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Systems

**IBM 3790
Communication System
Control Operator's
Guide**

IBM

Second Edition (March 1975)

This edition replaces and makes obsolete GA27-2786-0.

This publication is current with the first release of the IBM 3790 Communication System. Specifications contained in it are subject to changes, which will be reported in subsequent revisions or Technical Newsletters.

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PREFACE

This publication is a reference and guide to the functions performed by the control operator of an IBM 3790 Communication System. The control operator is responsible for ensuring the smooth operation at the 3790 installation, and will probably follow procedures established by the system programmer at the host-system location.

The material in this book is organized in five chapters.

Chapter 1, an introduction to the 3790 Communication System, describes the configuration of the system, the organization of data within the system, and gives an overview of the procedures to be used in managing the system.

Chapter 2 is a guide to the basic operating procedures to be used during normal operations. It includes information such as starting, operating, and stopping the 3791 and the 3792.

Chapter 3 is a guide to the specialized functions available to the control operator. This chapter treats each function as a step-by-step procedure.

Chapter 4 outlines the problem recovery procedures to be used in isolating and correcting problems when the system is not operating properly.

Chapter 5 describes the Operator Panels on the 3791 and 3792.

This publication also contains three appendixes:

Appendix A provides blank sheets so that the control operator can record the actual configuration of the system.

Appendix B lists the options available for the specialized 3790 functions.

Appendix C describes the output of the SYSLERR function.

Prerequisite Publications

The control operator should have a basic understanding of the 3790 Communication System, as presented in:

An Introduction to the 3790 Communication System, GA27-2767

The control operator should understand how the various operator terminals operate, as described in one or more of the following publications:

IBM 3790 Communication System: Operator's Guide for the 3277 Display Station, GA27-2785

IBM 3790 Communication System: Operator's Guide for the 2741 Communication Terminal, GA27-2783

IBM 3790 Communication System: Operator's Guide for the 3793 Printer-Keyboard, GA27-2784

The control operator will also need to know the descriptions of 3790 messages as contained in:

IBM 3790 Communication System: Messages, GA27-2789

Related Publication

3790 System Installation Data Form, GX27-2763

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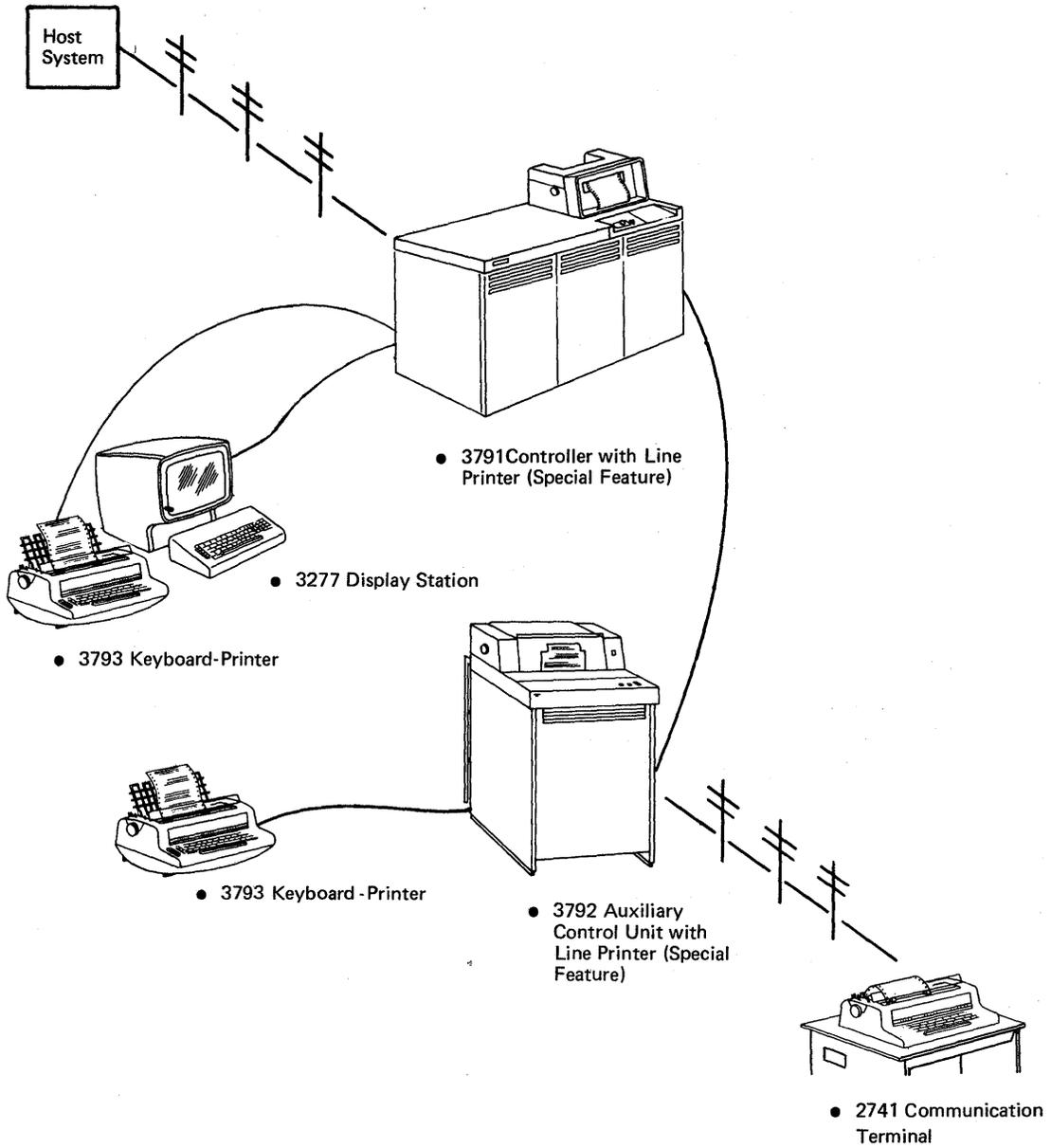
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3790 Communication System Components

CHAPTER 1. UNDERSTANDING THE 3790 SYSTEM

If you are not already familiar with the 3790 system, the first thing you should do is understand the IBM 3790 Communication System and how it relates to a central data processing site called the host system. This chapter introduces you to the 3790 system, its various components and their definitions, the various methods of communicating with the host system and your job as a control operator in coordinating your installation's operations.

CONTROL OPERATOR

Introduction

As a 3790 Communication System control operator, you are the coordinator of a variety of functions that ensure a smooth flow of data through the 3790 system. You might normally operate a display station or keyboard-printer, or be a supervisor, depending upon the needs of your installation. You have been designated a control operator to monitor the 3790 Communication System by yourself or as a shared responsibility. The purpose of this manual is to help you prepare for the various operating tasks as they relate to your job as a control operator.

Responsibilities

Your function as a control operator is basic to the successful operation of a 3790 system. Duties of the control operator generally include:

Turning the 3790 system on and off.

Doing a daily power-on sequence (initialization) of the system.

Establishing the telephone link between the 3790 system and the host system.

Coordinating the activities with the host system console operator, and programmer.

Controlling the security of the 3790 system by:

- Controlling which terminal operators have access to the 3790 system.
- Controlling which terminals have access to the 3790 system.

Changing or replacing the diskettes.

Operating the line printer (if installed).

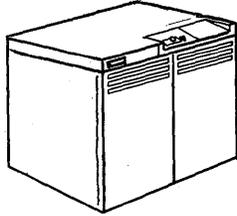
Handling Problem Recovery Procedures if the system has a malfunction.

Selecting the various control operator functions and their options that are available to monitor and maintain the 3790 system.

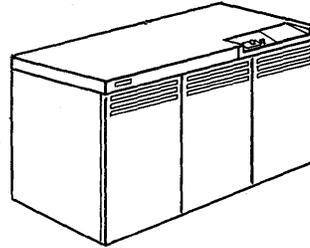
DESCRIPTION OF THE 3790 SYSTEM

3791 Communications Controller

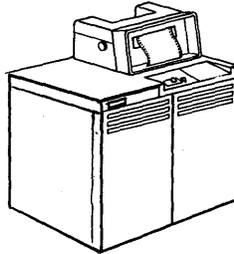
The 3790 system uses a IBM 3791 Communications Controller as the "heart" of the system. The 3791 is the direct link between the data input or output and the host system. All information going to and coming from the host system must flow through the controller. The controller can have a line printer (special feature) installed as an output printer.



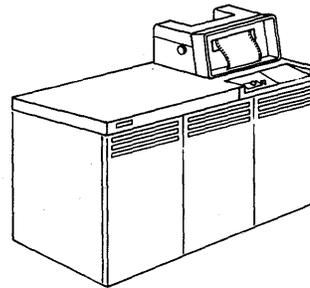
3791 Controller - Model 1



3791 Controller - Model 2



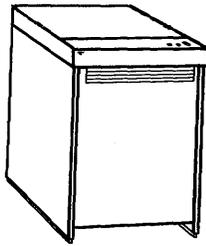
3791 Controller - Model 1
(with line printer
feature)



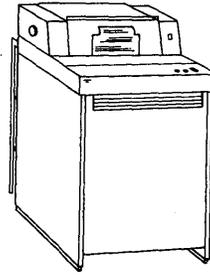
3791 Controller - Model 2
(with line printer
feature)

3792 Auxiliary Control Unit

Up to 3 IBM 3792 Auxiliary Control Units can be attached to the controller to expand the capability of the 3790 System. The 3792 can also have an output line printer (special feature).



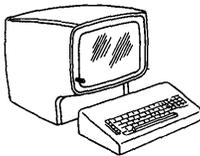
3792 Auxiliary
Control Unit



3792 Auxiliary
Control Unit
(with line printer
feature)

Terminals

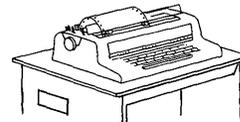
Operators enter data through the three types of operator terminals shown below:



3277
Display Station
(Models 1 and 2)



3793
Keyboard
Printer



2741
Communications
Terminal

Operating procedures for the terminals can be found in the IBM 3790 Communication System: Operator's Guide for the 3277 Display Station; Operator's Guide for the 3793 Keyboard-Printer; and the Operator's Guide for the 2741 Communication Terminal.

The 3277 Display Station can be attached only to the 3791 Controller. The 2741 Communications Terminal can be attached only to the 3792 Auxiliary Control Unit. 3793 Keyboard-Printers can be attached to the 3791 or 3792.

All of these components, together or in various combinations, comprise the 3790 Communication System. The control operator coordinates the operations of these components to ensure a smooth flow of operations at the 3790 site and the smooth flow of data to and from the host system. An example of a ten-terminal, two-printer 3790 system installation is shown in Figure 1-1.

Logical Unit Addressing

There are unique addresses assigned to each unit within the 3790 system (see Appendix A). These addresses are known as logical unit addresses and are assigned when the system is installed. Each logical unit address identifies a specific unit or line printer in the 3790 system.

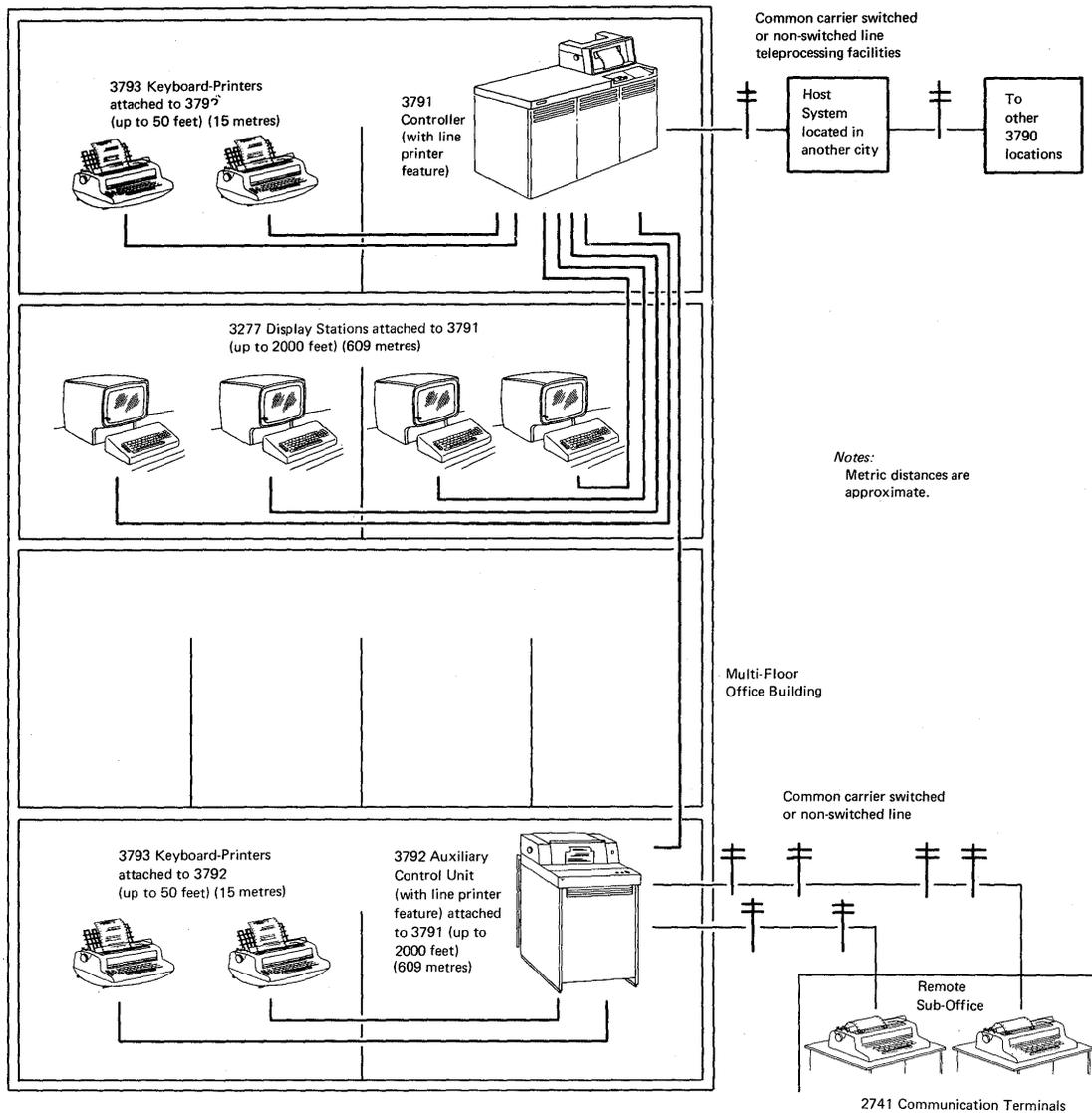


Figure 1-1. Sample 3790 Installation

You will be using these addresses to activate and deactivate specific terminals and 3792s, and to analyze unit or line printer conditions and errors in response to system prompts or operational problems.

CONTROL OF DATA

Data is controlled by user-written application programs called 3790 programs. These programs control the gathering and distribution of data in a logical sequence.

Data Records

A data record is the collection of source data entered by a terminal operator or transmitted to the 3790 system by the host system. For example, a person's name, street, city, state, and zip code complete a name and address record. The sequence and length of entries to complete the name and address record is determined by a 3790 program.

Data Sets

Data sets are collections of data records. These data sets can be of different sizes and formats, but are arranged in a prescribed manner that is meaningful to 3790 programs and controller functions.

- The Program Data Set contains all the 3790 programs that terminal operators use to do their job. This data set contains programs stored at the host system, and transmitted to the 3791 for execution.
- The Transaction Data Set is used to store data gathered by 3790 programs that can be transmitted to the host system (batch transmission).
- The Print Data Set is used to store data for bulk printing on the line printer or 3793 Keyboard-Printer. Print records are written by 3790 programs or as a result of transmission from the host system.
- The Message Data Set holds informational, warning, and error messages for terminal operators and the control operator. These messages can be written by 3790 programs, the host system, or by other operators.
- The Panel Data Set stores 3277 Display Station screen images. These screen images can be read or written by 3790 programs.
- The Application Data Sets are used by 3790 programs to satisfy individual program needs. There may be up to 48 application data sets, each identified by a unique data set ID in the range 01-48. They are classified as either indexed or relative:
 - Indexed Data Set - This class of data set contains an index that points to records contained in the data set. This is very similar to the index in a book.
 - Relative Data Set - This class of data set has no index: records are written sequentially. Each record is located by its relative position from the beginning of the data set.

All application data sets are controlled by host programming personnel through CREATE and DELETE operations. The CREATE operation consists of defining a data set (number, type, size, and other parameters) at the host and transmitting the definition to the 3790 during batch transmission. The 3790 system will reserve the required disk storage space, but no data will exist in the data set until it is placed there by 3790 programs or by transmission of data records from the host system.

