedures

© IBM Corp. 1974

This Technical Newsletter provides replacement pages for the subject publication. Pages to be inserted and/or removed are:

Front cover, ii	39, 40
iii, iv	45, 46
1, 2	71, 72
25, 26	85 through 88

A change to the text or to an illustration is indicated by a vertical line to the left of the change.

Summary of Amendments

This Technical Newsletter adds information about the IBM 3115-2 Processing Unit, and corrects some publishing errors.

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



Technical Newsletter

This Newsletter No. GN33-1629
Date 10 February 1975

Base Publication No. GA33-1514-0
System S/370 Model 115

Previous Newsletters GN33-1603

IBM Operator's Library System/370 Model 115 Procedures

© IBM Corp. 1974

This Technical Newsletter provides replacement pages for the subject publication. Pages to be inserted and/or removed are:

iii, iv
87 through 104 (replaced by 87 through 97)

A change to the text or to an illustration is indicated by a vertical line to the left of the change.

Summary of Amendments

This Technical Newsletter provides new information on the restart procedures for the IBM 2560 Multi-Function Card Machine. As details of error recovery, error message codes, and restart procedures have been improved and simplified, pages 89–96 should be read in their entirety.

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



Technical Newsletter

This Newsletter No. GN33-1603
Date 30 September 1974

Base Publication No. GA33-1514-0
System S/370 Model 115

Previous Newsletters None

IBM Operator's Library, System/370 Model 115 Procedures

© IBM Corp. 1974

This Technical Newsletter provides replacement pages for the subject publication. Pages to be inserted and/or removed are:

iii, iv	39, 40
1, 2	53 through 56
7, 8	59, 60
17 through 26	63, 64
29	77 through 82
29.1 through 29.9 (added)	85, 86
30	109, 110
31, 32	

A change to the text or to an illustration is indicated by a vertical line to the left of the change.

Summary of Amendments

This Technical Newsletter provides new information on the 1403/3203 carriage control feature. Other changes have been made to the text and flowcharts in order to bring the information up-to-date.

Pages 29.1 through 29.9 are new and should be read in their entirety.

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

IBM Laboratories, Product Publications, Dept 3179, 703 Boeblingen/Wuertt., P.O. Box 210, Germany

© IBM Corp. 1974

Printed in U.S.A.

GA33-1514-0

Operator's Library: System/370 Mod

Procedures (File No. S370-01)

Printed in U.S.A.

GA33-1514-0

IBM

**International Business Machines Corporation
Data Processing Division
1133 Westchester Avenue, White Plains, New York 10604
(U.S.A. only)**

**IBM World Trade Corporation
821 United Nations Plaza, New York, New York 10017
(International)**