When the host programming personnel do a DELETE of a data set:

- That data set can no longer be successfully accessed by 3790 programs until it is created again by the host personnel.
- All disk storage space used by the deleted data set will be freed for storing other application data.

The handling of data sets is addressed in further detail in Chapter 3 (Control Operator Functions) under SYSCOPY and SYSLDISK.

DATA SET STORAGE

Data sets are stored in the 3790 system on two types of data storage, called disk storage and diskette storage.

Disk Storage

The disk is a permanently installed storage medium needed for storing the data sets just discussed. There can be up to 48 application data sets, depending upon the combined needs of all 3790 programs.

Diskette Storage

The diskette is a flexible, removable storage medium used for saving application data sets and for storing data that is to be batch-transmitted to the host system. The diskette is normally inserted and removed by the control operator. It is also used by service personnel for system maintenance.

DATA HANDLING

Basically, there are four methods of handling data at the 3790: Inquiry, Store and Forward, Standalone, and Local.

Inquiry

Inquiry-handling of data provides the terminal operator with access to the host system, under control of a 3790 program, via communication (telephone) lines. The terminal operator is connected through the 3791 to the host system for data exchange (called "sessions"). The control operator is responsible for establishing the communication connection and for initiating the sessions between the terminal operator and the host system.

Store and Forward

The Store and Forward method of handling data is a three-step operation:

1. The gathering of data records from terminal operators on the Transaction Data Set over a period of time.
2. The packing of the Transaction Data Set and writing on the diskette. The data collection of records is now called the Transmit Data Set and is ready for transmission to the host system. The procedure for moving these data records from disk storage to the diskette (packing) is under direct control of the control operator and described in Chapter 3 as the SYSPACK function.
3. The establishment of the communications link between the 3790 system and the host system. The Transmit Data Sets are batch-transmitted to the host system. The procedure for establishing the communication link and the batch transmission to the host system is the responsibility of the control operator, and is described in Chapter 3.

Standalone

In this data-handling method, the terminal operator communicates only with a 3790 program within the 3790 system. Data is transferred only between the 3790 system and the terminal operator, with no host system required.

A 3790 program can use any or all of the preceding three methods.

Local Operation

This method of data handling allows the 3793 Keyboard-Printer or 2741 Communications Terminal to be used as you would a normal typewriter. There is no interaction between the terminal and any 3790 program.

TYPES OF COMMUNICATION LINES

There are four types of communication line/modem combinations that connect the 3790 with the host system. Your system will use only one of these types, described below. Communication lines can be connected to the 3790 system in one of two ways: they may be connected with an external modem or with an integrated modem (special feature).

Point-to-Point Nonswitched Line

This type of communication line employs the connection of a single communication line between your system and the host system. This line is connected only to your system and will always be ready for use.

Multipoint Nonswitched Line

This type of communication line employs the connection of communication lines to a number of 3790s that may be in separate cities; however, instead of connecting these lines to the host system separately as in the point-to-point method, all lines are connected to one common line that connects to the host. This allows the host system to transmit or receive data from a number of 3790 installations on one communication line, which will always be ready for use.

Point-to-Point Switched Line (Dial-Up/Non Auto Answer)

This type of communication line uses facilities on voice communication lines and is similar to a normal-dialed voice phone conversation.

The 3790 system and host system in this case have no direct communication line connection between them until the control operator picks up the phone and manually dials the host system. Operating procedures for this method of telecommunications are explained in Chapter 2.

Point-to-Point Switched Line (Dial-Up/Auto Answer)

This is the same as without auto-answer (above), except that the host system communication operator can dial out to the 3791 to establish the connection automatically.

CONTROL OPERATOR RESPONSIBILITIES

Control operator responsibilities within the 3790 system:

- Prevent unauthorized use of the 3790.
- Perform service functions for terminal operators.
- Control the daily usage of the system.
- Provide assistance for Problem Recovery.

PROBLEM RECOVERY PROCEDURES

Problem Recovery Procedures are described in Chapter 4 and detailed in the 3790 Messages publication. They are designed to reduce lost time when a problem is encountered.

Problems fall into two categories:

- Problems that are permanent, where operations on the 3790 cease until the problems are resolved -- such as loss of power to the system.
- Problems that are temporary, such as a loss of the communications link, in which case operations can continue in Standalone, Local, or the Store portion of the Store and Forward methods. Full operations can then resume when the communications link is reestablished.

The recovery procedures and who to notify in order to correct a problem are listed in the 3790 Messages publication, by message number.

POST INSTALLATION ACTIVITIES

When your 3790 system has been successfully installed by the service personnel, there are several things which must be done to make the 3790 a productive system.

Each 3790 system has the capability of storing ID and password information for up to 48 operators. When the system is installed, however, the only operator IDs defined are the control operator and service representative. You must use the SYSOPR function described in Chapter 3 to define an ID/password entry for each operator who is to be able to log on the 3790. Once SYSOPR has been used successfully, the defined operators can use the terminal training aids. In order to protect from unauthorized usage of the control operator functions, you will probably want to use the SYSOPR function to change the control operator password to a value other than OPID01. The new password should be kept in a secure place (such as a locked desk) so that:

- The password is kept secure.
- You will have access to the password if you forget it.

Once the operators have become familiar with terminal operation, they should be ready to select and run 3790 programs. These programs, which are written and stored at your host system, will not be available to any operator until they are transmitted to your 3790. The 3790 programs will be transmitted during a batch communication session between your 3790 and the host system. General communication procedures are discussed in the section titled Communications with the Host System, starting on page 2-5. You will use the SYSHOST function described in Chapter 3 to allow the batch transmission of 3790 programs from the host system.

The print and transaction data sets, defined earlier in this Chapter, can have groups defined for different types of data. The SYSIMOD function described in Chapter 3 must be used to establish those groups. Your host support personnel should supply the 3790 System Installation Data form to you so that you can use SYSIMOD. SYSIMOD should also be used by you or the service representative to establish 2741 and host communication options.

Each time you initialize the 3791 Controller, a daily initialization diskette must be mounted. One of these diskettes is supplied with your system. Because the diskette is removable, there is some danger that the diskette may become damaged or lost. For that reason, you should use the SYSIBLD function described in Chapter 3 to build backup initialization diskettes prior to allowing operators to use the system.

CHAPTER 2. BASIC OPERATING PROCEDURES

INTRODUCTION

The following procedures are those you will be using most often during normal system operation. These are the basic procedures needed to start, prepare, operate, and stop the 3791 and 3792. This manual assumes you are familiar with the terminal operating procedures contained in the Operator's Guide for the 3793 Keyboard-Printer and the Operator's Guide for the 3277 Display Station. You should also be familiar with the operating procedures of the 2741 Communications Terminal (if installed) to assist the 2741 operators if they have difficulty in their operations. These procedures can be found in the Operator's Guide for the 2741 Communication Terminal.

DAILY INITIALIZATION

The powering on of the 3790 system and preparing it for normal operations is called initialization. Initialization procedures consist of:

1. Ensuring that a Daily Initialization Diskette has been loaded in the 3791 Controller before turning on power. This diskette has either been supplied by IBM or has been created by the SYSIBLD function (see Chapter 3).
2. Powering on the 3791 Controller and 3792 Auxiliary Control Unit (if installed) and associated terminals.

All terminals that have had power turned on before initialization will automatically be ready (enabled) for a logon operation. All terminals whose power was off at initialization must be made ready (enabled) by the SYSTEM function when they are finally turned on for use (see Chapter 3).

If the 3790 system has a 3792 Auxiliary Control Unit installed, it should be powered on before the 3791 Controller is powered on.

3. Ensuring that the digit displays on the 3791 and 3792 remain blank when initialization is complete. This is the signal that the system is ready for normal operations.

The 3790 system can be reinitialized at any time by pressing the RESET pushbutton on the 3791 operator panel. Before reinitializing the system, all 3790 programs, host sessions, and functions should be ended or data will probably be lost.

3790 DISKETTE

The 3790 Diskette is a small disk-shaped storage medium which contains electronically recorded data. The following procedures describe the shipping and receiving, handling care, storage, and loading and unloading requirements for the diskette.

CAUTION: Do not load diskettes that are physically damaged (torn, creased, warped) or contaminated with eraser dust, fingerprints, coffee or other spills, cleaning fluid, etc. Doing so can result in operating or equipment errors and/or machine damage. Placing heavy objects on diskettes might also damage the diskette.

Shipping and Receiving

Ship diskette inside the original shipping carton. An ordinary envelope does not provide enough protection.

Be sure to label the package: DO NOT EXPOSE TO EXCESSIVE HEAT (temperatures above 125°F or 51.5°C) OR DIRECT SUNLIGHT.

Upon receiving diskettes, check for carton or diskette damage. Save the carton for storing the diskette and for later shipment.

Handling the Diskette

While they are not extremely fragile, diskettes can be damaged easily. Never write on the diskette. Pencil lead or ink can contaminate the surface and cause errors. The pressure of the pencil point can also damage the surface - even through the outer paper cover. Never use paper clips or staples on a diskette.

Do not try to clean the surface of a diskette. If it's contaminated (eraser dust, finger prints, cleaning fluid, etc.), discard it. Failure to do so can cause a controller failure and require a service representative call before your operations can continue.

~~Never place heavy objects on a diskette. Warped, torn or creased diskettes will not work properly.~~

Never expose a diskette to direct sunlight for a long period or to excessive heat.

Always keep diskettes away from magnetic fields or materials.

All of the possible ways to damage diskettes are easily avoided. Always place diskettes in the storage space provided for them (drawer, rack, etc.) when they are not loaded in the 3791 controller.

Always place each of your diskettes in its protective envelope before storing it.

Long Term Storage

Place diskettes in their protective envelopes and store in the following environment.

- Temperature: 50° to 125°F (10.0° to 51.5°C)
- Relative humidity: 8% to 80%

If a diskette has been exposed to temperatures outside of the above environmental range, allow five minutes time at normal room temperature before use. The diskette should be removed from its shipping container at this time, but should be kept in its protective envelope.

Loading the Diskette (Figure 2-1)

1. Lift the diskette access panel on the right side of the 3791 Controller to expose the diskette enclosure.
2. Open the diskette enclosure door by pressing the opening latch.
3. Grasp the diskette by its upper edge and remove it from its protective envelope. To avoid confusion, have only one diskette removed from its envelope at any time.

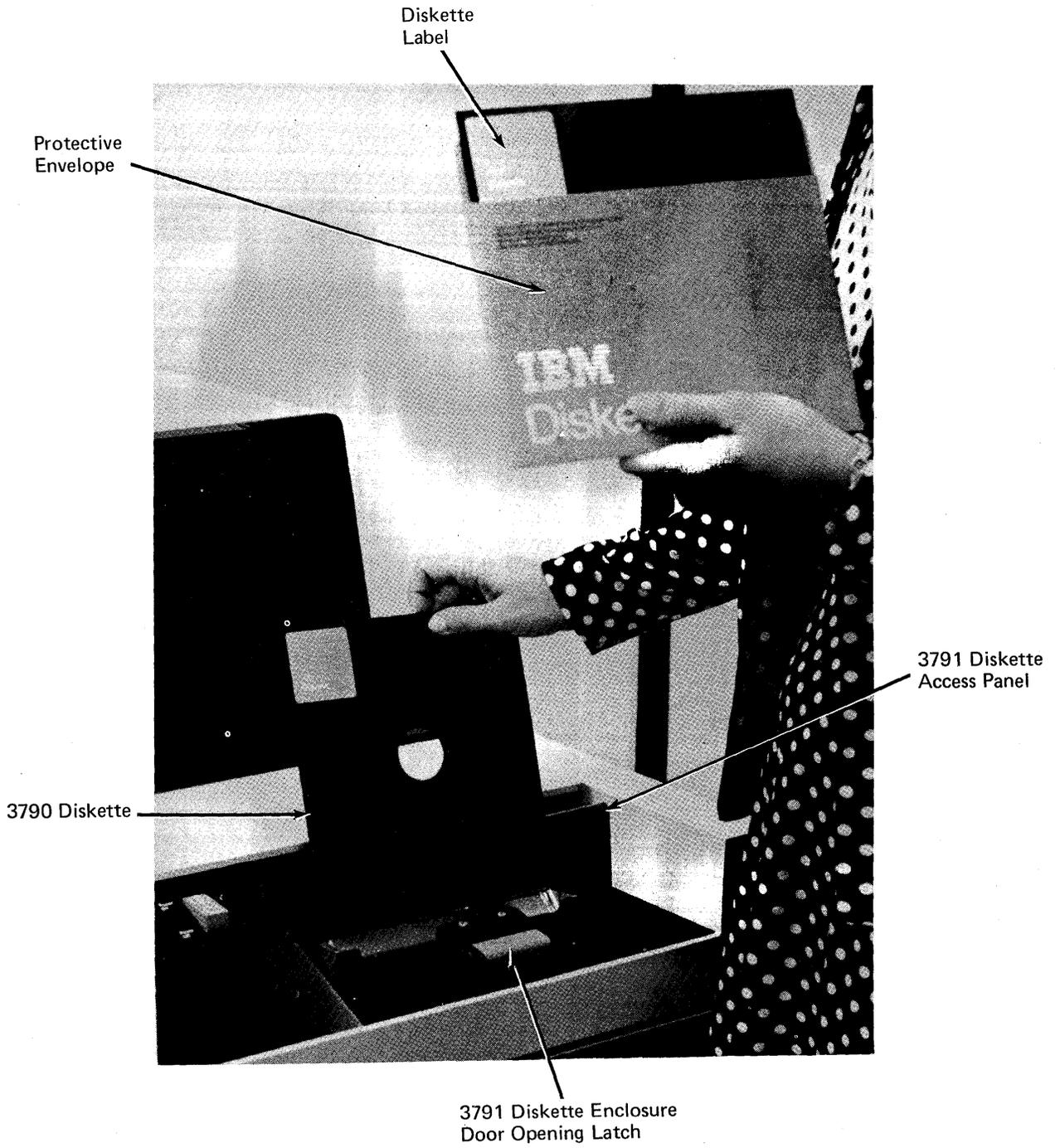


Figure 2-1. Loading of Diskette (Design Model)

4. Inspect the diskette for damage, tears, creases, warping, contamination, etc. If damaged, the diskette must be discarded and replaced.
5. Lower the diskette squarely into the opening at the top of the diskette enclosure.
6. Slowly close the diskette enclosure door until it latches.
7. Close the diskette access panel on the 3791 Controller and place the empty protective envelope in a clean storage area. The diskette is now loaded in the 3791 Controller and is ready to be used.

Unloading the Diskette

1. Lift the diskette access panel on the right side of the 3791 Controller to expose the diskette enclosure.
2. Open the diskette enclosure door by pressing the opening latch.
3. Grasp the diskette by its upper edge and remove it from diskette enclosure by lifting straight up.
4. Place diskette in its protective envelope, being careful to handle diskette by the upper edge only. If this diskette has just been initialized or created, mark the appropriate number or title on the diskette envelope in the space provided. The diskette unloading procedure is now complete.

TURNING ON THE 3792

See Figure 5-2 for a description of the 3792 Operator Panel.

1. The Data/Function Select switch should be in the NORMAL position.
2. If the security keylock feature is installed, the key must be inserted and turned. The key cannot be removed without powering off the 3792.
3. Press the top of the Power On - Power Off rocker switch until it clicks. The Logic On indicator on the extreme left top portion of the panel should light. If the Logic On light does not light, go to PREP1 in the Problem Recovery Procedures.
4. The operator panel digit display will be 1500 if the power-on sequence was successful. When power is turned on the 3791 Controller and initialization is complete, the digit display on the 3792 should be all blanks. If any other message numbers are displayed, go to the 3790 Messages publication for further details and corrective action.

TURNING ON THE 3791

See Figure 5-1 for a description of the 3791 Operator Panel.

1. The Data/Function Select switch must be in the NORMAL position.
2. The daily initialization diskette must be inserted into the 3791.
3. If the security keylock feature is installed, the key must be inserted and turned. This key can be removed once the 3791 has powered on, but must be reinserted for any following power-on operations. Power may be turned off without re-inserting the key.
4. Press the top of the Power On - Power Off rocker switch until it clicks. The power light to the right of the rocker switch should light. If the power light does not light, go to PREP1 in the Problem Recovery Procedures in Chapter 4.
5. There is approximately a 2 minute delay between the time the system begins initialization until it is complete. When initialization is complete, the digit display on the 3791 panel will be blank (no display). If any other message numbers are displayed, see the 3790 Messages publication for further details and corrective action.

The 3790 system is now ready for normal operations.

COMMUNICATING WITH THE HOST SYSTEM

Communicating with the host system has five parts:

- Establish the line connection to the host.
- Enable and start communication sessions.
- Execute sessions.
- Terminate sessions.
- Terminate line connection to host.

Establishing Line Connection

When the communication link between the 3790 and the host is non-switched, the physical connection is always made: no operator action is necessary.

When the communications link between the 3790 system and the host system is a point-to-point switched line, the following procedure can be followed to establish communications.

1. Ensure that power is on for the 3791 Controller and that the system has been initialized.
2. Remove handset from telephone cradle.
3. Press Talk button on dataset.
4. Dial host system number in the usual telephone manner.
5. Notify the person answering that you want to establish the communications link or, in the case of 3704/3705 autoanswer, wait for a high pitched tone.
6. Press Data button on your dataset.

7. Place handset in cradle. You are now ready to select the SYSHOST control operator function to begin host communication operations.

When your 3790 system is equipped with the auto-answer feature, the physical line connection can be initiated from the host system and completed without action by the control operator.

Enabling/Starting Communication Sessions

There are two types of sessions between the 3790 and the host system:

- The Batch Session
- Application Sessions

A batch session is communication between a host program, written by your host system programmers, and the 3791 controller. The batch session can be started only from the host system, and does not involve any 3790 terminals. Messages concerning the running of the batch session will be placed in the message file for the control operator.

An application session is communication between a 3790 program and a host program. Application sessions are always started by 3790 programs selected by operators at the 3790 terminals. The most common use for an application session is inquiry; that is, the requesting of data from the host system.

Enabling of sessions is discussed in detail in Chapter 3 under the SYSHOST function. The enabling of a session allows the session to be started only when the connection to the host is established and the host communication operator has associated the physical and logical links between the host and the 3790. The link connection and enable operation can be done in either order, but must both be successful before a session is started.

Session Execution

More than one session may be running at any time, but only one batch session may be active. Up to 16 application sessions can run at the same time. The number of application sessions allowed for your 3790 was defined by a 3790 system planner before your 3790 was installed.

The status of sessions can be presented through an option of the SYSHOST function. The status presentation will indicate whether:

- the 3791 modem is connected.
- the 3790 is physically connected to a 3704 or 3705.
- the 3790 physical connection to the host system is complete and activated.
- the specified sessions have been enabled by the control operator.
- the specified sessions have been logically activated by the host communication operator.
- the specified sessions have been started and are in progress.

Completing/Terminating Sessions

Sessions can end for one of these reasons:

- The session has been completed: the transfer of data is complete.
- The 3790, the 3704 or 3705, or the host system is inoperative.
- Unrecoverable communication equipment or a line failure has been recognized.
- The 3790 batch session or application session or host system has abnormally terminated.
- The control operator has disabled an application session, and the 3790 program ended before the data transfer was complete.
- The host communication operator deactivated the session or the physical connection.

The status option of the SYSHOST function can be used to check the session status. In general, messages are presented to the control operator and host communication operator when sessions terminate abnormally. Messages for the 3790 control operator will have 4-character identifiers which are explained in the 3790 Messages publication.

Terminating the Line Connection

For a non-switched line, the physical connection between the 3790 and the host system is not broken except in the case of failure of communication equipment or failure of the line. For switched lines, the physical connection can be broken as a result of equipment/line errors, or by the control operator disabling all sessions when no sessions are active. If sessions are active when the disable is done, the switched line connection is broken when the last session terminates.

Whenever the host communication operator deactivates the line connection, even though the physical connection is not broken, data cannot flow over the line until it is activated.

UNATTENDED 3790 OPERATION

The 3790 can perform limited operation with no operator in attendance. This occurs with the batch session. Preprocessed transaction data can be sent to the host during the batch session. The host can transmit print records, operator messages, 3790 program updates, application data set definitions, and data or control commands to the 3790. The data received by the 3790 during the batch session will be completely processed (disk updated) as part of the batch function.

Two control operator functions (SYSHOST and SYSTEMM), described in Chapter 3, control whether unattended processing is allowed. When the 3790 is not to be used by operators around the clock, the normal operating procedure is to use the SYSTEMM function to prohibit 3790 terminals from being used after the operators logoff the 3790. A SYSTEMM option allows power to be automatically turned off for the 3791 after all processing (including the batch function) has completed.

Since the batch function is started by a host operator (when the host has sufficient resources to process the 3790), you will have little or no control over when the batch function is started. However, it is your responsibility to ensure that when the host operator wishes to start the batch session, it has been enabled successfully. The enable may be done as a standard part of the daily operating procedure (in conjunction with the operation of SYSTEMM) or upon request from the host operator.

When a 3790 program has completed, it can terminate to allow another host program to be selected for additional batch operations, or it can send a power-down command to the 3791. If the power-down option of SYSTEMM was selected, power will be automatically turned off.

Here is a sample end-of-day procedure:

1. (SYSHOST) disable application sessions.
2. Mount transmit data diskette.
3. (SYSHOST) enable batch session.
4. Make dial connection if on switched line without auto-answer.
5. (SYSHOST) present session status.
6. Request messages until none left.
7. (SYSTEM) shutdown if power-down to be initiated from host or disable all.
8. Logoff.

POWERING OFF THE 3790 SYSTEM

The 3790 system can be powered off manually or automatically.

Manual Power Off

The 3790 system can be powered off at any time by using the power off rocker switch. Before powering off, the system should be clear of all job applications or data will probably be lost. Before manually powering off the system, perform the following steps:

1. Ensure that no control operator functions (SYSCOPY, SYSDINIT, SYSHOST, SYSIBLD, SYSPACK) are using the diskette.
2. Ensure that all terminal operator functions and 3790 programs have been terminated.
3. If the host communications link is operational, select the control operator function SYSHOST. Disable both batch and inquiry sessions, and wait for the messages "DISABLE COMPLETE" and "HOST PROCESSING ENDED" which notify you that the host communications link has been cleared.
4. Select the control operator function SYSTEM, Deactivate All Terminals option, and wait for the message "OPERATION COMPLETE" which notifies you that all terminals will be in a logically deactivated state when all current jobs are ended.

When these two steps have been performed, the 3790 system can be powered off manually without the loss of data.

Note: If emergency power off is required, open diskette enclosure door before powering off so that the diskette will not be damaged.

Automatic Power Off

The 3790 system can be directed to power off automatically (when all jobs have been terminated) by selecting the control operator function SYSTEM and the shutdown option. (See Chapter 3 for SYSTEM detailed description.)

This function allows an unattended power-off sequence, such as terminating a day's operations. Power off is delayed until there are no active jobs in the system.

Once the shutdown operation is selected, it will be in complete control of system action. To restart normal system operations, the 3791 must be reinitialized through power-on sequence.

ABNORMAL TERMINATION OF 3791 OR 3792 OPERATIONS

When either the 3791 Controller or the 3792 Auxiliary Control Unit ceases operations and:

- The Power On indicator is on (3791) or the Logic On indicator is on (3792).
- The digit display located on the individual operator's panel is displaying a four-character sequence.

It is often necessary to dump the contents of the 3791 or 3792 in order for IBM to identify and repair a malfunction. The four-digit number in the digit display should be looked up in the 3790 Messages publication to determine what action should be taken. When a dump action is specified, follow the procedures described below.

3791 Dump Procedure

1. If there is a diskette in the 3791, unload it and place it in its protective envelope.
2. Take a 3791 Dump Diskette (supplied by IBM) and handwrite the four characters (displayed in the digit display) in the space provided on the diskette protective envelope.
3. Load the 3791 Dump Diskette in the diskette enclosure.
4. Rotate the 3791 operator panel Data/Function Select switch to position 7.
5. Press the RESET pushbutton on the 3791 operator panel. The TEST indicator should light (on) to indicate the dump is in progress.
6. If the TEST indicator flashes on and off, the number displayed on the digit display should be recorded and the RESET pushbutton pressed again. The TEST indicator should come on and not flash.
7. When the TEST indicator goes off and the digit display number is FFFF, the dump is complete.
8. Unload the 3791 Dump Diskette, place it in its protective envelope, and set it aside for the service representative.
9. Return the Data/Function Select switch to the NORMAL position. The 3790 system can now be reinitialized by loading the Daily Initialization Diskette and turning power off and then on.

3792 Dump Procedure

Note: Failure of a 3792 Auxiliary Control Unit should not affect the operation of terminals or line printers on other 3792s or the 3791 Controller.

1. Record the four-character sequence displayed on the digit display of the 3792 operator panel. It should be saved for the service representative.
2. Rotate the 3792 Data/Function Select switch to position 7.

3. Press the RESET pushbutton on the 3792 operator panel. The digit display on the 3792 will display D000 to indicate that the dump is in progress.
4. When the digit display on the 3792 displays D100, the dump is complete and the 3792 can be restarted by returning the Data/Function Select rotary switch to the NORMAL position and pressing the RESET pushbutton or turning power off and then on.

Note: The 3791 can store only one dump for each 3792 installed. The service representative should be called to extract the 3792 dump before dumping the same 3792 again.

LINE PRINTER (SPECIAL FEATURE)

The 3791 and 3792 can have line printers as special features. This printer prints on a continuous form with a vertical line spacing of six lines per inch. A print line is either 80 or 132 characters wide with 10 characters printed per inch.

Print Mechanism

Actual printing is done by a mechanism that consists of a print hammer assembly, a ribbon cassette, and an endless type belt (Figure 2-2). The type belt is made of steel and has the characters etched on it. The paper on which you will be printing is fed between the print hammers and the ribbon. The ribbon is fed alongside the type belt. When the type is positioned (by two driving pulleys) in relation to the proper hammer, the hammer strikes the paper from the rear. Thus, the paper and the ribbon are forced against the type, and the character is printed.

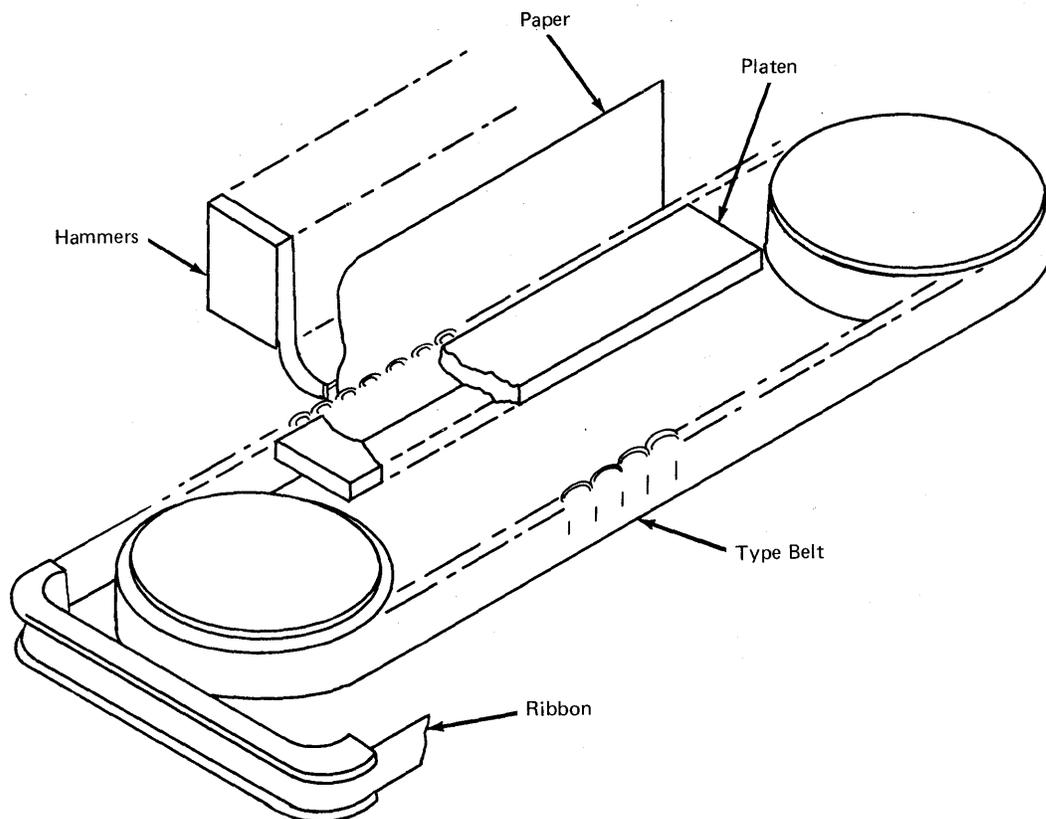


Figure 2-2. Type Belt Printing Mechanism

Forms Tractor Feed

The continuous-forms paper is fed through the Line Printer by two mechanical assemblies called "forms tractors". These tractors are mounted on the carriage drive shaft, which is powered by the carriage motor. You can adjust the tractors so that the pins engage the holes near the edges of the forms paper. When the drive shaft rotates, the tractor pins advance the paper for printing on the next line or on the next form. (Normally, this advance is under program control.)

Main Access Panel

To open the main access panel, press down on the latch handle (see Figure 2-3). This will release the latch. Then, insert your fingers under the handle and lift to open the cover. This panel must be closed before the printer will be made "ready" for printing.

Upper Paper Clamp

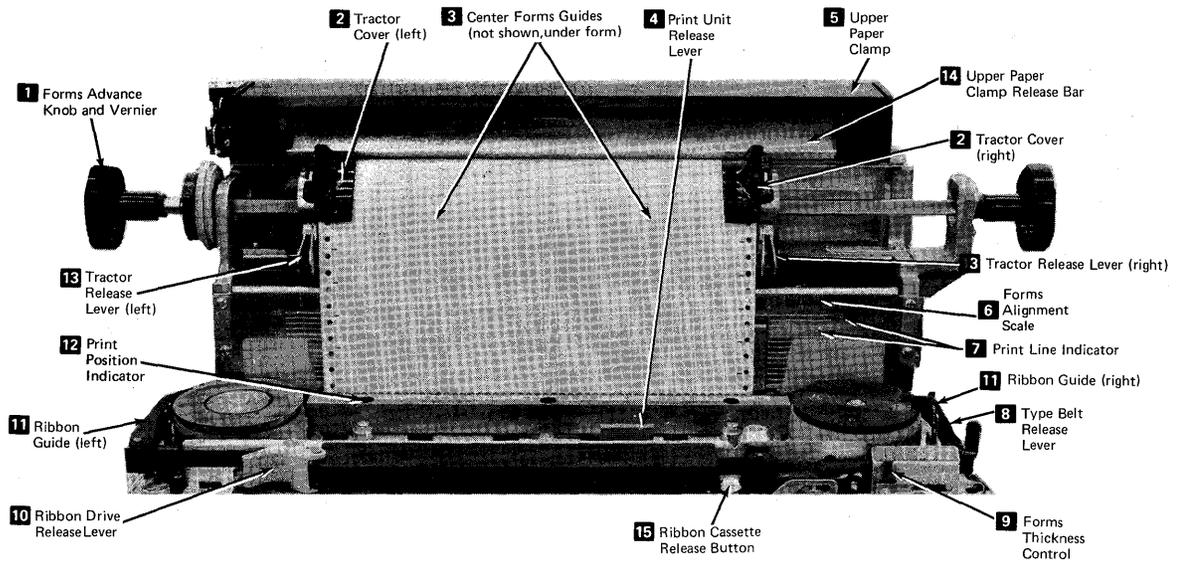
To open the upper paper clamp **5**, press the release bar **14** to the rear. This releases the clamp automatically.

Operating Controls

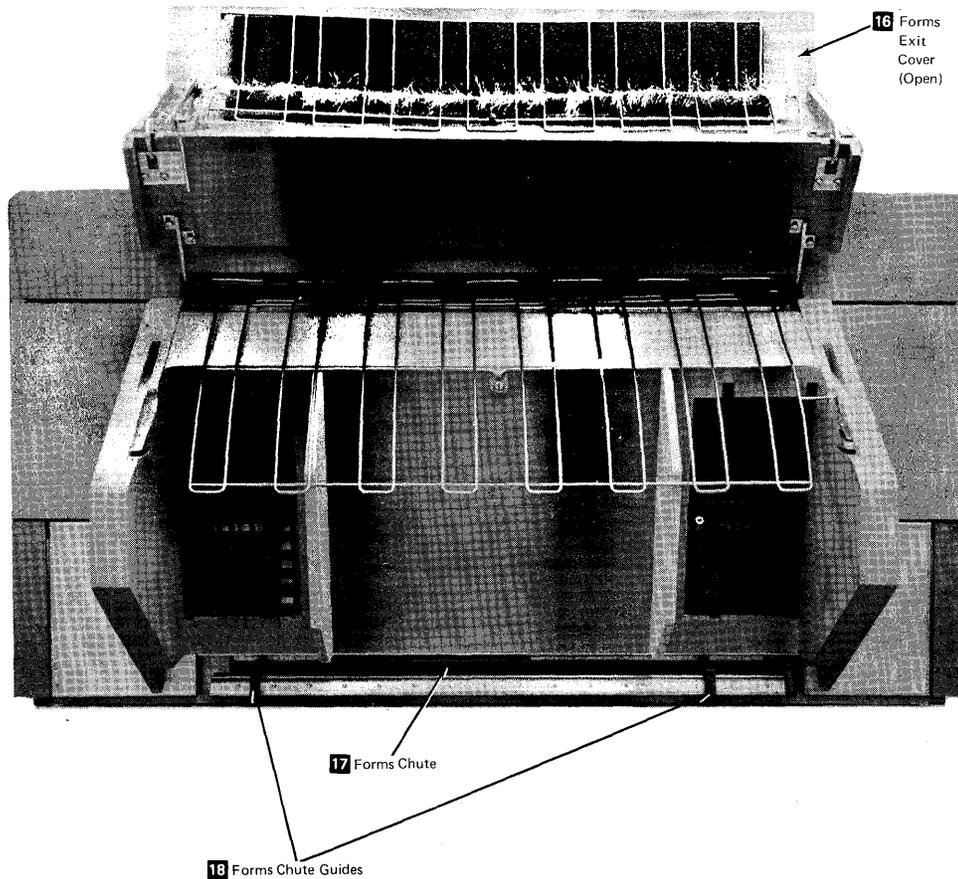
Figure 2-4 will help you locate and identify the various operating controls you will be using.



Figure 2-3. 3791 Controller with Line Printer (Design Model)



Front View



Rear View

Figure 2-4. Line Printer Operating Controls (Covers Removed)

Forms Advance Knobs/Vertical Alignment Vernier

The forms advance knobs provide an adjustment for approximate positioning of the paper forms in the printer. You'll find these knobs located at the left and right sides of the printer. As you turn the knobs, you can see how the forms tractors fit the holes in the edges of the paper and "feed" the paper through the machine.

The vertical alignment vernier **1** (a feature of the left forms advance knob) provides an adjustment for exact positioning of paper forms. This control is activated by pressing in and rotating the paper advance knob from the left side of the printer.

Tractor Release Levers

The tractor release levers **13** allow you to adjust the forms tractors to the left or right to fit the various widths of paper forms. To move the tractors, raise the tractor cover **2**, pinch the release levers together and shift the tractors left or right to the desired position. Releasing the levers locks the tractor in place. The tractor covers hold the forms-feed holes over the tractor pins.

Print Unit Release Lever

Pull the print unit release lever **4** toward you to open the print unit. This is necessary when you want to load or remove forms, replace the ribbon, or change the type belt. To close the print unit, push it to the rear.

Note: When the print unit is open, the type belt does not run.

Forms Thickness Control

Slide this control **9** to the position corresponding to the number of parts of the forms loaded in the printer. For example, if you are loading two-part forms, set the control to position 2.

Print Line Indicator

Several lines on the paper guide **7** are used to align the paper to the selected print line.

Print Position Indicator

Your Line Printer prints up to 80 or 132 characters on any one line. The print position indicator **12** shows you where each of these characters will print. Thus, the indicator is useful when you are loading forms that must be printed upon in specified positions.

Forms Alignment Scale

Note the number where the left edge of the form is located on the front forms alignment scale **6**. You will use this number when you align the form in the rear forms chute. At the rear of the printer, align the right edge of the form with the same number on the rear forms alignment scale.

Type Belt Release Lever

The type belt release lever **8** is located at the right pulley. When you pull this lever toward you, tension is released from the print belt, allowing removal or installation.

Ribbon Drive Release Lever

Push this lever **10** to the rear to release the pressure on the ribbon. Press the ribbon cassette release button **15** to remove the cassette.

Ribbon Guides

The right and left ribbon guides **11** can be raised to enable ribbon replacement and type belt replacement.

Operating Procedures

Readying the Printer

To make the printer "ready" for operations ensure that:

1. Forms are loaded in the printer.
2. The print unit release lever is latched.
3. The main access panel is closed and latched.

If you want to reposition or change forms while the printer is operating, opening the main access panel will make the printer "not ready", thus stopping print operation. Closing the main access panel will make the printer "ready", causing the print operation to continue.

Forms Loading

When performing the following procedure to load forms in the Line Printer, use Figure 2-4 for locating the various parts and controls.

1. Open the main access panel and the print unit.
2. Open the tractor covers **2** and the upper paper clamp **5**.
3. Push the print unit release lever **4** to lower the printing mechanism.
4. From the rear of the printer, open the forms exit cover **16**. Slide the forms chute guides **18** apart so the forms can be fed between the two guides.
5. Manually feed 15 to 20 inches of forms squarely into the forms chute **17**. (Be sure forms cover the end-of-forms mark on the rear forms alignment scale.) If the forms slide out, feed in more forms until they stay in the printer.

Note: Some forms are easier to feed if the first and second sheets are folded double.

6. From the front of the printer, squeeze the tractor release levers together and move the forms tractors to the approximate position for handling the forms.
7. Slide the two center forms guides **3** so they are equally spaced between the forms tractors.

8. Position the left forms-feed holes over the left tractor pins. By sliding the left tractor, align the form in relation to the print position indicator **12**. Position the right forms-feed holes over the right tractor pins. Make sure the forms are squarely on the tractors and close the tractor covers.
9. Recheck your print-position setting on the left edge of your forms. Then, adjust your right tractor to keep the forms taut but not so tight that the tractor pins tear the forms-feed holes.
10. Rotate the forms advance knobs **1**, feeding enough forms to start them into the upper forms guide. Close the upper paper clamp.
11. Note the number where the left edge of the forms passes over the front forms alignment scale. From the rear of the printer, align the right edge of the paper with the same number on the rear forms alignment scale. Slide the forms chute guides **18** in to just lightly touch the edges of the forms. (Be sure the forms cover the end-of-forms mark.)
12. Position the stack or box of forms squarely behind the printer so that the forms feed straight up into the printer without rubbing against the rear left and right forms guides.
13. Align forms to the first print line (next procedure).
14. Raise the printing mechanism until it locks.

Forms Alignment to First Print Line

In the following procedure, use Figure 2-4 to help locate controls and indicators.

Note: Printer power must be on to align forms properly.

1. Set the forms thickness control **9** for the number of parts in the forms being used.
2. Close the print unit.

Note: Printing within 1/6 inch of the horizontal perforation is not recommended. In this description, assume you wish to start printing on the eighth line of the form.

3. Rotate the forms advance knob until the perforation is aligned with 4 or 5 on the print line indicator **7**.
4. Push in the left (vernier) forms advance knob **1**, and slowly advance the forms up until the perforation lines up with the "8" on the print line indicator.

Note: If you have advanced the forms farther than you meant to, you may back down and realign as follows:

- a. Open the print unit.
- b. Rotate the forms advance knob backward until the perforation is at least three lines below the desired line. If the forms do not back down through the forms chute, gently pull the slack forms out the rear of the printer.
- c. Repeat steps 2, 3, and 4.
5. Close the main access panel and the forms exit cover.

Forms Removal

Note: You should not tear off forms while the printer is running. To do so could result in uneven print lines.

To remove forms after printing, simply stop the printer and, if necessary, advance the printed forms up to a perforated line and tear them off. You may then elect to do one of the following:

1. To continue printing on the forms remaining in the printer, realign the forms. (Follow steps 3, 4, and 5 of the "Forms Alignment to First Print Line" procedure.)
2. To remove unused forms from the printer, open the upper paper clamp, the tractor covers, and the print unit. Remove the forms from the upper paper clamp and the tractors. Then, from the rear of the printer, carefully pull the forms out through the forms chute.

Ribbon Cassette Removal and Replacement

In the following procedures, refer to Figure 2-4 to check control locations, and to Figure 2-5 for a detailed view.

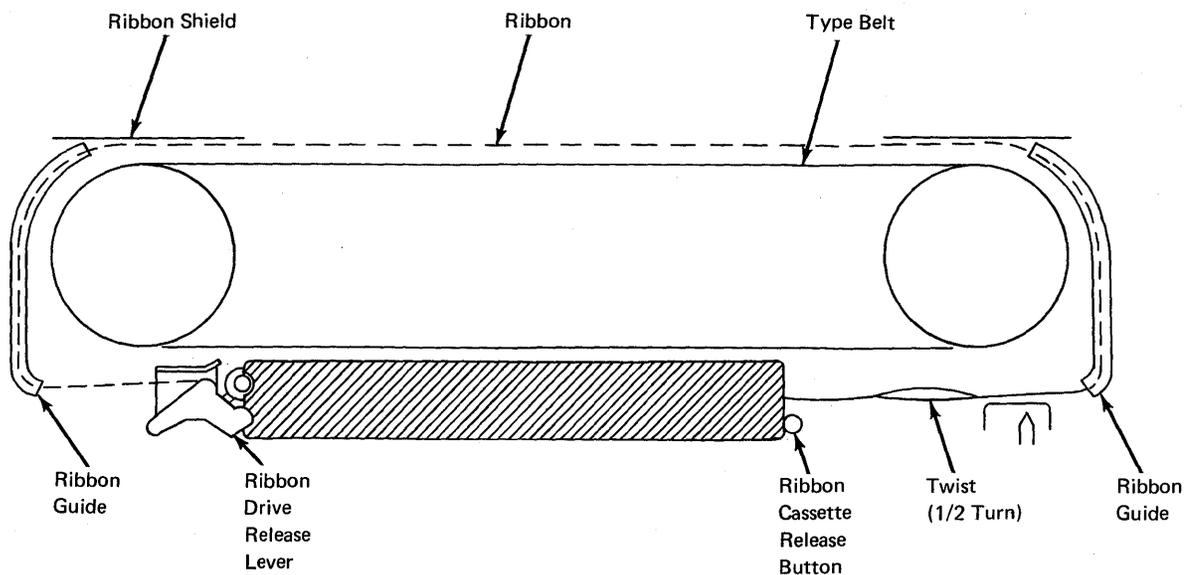


Figure 2-5. Ribbon Cassette Installed in Line Printer

Removal

1. Open the main access panel.
2. Pull the print unit release lever **4** toward you to unlatch the print unit.
3. Raise the ribbon guides **11** .

4. Release the pressure on the ribbon. (Move the ribbon drive release lever **10** to the rear.)
5. Press down the ribbon cassette release button **15** (on the right end of the cassette). Slide the cassette to the right, off the drive roll assembly, and out of the mounting bracket.
6. Remove the ribbon from the ribbon guides and dispose of the ribbon cartridge.

Replacement

1. Place the ribbon cassette in the mounting bracket and feed the ribbon between the drive rollers.
2. Slide the ribbon cassette to the left, over the drive roll assembly tabs, until the stop position is reached.
3. Close the ribbon drive release lever **10** to grip the ribbon between the drive roll and the pressure roll.

Note: A decal showing the proper ribbon-feed path is located on the underside of the main access panel.

4. From the cassette outlet, pull enough ribbon to thread (the ribbon around the guides and through the print area.
5. Lower the ribbon guides. Make sure the ribbon twist is located as shown on decal. (The ribbon is manufactured with one twist to equalize ribbon usage.) Be sure the ribbon is placed so it will feed between the ribbon shield and the type belt.
6. Rotate the type belt pulley counterclockwise to wind any extra ribbon back into the cassette and to check that the ribbon is feeding correctly.
7. Set the forms thickness adjustment control knob.
8. Close the print unit and main access panel.

Type Belt Removal and Replacement

In the following procedures, refer to Figure 2-4 to check control locations, and to Figure 2-6 for a detailed view.

Removal

1. Open the main access panel. Raise the ribbon guides **11** .
2. Pull the print unit release lever **4** toward you to unlatch the print unit.
3. Release the tension on the type belt by pulling the type belt release lever **8** toward you.

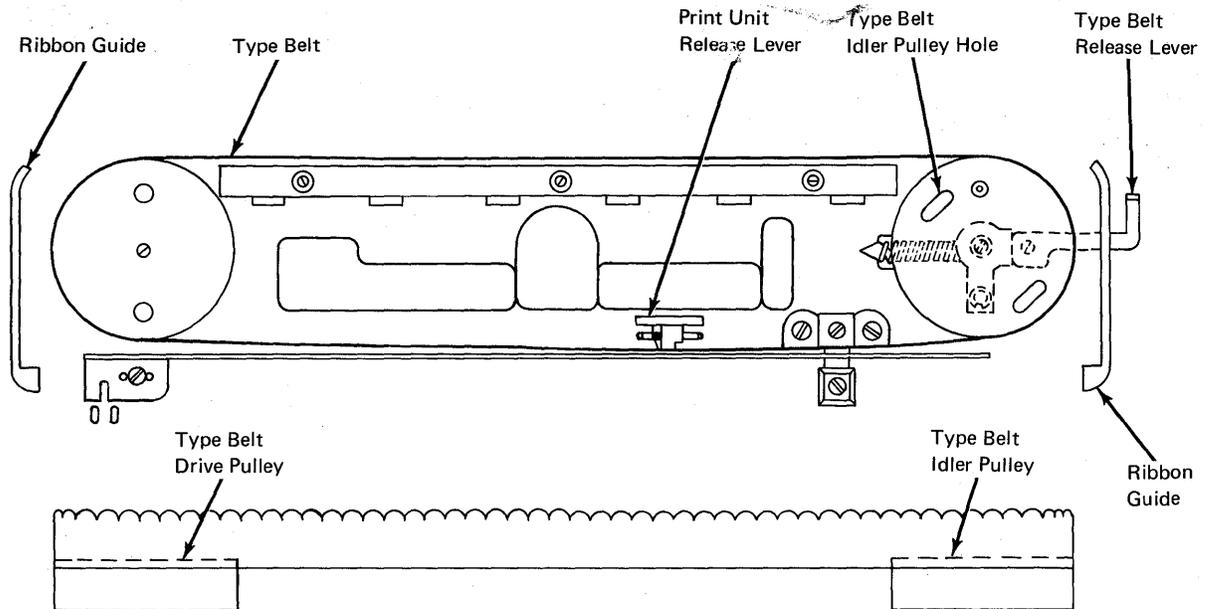


Figure 2-6. Type Belt Installed in Line Printer

4. Lift the type belt off the pulleys. Take care not to bend the belt sharply.

Replacement

Note: The belt being replaced must be the same type as the belt that was removed.

1. Place the type belt over the pulleys, with the typeface edge up.
2. Push the type belt release lever **3** back toward the rear of the printer.
3. Manually rotate the belt pulley counterclockwise. This will move the type belt to its operating position on the pulleys and in the guides.
4. Lower the ribbon guides and again rotate the belt pulley counterclockwise to position the ribbon.
5. Check that the ribbon is feeding between the type belt and the plastic ribbon shield.
6. Close the print unit and main access panel.

CHAPTER 3. CONTROL OPERATOR FUNCTIONS

INTRODUCTION

Use of control operator functions is restricted to the control operator's use of Operator ID 01 and the associated password. These functions can be selected from any 3277 Display Station or 3793 Keyboard/Printer: however, if an unauthorized operator (incorrect Operator ID) attempts to select these functions, an error is indicated by the error message: FOR CONTROL OPERATOR ONLY (followed by the STOP indication for the 3277).

When the 3790 system identifies a control operator logging on, any error or text messages accumulated are signaled by the MESSAGE-WAITING indication. The system messages are presented on request before any other type of message. If the control operator has already logged on the 3790 system, system messages are signaled by the MESSAGE-WAITING indications as soon as the system is free to do so.

Although the control operator functions can be selected from a 3793 or 3277, it is advisable to run them from the 3793 so that a copy of the input and output can be saved (for those times when communication with host system or service personnel is necessary).

Additionally, it is advisable to use the 3793 whenever possible for the request message function. The control operator message queue will often contain data that must be passed to the host or to service personnel for problem isolation and recovery.

Selection of Functions

If you are unsure about which function to select, Table 3-2 (found on page 3-53) can be used to look up responsibilities requiring use of control operator function. The description of the associated functions can be found in the body of this Chapter.

1. The operator terminal must be in Enter/Inquiry mode.

Note: You operate control operator functions only at a 3793 Keyboard-Printer or a 3277 Display Station. SYSTCM, SYSLERR, terminal operator functions, and 3790 programs can be used at any terminal.

2. Enter ID (01 or 1) and password (2 through 8 characters).
3. If there are any messages for you, the MESSAGE WAITING indication is presented on the operator terminal. Retrieve message(s) by activation of the request message function, take action if necessary, and continue.
4. Select the control operator function desired by entering either function name or function number. Selection of control operator functions by other than an authorized control operator results in the following message:

FOR CONTROL OPERATOR ONLY.

5. Following the selection of the control operator function, the 3790 system will be in a prompt/response mode until completion of the function.

6. When the function you selected has various options, the function will prompt:

SEE SYSXXXXX OPTION GROUP Y --

where:

SYSXXXXX is the function name

Y is the option group number if there is more than one option group.

A complete listing of all option groups can be found in Appendix B. Detailed descriptions of each option group are contained in the operating procedures for each function.

Listing of Functions

Table 3-1 lists control operator functions in alphabetical order. The remainder of this chapter contains detailed descriptions, operation procedures and error conditions for each control operator function. System prompts are preceded by an asterisk(*) to aid in visual identification. These asterisks do not appear at the terminal.

Table 3-1. List of Control Operator Functions

Function Name	Function Number ID	Control Operator Function	Page No.
SYSCOPY	931	Copy Application Data Set	3-3
SYSDATE	901	Set System Date	3-10
SYSDINIT	933	Initialize Diskette	3-11
SYSHCST	959	Control Host System Communication	3-14
SYSIBLD	935	Build Diskette for Daily Initialization	3-20
SYSIMOD	934	Modify System Parameters	3-22
SYSLDISK	912	List Disk Status	3-26
SYSLERR	978	List Condition Incident Log	3-28
SYSLPROG	914	List Program Information	3-31
SYSOPR	900	Access - Update Operator Table	3-33
SYSPACK	930	Pack Data for Transmission to Host System	3-36
SYSPRINT	904	Print a Print Data Set Group	3-40
SYSTEM	999	Test Control Monitor	3-42
SYSTEM	903	Activate-Deactivate-Shutdown Terminals/3792s	3-50

COPY APPLICATION DATA SET

Name: SYSCOPY Number: 931

The function of SYSCOPY is to copy the data from an application data set on disk storage to one or more diskettes (dump) or from one or more diskettes to disk storage (restore).

Because 3790 programs and other functions such as SYSHOST (batch) may read or write application data sets, it is imperative that SYSCOPY be used only when no other applications or functions are active. The result of using SYSCOPY while other applications or functions are active might be the loss or destruction of the data set(s). To protect your application data, SYSCOPY will not start if any applications/functions are active.

The use of SYSCOPY should generally be under the direction of your host programming staff. This is very important since they control the creation and deletion of application data sets as well as the 3790 programs that create and use the data in those data sets.

Some reasons for copying data from the disk to the diskette(s) (dump) are:

- To keep a backup copy of the disk application data set that can be restored if the disk application data set is subsequently lost, destroyed, or deleted.
- To allow recovery of the readable data from a data set that has been partially destroyed or is causing many disk read or write errors.
- To remove an application data set from the disk that is no longer used, but the data should be kept for historical purposes. The disk storage space will be freed for other uses when the host programmer causes a DELETE of that data set.
- To allow a duplicate of one of your application data sets to be taken to another 3790 system for use there. This must be done only under direction of your host programmer.
- To allow the host programmer to delete the data set from the disk while still keeping the data available for later use. Two reasons for deleting a data set are:
 1. To free disk space for other uses.
 2. A data set requiring a large amount of sequential disk space must be created. Although enough space is available for the new data set, it is not sequential.

DATA SET	UNUSED BLOCKS	DATA SET	UNUSED BLOCKS	DATA SET	UNUSED BLOCKS
1	(500)	2	(500)	3	(800)

If the host programmer attempted to create data set 4 which required 1000 sequential blocks, it could not be done. By copying data set 3 to diskette(s) and doing a DELETE for data set 3, CREATE data set 4, CREATE data set 3 and restoring data set 3, the appearance would then be:

DATA SET	UNUSED BLOCKS	DATA SET	DATA SET	DATA SET	UNUSED BLOCKS
1	(500)	2	4	3	(300)

This operation must be done only under the direction of the host programmer.

When a data set is copied to diskette(s), it retains its data set number and can be restored only to that same data set number. Up to 99 diskettes can be generated by a single data set copy operation.

There are two ways to copy from the diskette to disk storage (restore): full restore or update restore. Both restore options cause the writing of all the records on the diskette back to disk storage. An update restore will allow those records which exist on disk storage but not on the diskette to remain intact through the SYSCOPY operation. This type of restore is generally done when records have been added to an indexed data set (since the last dump via SYSCOPY) and they must be saved. Restores for relative data sets are always full restores; that is, the data set after restore will look exactly as it did immediately prior to the SYSCOPY dump. If an indexed data set is deleted and created by the host programmer after being copied to diskette(s), the full restore or update restore will produce the same results; that is, the data set will appear exactly as it was prior to the dump operation. This (DELETE and CREATE) should be done if many dataset errors have been found. The update restore without DELETE and CREATE will add back those records which were dumped and retain records added since the dump. It will not generally correct data set errors.

There are two basic reasons for performing a restore using SYSCOPY:

1. The data set has been partially or fully lost or destroyed.
2. A data set that was deleted from disk storage has been created and the old data is required.

These operations should be under the direction of the host programmer.

Operating Procedure

Before activating SYSCOPY, you should ensure that all other operators are logged off the system and that SYSHOST (batch) is inactive, or else SYSCOPY cannot be used.

After SYSCOPY is selected, a series of messages and prompts will be presented. Whenever starting SYSCOPY or proceeding to a new diskette, you should ensure that a diskette initialized by SYSDINIT is in the diskette enclosure prior to responding to the prompting messages. SYSDINIT must be run just prior to SYSCOPY.

For any messages not requiring a response, a STOP guidance indication will be given and must be acknowledged before SYSCOPY will continue.

* ENTER 0 TO DUMP, 1 TO RESTORE:

Entry of other than 0 or 1 will cause SYSCOPY to present a message and terminate.

If the restore option is chosen (1), the following prompts for input will be presented:

* TO UPDATE DATA SET, ENTER 0
(THERE MAY STILL BE BAD DISK
RECORDS AFTER DATA SET IS
RESTORED)
FOR FULL RESTORE, ENTER 1
(DELETE/CREATE DATA SET FROM
HOST BEFORE RUNNING SYSCOPY):

If other than 0 or 1 is entered, SYSCOPY terminates.

When the update option (0) is selected, all the diskette records are copied to the disk (replacing any records which are on the disk).

Records which are on the disk but not on the diskette will remain. When the full restore option (1) is selected, all the records that are on the diskette will be copied to the disk. Full restore should be done only for an empty data set.

If 1 is entered (full restore), the following prompt for input will be presented:

* HAS DELETE/CREATE BEEN DONE?

ENTER 0 IF YES, 1 IF NO:

This question should be answered only after communication with the host programmer indicates that these operations have been performed.

If the response is other than 0, SYSCOPY presents a message and will terminate.

The following prompt will be presented for a dump or restore operation.

* ENTER DATA SET NUMBER (01-48):

The number of the application data set to be dumped or restored should be entered. If the data set number entered does not exist, it is not in use, or it is not in the range of 01-48, SYSCOPY will present a message and terminate.

The following two prompts will appear for a dump operation only.

* ENTER CREATION DATE MM/DD/YY:

Enter today's date for SYSCOPY dump operation (message appears for first diskette only) where:

MM = month number (1-12)
DD = day number (1-31)
YY = last 2 digits of the year (00-99)

Each value should be separated from the next by a slash (/) or a dash (-) (both separators must be the same).

If an invalid date is entered, SYSCOPY will present a message and terminate.

* ENTER EXPIRATION DATE MM/DD/YY:

Enter the date past which the copied data need not be saved (may be overwritten). This date must be in the same format as the creation date and it must be later than the creation date. If an invalid date is entered, SYSCOPY will present a message and terminate.

The following message is presented for the first diskette in a restore operation.

* CREATION DATE IS MM/DD/YY

EXPIRATION DATE IS MM/DD/YY

These dates can be verified against the expected expiration and creation dates. A prompt will be presented to allow selection of the SYSCOPY, Continue, or Terminate option (if either date is incorrect).

* DONE WITH DISKETTE NUMBER XX

MOUNT NEXT DISKETTE NUMBER YY

This message is presented for dump or restore when the end of a diskette has been reached but there is more data to be dumped or restored. For a restore operation, ensure that the next diskette loaded has the correct sequence number. For a dump operation, write the next diskette number (YY) on the protective envelope of the diskette to be loaded.

* DCNE WITH DISKETTE NUMBER XX

DUMP COMPLETE

The dump is complete and the diskette can be removed from the enclosure and stored in the protective envelope. Additional messages will follow.

* DONE WITH DISKETTE NUMBER XX

RESTORE COMPLETE

The restore is complete and the diskette can be removed from the enclosure and stored in the protective envelope. Additional messages will follow.

* NO. OF INDEX BLOCK ERRORS IS XXXXX

NO. OF RECORD ERRORS IS YYYYY

NO. OF BLOCK ERRORS IS ZZZZZ

This message will appear for an indexed data set and contains the count of disk storage errors in reading or writing that data set. If any of the counts are non-zero, the information should be immediately communicated to the host programmer.

* NO. OF RECORDS SUCCESSFUL IS XXXXX

NO. OF RECORDS LOST IS YYYYY

This message will appear for a relative data set. If the number of records copied successfully is zero or the number of records lost is non-zero, the information should be immediately communicated to the host programmer.

Error Conditions

For any termination (other than normal or invalid option/reply) of SYSCOPY after a data set has been partially dumped or restored, contact the host programmer for assistance.

* INVALID OPTION

A value not valid for the preceding prompt has been entered. SYSCOPY is terminated.

* INVALID REPLY

A value not valid for the preceding prompt has been entered. SYSCOPY is terminated.

* DATA SET DOES NOT EXIST

The data set number entered is not between 01 and 48 or has not been defined by a CREATE from the host system. SYSCOPY is terminated.

* WRONG DATA SET

The data set number entered is not in use on disk storage. SYSCOPY is terminated.

* ONLY CONTROL OPERATOR ON SYSTEM

There are other operators using the system, or SYSHOST (batch) is in process and SYSCOPY could cause loss or destruction of a data set. SYSCOPY is terminated.

* CREATION EXCEEDS EXPIRATION

The expiration date entered for the first diskette on Dump option must be greater than the creation date. SYSCOPY is terminated.

* INVALID CREATION OR EXPIRATION

The creation or expiration date just entered was not in the correct format, or the day or month values were not valid. SYSCOPY is terminated.

* DATA SET EMPTY/CANNOT BE DUMPED

The specified disk storage data set does not contain any records that can be dumped. SYSCOPY is terminated.

* 6103-DISK READ ERROR--RECORD XXXXX

In attempting to dump a relative data set, SYSCOPY has encountered an unreadable disk storage block. A prompt will be presented so you may decide to terminate SYSCOPY or write a record of all zeros on the diskette.

* 6104-DISK READ ERROR-INDEX BLOC

In attempting to dump or restore an indexed data set, SYSCOPY was unable to read a disk storage index block (which may point to many indexed records). A prompt will be presented so that you can terminate SYSCOPY or continue (bypass the complete index block for dump, bypass current record for restore).

* ENTER 0 TO CONTINUE, 9 TO END:

If 0 is entered, SYSCOPY will continue as specified in the preceding message. If 9 is entered, SYSCOPY will terminate. Any other response will cause SYSCOPY to terminate after presenting an error message.

* 60E3-DISKETTE READ ERROR-RECORD XXXXX

The message will be presented during the restore of a relative data set. A prompt will be presented so that you can terminate SYSCOPY or cause one block of zeros to be written on disk storage.

* 7117-NO DISK SPACE AVAILABLE

The last free blocks of disk storage space were used before all the diskette data could be restored. SYSCOPY is terminated.

* DISKETTE NOT INITIALIZED OR

WRONG DISKETTE MOUNTED

A noninitialized diskette or a nondump diskette has been loaded. A prompt will be presented so that you can terminate SYSCOPY or load the correct diskette in order to continue.

* WRONG DISKETTE MOUNTED

DISKETTE NOT FORMATTED FOR 3790

A diskette for dump or restore must be properly formatted for the 3790. A prompt will be presented so that you can terminate SYSCOPY or load a correct diskette in order to continue.

* WRONG DISKETTE MOUNTED

DISKETTE INACCESSIBLE

An attempt was made to dump to a diskette that was marked inaccessible. A prompt will be presented so that you can terminate SYSCOPY or load a correct diskette in order to continue.

* WRONG DISKETTE FOR DATA SET NO. XX

The data set number on the diskette does not match the data set number specified for this restore operation. A prompt will be presented so that you can terminate SYSCOPY or load a correct diskette in order to continue.

* DISKETTE DOES NOT CCNTAIN
DUMPED RECORDS

The diskette mounted for a restore operation does not have any dumped records on it. A prompt is presented so that you can terminate SYSCOPY or load a correct diskette in order to continue.

* DISKETTE MOUNTED IS NUMBER XX

REQUIRED DISKETTE IS YY

The diskette just loaded for a restore operation does not have the proper sequence number. A prompt will be presented so that you can terminate SYSCOPY or load the diskette with the correct sequence number in order to continue.

* NO DATA ON DISKETTE

The diskette loaded for a restore contains no data as a result of an unsuccessful dump operation. A prompt will be presented so that you can terminate SYSCOPY or load a correct diskette in order to continue.

* TO MOUNT NEW DISKETTE, ENTER 2

TO TERMINATE, ENTER 9:

The currently loaded diskette cannot be used. Entering 9 will terminate SYSCOPY. Before entering 2, a correct diskette should be loaded and made ready. Any other response will cause an error message to be presented, and SYSCOPY will reprompt for input.

* CREATION DATE SHOULD BE MM/DD/YY

EXPIRATION DATE SHOULD BE MM/DD/YY

DISKETTE DOES NOT MATCH DATES

This message is presented for diskettes (other than the first) in a restore operation and indicates that the diskette dates do not match those found on the first diskette. A prompt will be presented so that you can terminate SYSCOPY or load the correct diskette to continue.

* DATA SET CANNOT BE RESTORED

DESCRIPTION CHANGED SINCE DUMP

The disk storage data set has been deleted and created from the host since it was dumped to the diskette, and the description (type, size, key definition, or other parameters) has changed so that the data on the diskette cannot be restored. SYSCOPY terminates. You should communicate this information to the host system programmer after running SYSLDISK for the data set you have tried to restore.

* 60E0-DISKETTE READ/WRITE ERROR

SYSCOPY has detected a permanent error on the diskette which prohibits processing that diskette. If detected during initial diskette processing, a prompt is presented so that you can terminate SYSCOPY or load another diskette to continue. If detected after initial diskette processing, SYSCOPY terminates. Running SYSDINIT might cause the diskette to become usable; if not, it should be discarded.

* 60E1-DISKETTE DRIVE FAILURE

The diskette drive has malfunctioned and SYSCOPY terminates.

* 90E0-DISKETTE DRIVE UNAVAILABLE

SYSCOPY is not able to access the diskette and will terminate. Either the drive is in use or has been found inoperational.

* 60E2-DISKETTE NOT READY

If the diskette is not ready during the initial processing for that diskette (First read), a prompt will be issued so that you can terminate SYSCOPY or continue with the diskette loaded and ready. If processing the data portion of the diskette, SYSCOPY will terminate.

Note: For messages 6103, 6104, 60E0, and 60E3, contact the host programmer for assistance in selection of proper option.

SET SYSTEM DATE

Name: SYSDATE Number: 901

The function of SYSDATE is to allow the control operator to enter a date into the 3790 system for access by 3790 programs. Because the date is not saved by the 3791 between initializations, SYSDATE must be called following the completion of each initialization sequence of the 3791 as well as any time the day changes without the 3791 being reinitialized.

Operating Procedure

Upon selection, the SYSDATE function will issue the following prompt:

* ENTER DATE MM/DD/YY:

The response should be entered on one line (with no blanks) followed by pressing the enter key. The response meanings are:

- MM = Month number 1-12 (1 or 2 digits)
- DD = Day of month number 1-31 (1 or 2 digits)
- YY = Last 2 digits of the year

Month, day, and year can be separated by slashes (/) or dashes (-).

When SYSDATE has checked and confirmed the input, the message:

* SYSTEM DATE CONFIRMED

will be presented and SYSDATE will terminate.

SYSDATE must be run each time the system is (re)initialized, or the day changes.

Error Conditions

If the month, day, or year values were not entered correctly, SYSDATE will present one of the following messages and reprompt for the entire input.

* INVALID DATE

Means that one (or more) of the three input values was longer than 2 digits.

* MONTH INCORRECT

Means that the month value entered was not between 1 and 12.

* DAY INCORRECT

Means that the day value entered was not between 1 and 31 or the value was too high for the specified month.

Example: 02/30/76 (February 30th)

INITIALIZE DISKETTE

Name: SYSDINIT Number: 933

The function of SYSDINIT is to analyze and initialize new or used formatted diskettes. The initialized diskette can then be used for SYSCOPY, SYSPACK, or SYSIBLD output. If errors are identified by SYSDINIT, the diskette may be rejected (discarded) or used with a reduced data capacity.

SYSDINIT requires exclusive use of the diskette enclosure and cannot be run when any of the following functions are in process:

SYSPACK
SYSCOPY
SYSIBLD
SYSHOST (Batch transmission)

SYSDINIT will write required header information on the diskette and optionally clear the data portion. Unformatted or improperly formatted diskettes will be rejected.

Operating Procedure

After selection, the following messages will be presented.

* MOUNT NEW DISKETTE

The diskette should be placed in the 3791 Controller and the diskette enclosure closed.

* IS DISKETTE TO BE CLEARED?
ENTER 1 IF YES, 2 IF NO:

If a 1 is entered, the entire data portion of the diskette is cleared. If a 2 is entered, the data portion of the diskette will remain unchanged. Any other entry results in RANGE being presented. Reset the RANGE to enter a valid response.

When the analysis and initialization are complete, the following message is presented:

* DISKETTE HAS BEEN INITIALIZED--

ARE ADDITIONAL DISKETTES

TO BE INITIALIZED?

ENTER 1 IF YES, 2 IF NO:

The initialized diskette can now be unloaded. If a 1 is entered, SYSDINIT will restart. If a 2 is entered, SYSDINIT will terminate. Any other response results in RANGE being presented. Reset the RANGE to enter a valid response.

Error Conditions

* READY DISKETTE

The diskette is not ready. Ready it by closing (or opening and closing) the diskette enclosure. SYSDINIT will continue processing.

* FOLLOWING DATA SET NOT EXPIRED

XX

TO TERMINATE, ENTER 9

TO MOUNT NEW DISKETTE, ENTER 2

TO CONTINUE-DELETE DS, ENTER 3:

SYSDINIT has found that data set XX has not expired and you must enter a 9 to terminate SYSDINIT, a 2 to mount a new diskette, or a 3 to delete the unexpired data set and continue. Any other entry results in RANGE being presented.

* DISKETTE INACCESSIBLE

TO TERMINATE, ENTER 9

TO MOUNT NEW DISKETTE, ENTER 2:

The diskette has been flagged so that it cannot be read or written.

Enter a 9 to terminate SYSDINIT or a 2 if a new diskette is to be mounted. Any other entry results in RANGE being presented.

* CANNOT INITIALIZE DISKETTE
DATA SET WRITE PROTECTED

TO TERMINATE, ENTER 9

TO MOUNT NEW DISKETTE, ENTER 2:

The diskette contains unexpired data which cannot be overwritten.

Enter a 9 to terminate SYSDINIT or a 2 if a new diskette is to be mounted. Any other entry results in RANGE being presented.

* DISKETTE NOT FORMATTED FOR 3790

TO TERMINATE, ENTER 9

TO MOUNT NEW DISKETTE, ENTER 2:

Enter a 9 to terminate SYSDINIT or a 2 if a new diskette is to be mounted. Any other entry results in RANGE being presented.

* 6CE4-DISKETTE DEFECTIVE

TO TERMINATE, ENTER 9

TO MOUNT NEW DISKETTE, ENTER 2

TO CONTINUE, ENTER 3:

Enter a 9 to terminate SYSDINIT, a 2 to mount a new diskette, or a 3 to complete initialization of the defective diskette. If continue is selected, the possibility of errors exists during subsequent use of the diskette. Any other entry results in RANGE being presented.

* 60E0-DISKETTE READ/WRITE ERROR

TO TERMINATE, ENTER 9

TO MOUNT NEW DISKETTE, ENTER 2:

An error was detected on the diskette. Enter a 9 to terminate SYSDINIT or a 2 if another diskette is to be mounted for initialization. Any other entry results in RANGE being presented.

* 90E0-DISKETTE DRIVE UNAVAILABLE

This message is presented at the start of SYSDINIT when another function such as SYSHOST (Batch session) is using the diskette or the 3791 diskette mechanism is not accessible.

* 60E1-DISKETTE DRIVE FAILURE

The diskette drive has malfunctioned and SYSDINIT terminates.

* FUNCTION TERMINATED

SYSDINIT is terminating: See previous message for reason.

CONTRCL HOST SYSTEM COMMUNICATIONS

Name: SYSHOST Number: 959

The functions of SYSHOST are: enabling, controlling, monitoring, and disabling communications between host system program and 3790 programs or functions executing within the 3790. Such communications are called "sessions". There are two types of sessions: application sessions which are initiated by terminal operators through 3790 programs, and a batch session which is initiated from the host system and communicates with the 3791 controller.

SYSHOST allows you to:

- Enable batch and/or application sessions to be initiated.
- Prohibit new batch and/or application sessions from being initiated, and set an indicator requesting that application sessions be terminated.
- Set line speed or switched/nonswitched line type indicator.
- Request presentation of connection and session status.
- Add, delete, or request presentation of batch session IDs.
- Run 3791 communication equipment diagnostics.

SYSHOST must be coordinated with the communication personnel in order to assure desired data communication.

SYSHOST does not control the physical line connection between your 3790 and the host system. If your system has a switched line connection, refer to Chapter 2 for dial procedures.

Operating Procedure

After SYSHOST is selected, the following prompt will be presented:

* SEE SYSHOST OPTION GROUP 1 --

Responses of 1, 2, 3, 4, 5, 6, and 9 are valid and described below. Any other response will cause the RANGE indication to be presented. Reset the RANGE indication and enter the correct response.

<u>Response</u>	<u>Action</u>
1	<p>Batch and/or application session(s) are to be enabled. OPTICN GROUP 2 prompt will be presented next. Note that this will not initiate (start) sessions. Application sessions must be started by a terminal operator using a 3790 program and a batch session must be started by a host system program. The physical line connection to the host system should be established prior to enabling application sessions or enabling a batch session when your system has a switched line connection without an automatic answer feature.</p> <p>If no other session is currently enabled, the host communication equipment diagnostics will automatically be run and the success/failure status of the diagnostics will be presented. Once the enable options have been accepted, message A081 (see below) will</p>

<u>Response</u>	<u>Action</u>
	<p>be presented. The status option (5) of SYSHOST should be used to determine the complete status of the enabled session(s).</p> <p>Sessions that have been disabled, but are still active, cannot be enabled. Once a session has been terminated, it can not be reinitiated. Before ending a session, its status should be presented (option 5) to determine whether it is active. If the session is inactive, do not enable it until it has terminated.</p>
2	<p>Batch and/or application session(s) are to be disabled. The OPTION GROUP 2 prompt will be presented next. Note that currently active sessions will not be terminated by this option; it will only prohibit new sessions from being started, and set an indicator requesting that application sessions be terminated.</p> <p>The program that started the session (3790 program for application session, 370 program for batch session) has access to an indicator set by the disable option. Normal operational procedure will be for that program to terminate the session, but it is not mandatory. The present option (5) of SYSHOST should be used to determine the complete status of any or all sessions.</p>
3	<p>The line speed will be set to high or low, or the line indicator will be set to switched or nonswitched, depending on your response to the OPTION GROUP 3 prompt presented next.</p> <p>These operations should be done only under the direction of the host communication operator. They will normally be performed only when errors have occurred during transmission. If the corresponding operations are not performed by the host communication operator, the 3790 will be unable to transmit or receive data.</p> <p>These operations cannot be done while the host is connected and any session is enabled. The set line speed option is valid only on variable speed modems. The set switched/nonswitched is valid only for an external modem.</p> <p>The set operations will last only until the next (re)initialization of the 3791 or the inverse SET operation.</p>
4	<p>3791 communication equipment diagnostics are to be run. The next message presented will be the indication of success or failure.</p>
5	<p>The status of the host connection and that of batch and/or application session(s) will be presented, depending on your response to the OPTION GROUP 2 prompt presented next.</p> <p>The status presentation will include the status of the modem, the 3704 or 3705 at the host location, and the 370 at the host location. They will be presented as connected or not connected. The four combinations of status follow:</p>

<u>Response</u>	<u>Action</u>																				
	<p style="text-align: center;">CONNECTED</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> </tr> </thead> <tbody> <tr> <td>MODEM</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> <td>No</td> </tr> <tr> <td>3704/3705</td> <td>Yes</td> <td>Yes</td> <td>No</td> <td>No</td> </tr> <tr> <td>370</td> <td>Yes</td> <td>No</td> <td>No</td> <td>No</td> </tr> </tbody> </table> <p>Case A All connected-normal communications can proceed.</p> <p>Case B and C If the host communications operator has not activated the line and/or the cluster, this will be the normal status. If the host communications operator activates the line and cluster (successfully) and the same status continues, the service representative should be called.</p> <p>Case D If no session has been enabled or dial connection has not been established, this status is normal. If one or more sessions have been enabled, the line connection is made and the same status continues, contact the service representative.</p> <p>A line of status will be presented for each session specified (see messages in this section). Each line will indicate batch or application session, whether it has been enabled, whether it has been logically activated from the host, and whether it has started. Additionally, for application sessions, the 3790 program ID, operator ID, and terminal logical unit address are presented for sessions which have been started.</p>		A	B	C	D	MODEM	Yes	Yes	Yes	No	3704/3705	Yes	Yes	No	No	370	Yes	No	No	No
	A	B	C	D																	
MODEM	Yes	Yes	Yes	No																	
3704/3705	Yes	Yes	No	No																	
370	Yes	No	No	No																	
6	<p>Batch session IDs are to be added, deleted, or presented. Two or three additional messages will be presented so that you can select the desired option.</p> <p>The batch session IDs should be changed before enabling the batch session. If the ID(s) are changed after the batch session is enabled, the new ID(s) will not be in effect for the enabled session. Only a successful re-enable of batch (or reinitialization of the 3791) will cause the new IDs to be used. The IDs should be presented before enabling batch to ensure that the correct IDs are in force.</p>																				
9	SYSHOST is to be terminated.																				

* SEE SYSHOST OPTION GROUP 2 --

This prompt will appear if option 1, 2, or 5 was selected for the first prompt. Responses 7, 8, or 9 are valid. Any other response will result in RANGE being presented. Reset the RANGE indication and enter a valid response.

<u>Response</u>	<u>Action</u>
7	The enable, disable, or listing will be applied to the batch session. Before enabling the batch session, it is advisable to mount the (first) SYSPACK output diskette in the 3791. If there is no SYSPACK output, a SYSPACK diskette containing no data should be loaded. If batch sessions are to occur when there is no one

<u>Response</u>	<u>Action</u>
	at the 3791 (unattended), batch should not be disabled because the host system may require more than one batch session (which cannot happen after a disable batch).
8	The enable, disable, or listing will be applied to application sessions.
9	The enable, disable, or listing will be applied to all sessions.

After the requested option is completed, SYSHOST will present the OPTION GROUP 1 prompt again.

* SEE SYSHOST OPTION GROUP 3 --

This prompt will appear if option 3 was selected for the first prompt. Valid responses are 12, 13, 14, or 15. Any other response will result in RANGE being presented. Reset the RANGE indication and enter the valid response.

<u>Response</u>	<u>Action</u>
12	Line speed is set to high.
13	Line speed is set to low.
14	Line indicator is set to switched.
15	Line indicator is set to nonswitched.

After the requested option is completed, SYSHOST will present the OPTION GROUP 1 prompt again.

* A083-DIAGNOSTIC SUCCESSFUL

This message will be presented if OPTION GROUP 1, option 4, was selected and the 3791 communication equipment responds properly to the diagnostic. The OPTION GROUP 1 prompt will be presented again.

* FOR BATCH ID, ENTER 7:

This prompt will be presented if OPTION GROUP 1, option 6, was selected. A response other than 7 will cause RANGE to be presented. Reset the RANGE indication and enter 7. The OPTION GROUP 5 prompt will be issued next.

* SEE SYSHOST OPTION GROUP 5 --

Valid responses for batch ID operations are 41, 42, or 43. Any other response will cause RANGE to be presented. Reset the RANGE indication and enter a valid response.

<u>Response</u>	<u>Action</u>
41	A batch session ID is to be added. An additional prompt for the ID will follow.
42	A batch session ID is to be deleted. An additional prompt for the ID will follow.
43	The batch session IDs are to be presented. After presentation, a STOP will be issued. When acknowledged, SYSHOST will present the OPTION GROUP 1 prompt again.

* ENTER ALPHAMERIC ID:

This prompt will appear if option 41 or 42 was selected for OPTION GROUP 5. Enter the 1 to 8 character batch session application name

(ID) given to you by the host system programmer. Any alphabetic characters should be entered in uppercase; if not, these characters will be converted to uppercase by SYSHOST in order to match IDs sent from the host system. Invalid input (more than eight characters or one or more nonalphameric characters) will cause a terminal guidance indication to be presented. The indication can be reset and valid input entered. After the ID operation has been completed, SYSHOST will present the OPTICN GROUP 1 prompt.

* HOST CONNECTED - nnn

* 3704/3705 CONNECTED - nnn

* MODEM CONNECTED - nnn

where: nnn will be Yes or No in the above three messages.

These three messages will appear whenever status is presented.

* OLN RDY SESS PGM OPR TM

This header will be presented when status of sessions is requested. It will be followed by one line for each session. The meanings for the header are:

OLN: On-line; if the session has been enabled, the status line will show YES.

RDY: Ready; if the session has been logically activated from the host system, the line status will show YES.

SESS: Session; if the session has been started, the status line will show YES.

PGM: Program ID; for started sessions, the 3790 program ID being used will be presented on the status line.

OPR: Operator ID; for started sessions, the operator ID will be presented on the status line.

TM: Terminal logical unit address; for started sessions the terminal logical unit address that started an application session will be presented on the status line.

Note: Both OLN and RDY must be YES before a session can be started. PGM, OPR, and TM are not presented for batch sessions.

* STATUS COMPLETE

This message will appear when the final session status line has been presented. The OPTICN GROUP 1 prompt will be presented.

* A081-ENABLE IN PROCESS--BEFORE

PROCEEDING, DISPLAY STATUS

This message will be presented during the enable batch session process. Status should be presented by use of the status presentation option (5). before communications are started.

* SET COMPLETE

The SET option for line speed or switched/nonswitched has been successfully completed. A STOP will be presented, followed by the OPTION GROUP 1 prompt.

* DISABLE COMPLETE

The DISABLE option has been accepted. No sessions can be started until a subsequent enable. Status should be presented with the PRESENT option (5) to see if the session terminated. A STOP is presented, followed by the OPTION GROUP 1 prompt. This message is presented only when no application sessions are on line, and the batch session is not enabled.

Error Conditions

* 6080-DIAGNOSTIC FAILURE

The diagnosis of the 3791 communication equipment has failed. The message queue will have a message regarding the type of failure and should be requested when you are finished with SYSHOST. SYSHOST will present the OPTION GROUP 1 prompt.

* HOST TASK NOT ENABLED

RESOURCES NOT AVAILABLE

SYSHOST is not able to enable the specified sessions because not enough system resources are available. At least one operator must log off before a batch session can be enabled.

SYSHOST will present the OPTICN GROUP 1 prompt again.

* NO ROOM IN ID RECORD

No more than eight batch IDs can exist in the ID record. Before another ID can be added, at least one ID must be deleted.

SYSHOST will present the OPTICN GROUP 1 prompt again.

* ID NOT IN RECORD

An attempt was made to delete a batch ID that did not exist. SYSHOST will present the OPTION GROUP 1 prompt again.

* UNABLE TO SET, HOST ACTIVE

No SET operations can be done while any session is active on line as defined in the status presentation. The SYSHOST OPTION GROUP 1 prompt will be presented.

* A082-CANNOT RUN DIAGNOSTICS,

HOST ACTIVE

No diagnostic operations can be selected while any session is active. The OPTION GROUPE prompt will be presented.

BUILD DISKETTE FOR DAILY INITIALIZATION

Name: SYSIBLD Number: 935

The function of SYSIBLD is to generate a daily initialization diskette by writing control data on an initialized diskette so that the diskette can be used for 3791 initialization. The diskette must have been previously initialized by the SYSDINIT function.

Execution of SYSIBLD requires exclusive use of the diskette enclosure and therefore cannot be done while any of the following are in process:

- SYSHOST (batch)
- SYSDINIT
- SYSCOPY
- SYSPACK

The initialization of the 3791 requires the diskette to be loaded in the diskette enclosure and that it be fully readable. Diskettes can wear out over a period of time; therefore, the SYSIBLD function is provided to allow the generation of additional (backup) daily initialization diskettes so that at least one readable daily initialization diskette is always available.

Operating Procedure

After SYSIBLD is selected, the following messages and prompts will be presented:

* DAILY INITIALIZATION DISKETTE

HAS BEEN GENERATED

This message indicates that a diskette has successfully been generated and can be removed from the diskette enclosure. It will be followed by the message:

* ARE ADDITIONAL DISKETTES TO BE

GENERATED?

ENTER 1 IF YES, 2 IF NO:

If another diskette is to be generated, load another SYSDINIT initialized diskette in the diskette enclosure before responding with 1. A response of 2 will terminate SYSIBLD. Any other response will cause RANGE to be presented. Reset the range to enter a valid response.

Error Conditions

* TO TERMINATE, ENTER 9

TO MOUNT NEW DISKETTE, ENTER 2:

This message will appear when the diskette loaded is not properly initialized. If another diskette is to be processed by SYSIBLD, it should be loaded into the diskette enclosure before responding with 2. Entering 9 will terminate SYSIBLD. Any other response will cause RANGE to be presented. Reset the range to enter a valid response.

* READY DISKETTE

This message will be presented when the diskette becomes not ready during the SYSIBLD processing. Ready the diskette by closing (or opening and closing) the diskette enclosure with the diskette loaded.

* MOUNT NEW DISKETTE

This message will be presented when the diskette is not loaded or is not ready when SYSIBLD processing is to start. Insure that an initialized diskette is loaded and ready.

* 60E0-DISKETTE READ/WRITE ERROR

This message is presented when an unrecoverable read or write error occurs on the diskette. The next prompt presented will allow you to mount another diskette to continue or terminate SYSIBLD.

* 90E0-DISKETTE DRIVE UNAVAILABLE

This message is presented at the start of SYSIBLD when another function such as SYSHOST (batch) is using the diskette drive or the drive is inaccessible. SYSIBLD will terminate.

* DISKETTE NOT FORMATTED FOR 3790

This message is presented when the mounted diskette is not initialized or is improperly initialized. The next prompt will allow you to mount a new diskette to continue or terminate SYSIBLD.

* 6105-DISK READ FAILURE

An unrecoverable read failure was encountered on disk storage. SYSIBLD is terminated.

* 6102-REQD DATA NOT ON DISK

The data required to build the operating diskette cannot be read from disk storage. SYSIBLD terminates.

* 60E1-DISKETTE DRIVE FAILURE

After starting to build a diskette, the diskette mechanism has become inaccessible. SYSIBLD terminates.

* FUNCTION TERMINATED

DISKETTE NOT INITIALIZED

SYSIBLD is terminating; see previous message for reason. The diskette is not usable for 3791 initialization.

Note: Messages not requiring specific responses will be followed by the STCF guidance message which must be acknowledged prior to SYSIBLD continuing.

MODIFY SYSTEM PARAMETERS

Name: SYSIMOD Number: 934

The function of SYSIMOD is to allow the entry of parameters for host communication, print data set groups, transaction data set groups, and terminal/printer attachment. These parameters must be entered at system installation time by you or the service representative and may be changed as the characteristics of the system change. The parameters should be supplied to you by the host system or by service personnel. Data will be supplied by host system personnel on the 3790 System Installation Data form.

Operating Procedure

After selecting SYSIMOD, the following prompt is presented:

- * TO MODIFY HOST TABLE, ENTER 1
- PRINT GROUP TABLE, ENTER 2
- TDS GROUP TABLE, ENTER 3
- SYSTEM IOCB(S), ENTER 4
- 2741 IOCB(S), ENTER 5:

Although 1, 2, 3, 4, and 5 are considered valid responses, 4 should be used by service personnel only and is documented in the 3791 Maintenance Information Guide. Any other responses will cause RANGE to be presented. After resetting the RANGE, a valid response can be entered.

<u>Response</u>	<u>Action</u>
1	A series of prompts (described below) is presented for host communications options. When all prompts have been answered, SYSIMOD can be terminated or continued with additional option(s).
2	A series of prompts (described below) is presented for print data set group options. The final prompt allows termination of SYSIMOD or return to the original prompt.
3	A series of prompts (described below) is presented for transaction data set group options. The final prompt allows termination of SYSIMOD or return to the original prompt.
5	<p>A series of prompts (described below) is presented for options for the 2741s attached to your 3792(s). When all prompts have been answered, SYSIMOD can be terminated or continued with additional options.</p> <p>Data for answering the prompts should be supplied to your location on the 3790 System Installation Data form provided from the host location. If you do not have this form or its equivalent, SYSIMOD should be used only under the direct guidance of the host programming personnel.</p>

Host Prompts (Presented in order)

- * ENTER VALUE FOR
CONNECT RETRY COUNTER (0-32767)
IF NO CHANGE REQD, ENTER 88888:
- * ENTER VALUE FOR
CPEN RETRY COUNTER (1-32767)
IF NO CHANGE REQD, ENTER 88888:
- * ENTER VALUE FOR
STATION ID
IF NO CHANGE REQUIRED,
ENTER 12 ZEROS:
- * ENTER VALUE FOR
STATION ADDRESS (0-255)
IF NO CHANGE REQD, ENTER 888:
- * IF MODEM IS WRAPABLE, ENTER 1
IF NOT, ENTER 2
IF NO CHANGE REQD, ENTER 0:
- * IF MODEM CONTAINS
CONNECT-MODEM-TO-LINE-CIRCUIT,
ENTER 1, ELSE ENTER 2
IF NO CHANGE REQD, ENTER 0:
- * FOR NRZI ENCODING, ENTER 1
IF NOT NRZI ENCODING, ENTER 2
IF NO CHANGE REQD, ENTER 0:
- * FOR NONSWITCHED LINE, ENTER 1
FOR SWITCHED LINE, ENTER 2
IF NO CHANGE REQD, ENTER 0:
- * IF MODEM GENERATES TONE,
ENTER 1, ELSE ENTER 2
IF NO CHANGE REQD, ENTER 0:
- * FOR PERM REQ-TO-SEND, ENTER 1
FOR CTL REQ-TO-SEND, ENTER 2
IF NO CHANGE REQD, ENTER 0:
- * CHANGES COMPLETE--TC ENTER
IN SYSTEM, REINITIALIZE 3791

The changes entered will not take effect until the next reinitialization of the 3791.

Print Group Prompts

- * XX=NO.OF RECORDS DIVIDED BY 256
FOR THE PRINT DATA SET
- * ENTER GROUP SIZE(S), 0 TO END:

Valid responses are 1, 2, 4, 8, 16, or 32.

This prompt will be presented once. As each value is entered, SYSIMOD will present the cumulative total of values entered so far. If the total exceeds the value (XX) from the previous message, the changes will be rejected and the option can be restarted. Valid values are 1, 2, 4, 8, 16, or 32. Any other input value will cause RANGE to be presented. Reset the RANGE to enter valid value.

- * GROUP TABLE AND DSCB UPDATED
FOR PRINT DATA SET

TO CONTINUE, ENTER 1
TO TERMINATE, ENTER 9:

- * CHANGES COMPLETE--TO ENTER
IN SYSTEM, REINITIALIZE 3791

The changes entered will not take effect until the next reinitialization of the 3791.

Transaction Data Set Group Prompts

- * XX=NO.OF RECORDS DIVIDED BY 256
FOR THE TRANSACTION DATA SET

- * ENTER GROUP SIZE(S), 0 TO END:

This prompt will be presented once. As each value is entered, SYSIMOD will present the cumulative total of values entered so far. If the total exceeds the value (XX) from the previous message, the changes will be rejected and the option can be restarted. Valid values are 1, 2, 4, 8, 16, or 32. Any other input value will cause RANGE to be presented. Reset the RANGE to enter valid value.

- * GROUP TABLE AND DSCE UPDATED
FOR TRANSACTION DATA SET
TO CONTINUE, ENTER 1
TO TERMINATE, ENTER 9:

- * CHANGES COMPLETE--TO ENTER
IN SYSTEM, REINITIALIZE 3791

The changes entered will not take effect until the next reinitialization of the 3791.

2741 Prompts

Three prompts will be presented once for each 2741 defined in your system. XX is the terminal's logical unit address.

- * TO SET LOGICAL UNIT XX
FOR NONSWITCHED LINE, ENTER 1
FOR SWITCHED LINE, ENTER 2
IF NO CHANGE REQD, ENTER 0:

- * TO SET LOGICAL UNIT XX
FOR FULL DUPLEX, ENTER 1
FOR HALF-DUPLEX, ENTER 2
IF NO CHANGE REQD, ENTER 0:

- * TO SET LOGICAL UNIT XX
ENTER VALUE FOR
TIMEOUT THRESHOLD (1-255)
IF NO CHANGE REQD, ENTER 888:

- * CHANGES COMPLETE--TO ENTER
IN SYSTEM, REINITIALIZE 3791

The changes entered will not take effect until the next reinitialization of the 3791.

Error Conditions

- * TOTAL NUMBER OF GROUPS ENTERED
IS INCORRECT

The total of all values entered exceeded the total number of records (divided by 256) available. Retry desired option.

- * NO 2741 ATTACHED TO SYSTEM

There are no 2741s on your system; 5 is an invalid option if you have no 2741s.

- * 6105-DISK READ ERROR

An unrecoverable disk read error has occurred. SYSIMOD terminates.

- * 9100-INTERNAL TABLE FAILURE

The required changed could not be made because of a 3791 or disk failure. SYSIMOD terminates. See 9100 in the 3790 Messages publication for further action.

- * RECORD NOT FOUND

Data required to complete the specified update could not be found. SYSIMOD terminates. If this failure recurs, contact the service representative.

LIST DISK STATUS

Name: SYSLDISK Number: 912

The function of SYSLDISK is to list on your terminal the descriptions of application data sets and/or the amount of unused space on disk storage.

This function is normally used in isolating problems (see Chapter 4, Problem Recovery Procedures), but it can be used after batch transmission with the host system to ensure that proper data set updates have been accomplished. The output of SYSLDISK will normally be discussed with or forwarded to the programmer at the host system.

Operating Procedure

When SYSLDISK is selected, the following prompt is presented:

* SEE SYSLDISK OPTION GROUP --

<u>Response</u>	<u>Action</u>
1	Request description of one or all application data sets.
2	Request count of free blocks per disk storage volume and total free blocks.
3	Request data set description and free block count.

If option 1 or 3 is chosen, the following prompt for input is presented.

* ENTER DATA SET NO. (00=ALL):

If 00 is entered, all application data sets will be listed. If a number (1-48) is entered, that data set will be listed. Any other value will cause RANGE to be presented. Reset the RANGE indication and enter a valid number.

When option 1 or 3 is selected, the specified data set description or all data set descriptions are listed in one of the following formats. For more than one data set, eight lines at a time are presented (one per data set) followed by the STOP guidance message; acknowledge the STOP to continue.

- * AA NOT IN USE
- * AA INDEX B CCC DD E FF GGG HH J
- * AA RELATIVE B KKK LLLLL

Where:

- AA = Data Set Number
- B = 0 for Read Only, 1 for Read/Write
- CCC = Indexed data set - Key 1 displacement
- DD = Indexed data set - Key 1 length
- E = Indexed data set - Key 1 hash type
- FF = Indexed data set - Index size indicator (See Programmer's Note)
- GGG = Two keyed indexed data set - Key 2 displacement
- HH = Two keyed indexed data set - Key 2 length
- J = Two keyed indexed data set - Key 2 hash type
- KKK = Relative data set - Logical record length
- LLLL = Relative data set - Number of records

When option 2 or 3 is selected, the following is presented:

- * XXXXX FREE BLOCKS ON VOLUME 1
- * XXXXX FREE BLOCKS ON VOLUME 2
- * XXXXX FREE BLOCKS ON VOLUME 3
- * XXXXX TOTAL FREE BLOCKS

Lines 3 and/or 2 are presented if more than one disk storage volume is installed.

Programmer's Note: Index size indicator is the number of index blocks divided by 4 minus 1.

Error_Conditions

- * INVALID OPTION

This message is presented when the response to the Option Group prompt is not 1, 2, or 3. The Option Group prompt will be presented again (after a STOP indication on the 3277).

- * INVALID DATA SET NUMBER

This message is presented if the data set number has not been defined for your 3790 system. The prompt will be presented again (after a STOP indication on the 3277).

LIST CONDITION INCIDENT LOG

Name: SYSLERR Number: 978

The function of SYSLERR is to provide an output listing of one or more entries from the Condition Incident Log at a terminal or on a line printer.

Four types of incidents are recorded in the Condition Incident Log.

- Unit incidents. Examples are malfunctions or not ready conditions for terminals, printers, disk storage, or diskette.
- Machine checks within the 3791 or 3792.
- System incidents. Examples are initializations, shutdowns, abnormal application ends, logon rejections, and Set Date operations.
- Incidents related to tests of the communication connection to the host system.

Recoverable and unrecoverable errors are recorded in the Condition Incident Log.

Entries are put into the Condition Incident Log in a sequential manner and each entry is assigned a sequence number. The log is a fixed size so that after it becomes full, the oldest entries will be replaced with new incident recordings. Prior to overlaying any old incident entries, a message will be provided to the control operator (A000-CONDITION INCIDENT LOG FULL), which will indicate that the log is nearly full and should be printed or displayed so that no incident recordings will be lost.

The prime user for the data from the Condition Incident Log will be your service representative; however, you may use some of the data contained in the log for problem isolation and recovery (see Chapter 4). Since the service representative will not necessarily be at your site at all times, it is important that the Condition Incident Log be printed periodically so that when a problem occurs, it can be quickly identified and repaired. This data can also assist the service representative in identifying and adjusting or repairing parts of the system that are about to fail.

Whenever more than one incident is listed, the most current entry will always appear first. Whenever incidents are presented on the 3277, a STOP will be issued so that the operator may view the output and acknowledge the stop before the next screen presentation.

SYSLERR can also be used to clear (remove all incident entries) from the Condition Incident Log.

Unless all entries in the log are to be listed, the normal procedure in using SYSLERR will be to use one or both of the set options (range and type described below) to define the criteria to be used by SYSLERR in selecting which incident entries are to be listed.

Operating Procedure

Upon selection, the SYSLERR function will issue the following prompt:

* SEE SYSLERR OPTION GROUP --

One to nine digits of input can be entered to specify the options for SYSLERR. The first digit of the input can be 1, 2, 3, 8, or 9. Any invalid value will cause the prompt to be reissued. The meanings for the first digit are:

- 1 Scan option
- 2 Set incident type
- 3 Set range (of sequence numbers) to be printed/displayed
- 8 Clear the incident log
- 9 Terminate SYSLERR

When entering a value, you must enter the full value (see below), not just the first digit (except for 3, 8, or 9).

The complete set of input options follows:

SCAN OPTIONS

- 10 Print/display the most recent incident record (on your terminal) that matches the last set incident type and last set range. If neither type nor range has been set, the latest entry will be printed/displayed. Entry of the 10 option again will cause the next-to-last entry to be printed/displayed, and so on.
- 11 Print/display all incident records (on your terminal) that match the last set incident type and last set range. (All incidents are output if neither range nor type has been specified.)
- 12 Print all incident records (on a line printer) that match the last set incident type and the last set range. (All incidents are output if neither range nor type has been specified.)

SYSLERR will then prompt for printer selection with the message:

* ENTER PRINTER ID:

If your system has only one printer, you must enter 56. If your system has two printers, you may select the first (56) or the second (57). If the selected printer is in use or malfunctioning, you will be reprompted for input after the following message:

* PRINTER IN USE CR UNAVAILABLE

- 13 Print/display counts of all incidents at your terminal which match the last set type and range. (All counts are output if neither range nor type has been specified.)

SET TYPE OPTIONS

- 20 Set incident type to ALL.
- 21 Set incident type to all device errors.
- 21XX Set incident type to only incidents recorded for device with logical unit address XX.
- 22 Set incident type to only machine check incidents.
- 22XX Set incident type to machine check incidents for device with logical unit address XX.
- 24 Set incident type to only system incidents.
- 24XX Set incident type to specific system incidents where XX is equal to:
 - 01: Set date (SYSDATE).
 - 02: 3791 (re)initialization.
 - 04: 3791 abnormal termination.
 - 05: Shutdown (SYSTEM).
 - 09: System altered by service personnel.

10,11: 3791 storage not available.
12: Disk storage space almost used up.
13: Logon rejected.
14: SYSPACK operation required.
15: SYSHOST (batch) operation required.
20: Host communication test

SET RANGE OPTIONS

3 Set range to all sequence numbers.
3XXXX Set range to specific sequence number XXXX.
3XXXXYYYY: Set range values:
XXXX (highest sequence number)
YYYY (lowest sequence number)

CLEAR OPTION

8 Clear the entire Condition Incident Log.

Note: This should not generally be done without first printing the entire log.

TERMINATE OPTION

9 Terminate the operation of SYSLERR.

* OPERATION COMPLETE

The selected option has been successfully completed. The initial prompt for the SYSLERR option will be presented.

* PRINT INITIATED

The selected option (12) has been accepted and printing will start. The initial SYSLERR prompt will be presented.

* A001-SCAN COMPLETE COUNT=XXXX

The scan operation has been successfully completed and the number of incidents in the selected category is XXXX. The initial prompt for the SYSLERR option will be presented.

* SCAN/INCIDENT COUNT ARE RESET

This message indicates that any incident count has been set to 0 and that the SCAN start will be set to the most current incident specified. This will be done whenever a SET operation is done or the line printer output has been initiated. SYSLERR will continue.

See Appendix C for output listing formats and sample.

Error Conditions

If the response to the input option prompt does not match any of the formats described above, the following message will be presented, followed by the prompt for input option.

* INVALID REQUEST

The input should be checked against the input options listed above and a valid response entered.

* 6060-UNABLE TO READ BLOCK

An unrecoverable disk storage read error has occurred. SYSLERR continues with next preceding block.

LIST PROGRAM INFORMATION

Name: SYSLPROG Number: 914

The function of SYSLPROG is to list on your terminal the number, access code, primary device specification, transaction data set utilization, and program name for 3790 programs stored in your system.

SYSLPROG will normally be used one (or both) of two times:

1. After batch transmission of new or updated programs from the host system in order to:
 - a. Keep an accurate, up-to-date list of the programs available on the system and their characteristics.
 - b. Ensure by communication with the host programmer(s) that the proper programs have been sent to your system.
2. When an operator is having difficulty selecting or using a program. (See Problem Isolation in Chapter 4.)

Operating Procedure

After SYSLPROG has been selected, the following prompts will be presented. (The second prompt will not be presented until a valid value is entered for the first prompt.)

* LIST FROM PG MID:

The lowest program number to be listed (range 1-832) is entered. If no data is entered, the value 1 is assumed.

* LIST TO PG MID:

The highest program number to be listed (range 1-832) is entered. If no data is entered, the value 832 is assumed.

Next, a heading line is presented:

* PG MID ACCESS DEVICE TDS NAME

Followed by a listing in ascending numeric sequence of the programs within the range specified.

PG MID is the program number.
ACCESS is the program access code (0s, 1s).
DEVICE is the specification of the type of terminals that can operate with this program.
 Values are 3277-1, 3277-2, 3277, 3793, 2741 or ANY.
TDS is YES or NO, indicating whether the program uses the transaction data set and can therefore be RERUN.
NAME is the alphanumeric program name.

The following is a sample terminal listing:

PGMID	ACCESS	DEVICE	TDS	NAME
78	00000010	ANY	YES	TSTFP078
79	00000001	3793	NO	TSTFP079
84	00000000	2741	NO	TEST00084
89	10000000	ANY	NO	TEST0089
90	00000000	3277-1	NO	TEST0090
91	00000000	ANY	NO	TEST0091
94	00100000	ANY	NO	TEST0094
95	00000000	3277-2	YES	TEST0095
98	00000000	ANY	NO	TEST0098
99	00000000	ANY	NO	TEST0099

When SYSLPROG is run on the 3277 and the number of programs to be listed exceeds the number of lines on the screen, a STOP is issued after each screen is filled and the audible alarm is activated. When the STOP is acknowledged, the next screen of program listings will be presented or SYSLPROG will terminate (if there are no more programs to list).

ACCESS/UPDATE OPERATOR TABLE

Name: SYSOPR Number: 900

The function of SYSOPR is to control operator access to the 3790 system. Three values are used to control access for protection of data and programs: Operator ID, Access Code, and Password.

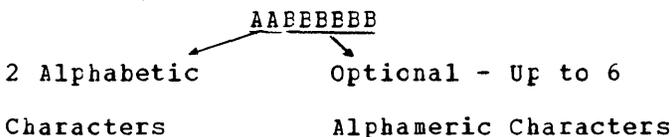
Operator ID. This is a unique operator identification number associated with each authorized operator. The numbers range from 01 to 48. Only operator 01 is the control operator. (Number 48 is reserved for the service representative. The control operator cannot use SYSOPR to control the service representative's access to the 3790 system.)

Access Code. Each operator ID will have an 8-digit access code where each digit is a 0 or 1. At least one digit must be a 1. Each 3790 program will have an access code of the same format. To select a 3790 program, a corresponding digit must be set to 1 in both the operator's access code and the 3790 program's access code. A 3790 program with an access code of all zeros can be selected by any operator. The access code assignment process allows the use of 3790 programs to be restricted to a defined set of operators.

Examples:

- A 3790 program with access code 00000000 can be selected by all operators.
- An operator with access code 11111111 can select any 3790 program.
- An operator with an access code of 11110000 can select a 3790 program with access code of 10000000 but cannot select one with an access code of 00000001.

Password. This must be used by every operator to log on the 3790 system. Passwords might be unique for every operator or they might be the same for several operators. The password format is:



When passwords are entered in the SYSOPR function, the alphabetic characters may be entered in lowercase or uppercase. The same is true for the logon function that will match uppercase and lowercase of the same alphabetic characters successfully. When passwords are displayed, the alphabetic characters will be displayed as uppercase.

When the 3790 system is first installed, the operator table contains ID 01, access code 00000000, password OPID01, and the enabled condition for the control operator. Your access code and password can be changed any time, but caution is advised. If you forget your password, you cannot log on and the system must be reinstalled by the service personnel. There are no entries in the table for operators 02-47 when the 3790 is installed.

Operating Procedure

When SYSOPR is first selected and after each option is completed, the following prompt for input will be presented:

* SEE SYSOPR OPTION GROUP --

Responses 1, 2, 3, 4, 5, 6, 7, and 9 are valid. Other responses will cause RANGE to be presented. Reset the RANGE indication to enter a valid response.

<u>Response</u>	<u>Action</u>
1	Add a new operator ID, password, and access code to the operator table. Additional prompts will be issued for ID, access code, and password. An ID already in the table cannot be added.
2	Change the access code for a specific operator ID. Additional prompts will be issued for ID and access code. The ID must be currently defined in the operator table.
3	Change the password for a specific operator ID. Additional prompts will be issued for ID and password. The ID must be currently defined in the operator table.
4	Delete an operator ID from the operator table. The prompt for ID will be issued. The ID must be currently defined in the operator table. ID 01 (control operator) cannot be deleted.
6	Mark an operator ID as being unable to log on to the 3790 system (disable). The prompt for ID will be issued. The ID must be currently defined in the operator table. ID 01 (control operator) cannot be disabled. Note that you cannot enable an operator ID until you have disabled it.
5	Mark an operator ID as being able to log on to the 3790 system (enable). This is necessary only if an ID has been disabled. The prompt for ID will be issued. The ID must be currently defined in the operator table.
7	Print/display the access code, password, and enabled/disabled state for a specific operator ID. The prompt for ID will be issued. The ID must be currently defined in the operator table.
9	Terminate the SYSOPR function.

* ENTER OPERATOR ID (01-47):

Enter the 2-digit ID for the desired operator. An invalid response (such as attempting to delete or disable operator 01) results in an error message being presented.

* ACCESS CODE IS:

Enter the new access code. A response of:

- a. Digits other than 0s or 1s results in the RANGE indication being presented. Reset the RANGE indication and re-enter a valid access code.

b. Eight 0s results in an error message being presented.

* PASSWORD IS:

Enter the new password. Any invalid response results in the guidance message RANGE being presented.

* ENABLED

The specified operator is currently enabled.

* DISABLED

The specified operator is currently disabled.

* OPERATION COMPLETE

This message will be presented when the specified option has successfully been performed.

At the completion of each option on the 3277, the STOP guidance message is presented. It must be acknowledged prior to the prompt for the next option.

Error Conditions

* INVALID OPERATOR ID

The entered ID is outside the range 01-47. The OPTION GROUP prompt will be presented again.

* INVALID REQUEST

This message is presented for one of the following reasons:

- ADD for an ID that is already in operator table.
- DELETE, CHANGE, ENABLE, or DISABLE for an ID that is not in operator table.
- DELETE or DISABLE of ID01.
- ACCESS CODE of 00000000 was entered.
- ENABLE of previously enabled ID.
- DISABLE of previously disabled ID.

PACK DATA FOR TRANSMISSION TO HOST SYSTEM

Name: SYSPACK Number: 930

The function of SYSPACK is to prepare transaction data for transmission to the host system during a subsequent batch session. Completed transaction records are taken from the transaction data set on the disk and packed onto a diskette as transmit records where they are ready for transmission to the host system.

Execution of SYSPACK requires that a diskette initialized by SYSDINIT be mounted. It also requires exclusive use of the diskette drive and therefore cannot be run at the same time as:

- SYSDINIT
- SYSIBLD
- SYSHOST (batch)
- SYSCOPY

You must specify whether the transaction records are to be kept on or deleted from the disk after being packed. Transaction records that are packed onto the diskette (completed, unheld records) will be deleted from the disk if:

- You specify deletion or
- The 3790 program that created the record specified deletion.

You have the following options regarding output to the diskette:

1. Operating with the currently mounted diskette.
2. If the mounted diskette already contains packed records, expired data will be replaced, unexpired data will be kept.
3. If the diskette becomes full, mounting another diskette or ending SYSPACK.

As transaction records are packed onto the diskette, they are deleted from the disk or marked so that they may no longer be modified by the operators after SYSPACK completes.

Operating Procedure

The following prompts for input will be presented:

* SEE SYSPACK OPTION GROUP 3 --

Enter the desired option. Valid options are:

- a. To unconditionally delete "completed" packed records, enter 1.
- b. To keep packed records that have KEEP specified as program option enter 2.

Invalid option selection results in a RANGE indication. Reset to enable entry of a valid response.

* EXPIRATION DATE (MM/DD/YY):

Enter the expiration date for the diskette where:

- MM is the number of the month (1-12)
- DD is the number of the day (1-31)
- YY is the last 2 digits of the year (00-99)

and each value is separated by a slash (/) or a dash (-). Entering values outside of the specified ranges will cause the RANGE indication to be presented. Reset to enable re-entry of date.

* STARTING DISKETTE NO. (01-99):

Specify the starting diskette number for this execution of SYSPACK. The number is required because SYSPACK can be selected any number of times prior to batch transmission, and does not maintain diskette sequence numbers between multiple selections.

* ENTER GROUP NUMBER (00-32):

Enter the desired group number. If you specify group 00, then all completed transaction records will be packed. If you specify any other group, then only the completed records in that group will be packed. A number greater than 32 will result in RANGE indication. Reset to enable entry of a valid group number. The group number entered must be defined for your system through the SYSIMOD function.

* NEXT DISKETTE NUMBER IS: XX

The current diskette has been filled. SYSPACK will continue when new diskette is mounted and ready. XX should be written in the new diskette protective envelope at the time it is mounted.

* PACKING IS COMPLETE

The specified group(s) have been packed and SYSPACK terminates.

Note: Depending on the number of records to be packed, this operation may take a few seconds or many minutes.

* OPERATION COMPLETE

This message is presented before SYSPACK terminates because there are no records to be packed or you have selected a terminate option.

* DISMOUNT DISKETTE

SYSPACK has finished processing the current diskette. Remove it and place in the protective envelope. The protective envelope should indicate the current date and sequence number.

* MOUNT NEW DISKETTE

Place the next diskette to be written in the diskette enclosure.

Error Conditions

* DISKETTE INACCESSIBLE

This message will be presented if the diskette is flagged so that data cannot be read or written. It will be followed by SYSPACK OPTION GROUP 1 prompt for input. To continue, mount a correct diskette.

* DISKETTE NOT INITIALIZED

This message is presented if the diskette has not been initialized or improperly initialized. It will be followed by OPTION GROUP 1 prompt for input. To continue, mount a correct diskette.

* DO NOT USE DISKETTE FOR PACKING

This message is presented when the diskette is not formatted for the 3790. It will be followed by OPTION GROUP 1 prompt for input. ~~To continue, mount a correct diskette.~~

* 60E0-DISKETTE READ/WRITE ERROR

This message is presented when the diskette cannot be read/written. It is followed by OPTION GROUP 1 prompt for input. To continue, mount a correct diskette.

* DISKETTE NOT EXPIRED

This message is presented when the mounted diskette has an expiration date not yet reached. It is followed by OPTICN GROUP 2 prompt for input. To continue, mount a correct diskette.

* FCUND NO RECORDS TO PACK

This message is presented when SYSPACK finds no completed records in the specified group. SYSPACK terminates.

* 90E0-DISKETTE DRIVE UNAVAILABLE

This message is presented at the beginning of SYSPACK when:

- a. SYSHOST (batch) is accessing the diskette drive.
- b. SYSPACK cannot access the diskette drive. SYSPACK terminates.

* 60E1-DISKETTE DRIVE FAILURE

This message is presented when a diskette drive error is detected during the operation of SYSPACK. SYSPACK terminates.

* 60E2-DISKETTE NOT READY

This message appears when the diskette is or becomes not ready.

It is followed by READY DISKETTE message and OPTION GROUP 4 prompt.

* 6107-ERROR WHILE PACKING TRN XXXX

A error was found attempting to read transaction record number XXXX from disk storage and it cannot be packed. The OPTION GROUP 4 prompt will be presented next to allow continuation or termination. The specified transaction record will be bypassed; SYSPACK will continue.

* SEE SYSPACK OPTION GROUP 1 --

Enter the desired option. Valid options are:

- a. To mount a new diskette, mount the new diskette then enter 2.
- b. To terminate, enter 9.

Invalid option selection results in a RANGE indication to the terminal. Reset to enable entry of valid input.

* SEE SYSPACK OPTION GROUP 2 --

Enter the desired option. Valid options are:

- a. To mount another diskette, mount diskette then enter 2.
- b. To use current diskette overlaying unexpired data, enter 3.
- c. To terminate, enter 9.

Invalid option selection results in a RANGE indication. Reset to enable entry of valid input.

* SEE SYSPACK OPTION GROUP 4 --

Enter the desired option. Valid options are:

a. To continue, enter 3.

b. To terminate, enter 9.

Invalid option selection results in a RANGE indication. Reset to enable entry of valid input.

* DISKETTE NOT FORMATTED FOR 3790

A diskette for Dump or Restore must be properly formatted for 3790. A prompt will be presented so that you can terminate SYSCOPY or load a correct diskette in order to continue.

* READY DISKETTE

Ready the diskette drive by closing (or opening and closing) the diskette cover with a diskette properly loaded. Presented next is the OPTION GROUP 4 prompt for input.

Note: See also the 3790 Message publication for further detail on messages 60E1, 60E2, and 6107.

PRINT A PRINT DATA SET GROUP

Name: SYSPRINT Number: 904

The function of SYSPRINT is to initiate the printing of a selected print data set group on a line printer or a 3793. The data printed may be retained or deleted after printing.

Selecting this function from a 3793 operator terminal allows printing on two types of printers:

1. The 3793 operator terminal used to select SYSPRINT.
2. Either one of the two line printers (if installed).

Selecting SYSPRINT by using a 3277 display terminal limits printing to either one of the two line printers (if installed).

When SYSPRINT is initiated for a 3793, a STOP guidance indication will be given so that the proper form can be mounted (if necessary) before printing starts. Pressing the RESET key will cause the print to start. Care should be used to ensure that the proper forms are mounted in a line printer before activating SYSPRINT for that line printer because printing will start as soon as the SYSPRINT input is accepted.

If the selected printer is busy with other operations, the print request is rejected, and the Print Data Set Group is kept, even if deletion is specified.

If printing is interrupted due to the selected printer becoming "not ready" (access cover open, out of forms, or forms jam), correcting the condition causes SYSPRINT to restart printing at the beginning of the Print Data Set Record that was interrupted.

Operating Procedure

After SYSPRINT is selected, the following prompt is presented:

* ENTER PRINTER ID:

If a line printer is desired, enter one of the two following responses:

<u>Response</u>	<u>Action</u>
56	The data will be printed on the first line printer.
57	The data will be printed on the second line printer.

If the output is desired on the 3793 you are operating, press the RETURN/ENTER key.

Any other response will result in the RANGE indication being presented. When the RANGE condition is reset, valid input can be entered. The third response (RETURN/ENTER with no data) will be rejected from the 3277.

* SEE SYSPRINT OPTION GROUP --

Enter the desired final disposition of the records in the data set. Valid responses are:

Enter:	To:
1	Delete records from disk storage after printing.
2	Keep records after printing.

An invalid response results in the RANGE indication being presented. When the RANGE indication is reset, a valid option can be entered.

* ENTER GROUP NUMBER (01-32):

Enter the print group number (1-32) of the records to be printed. A number greater than 32 will cause the RANGE indication to be presented. When the RANGE is reset, a valid group number can be entered.

* PRINT INITIATED

This message will be presented when the SYSPRINT inputs have been accepted for line printer output.

Error Conditions

* PRINTER IN USE OR UNAVAILABLE

This message is presented if the specified line printer is busy with other operations or is not operational. SYSPRINT is terminated.

TEST CONTROL MONITOR

Name: SYSTCM Number: 999

The function of the test control monitor is to allow the selection and execution of tests for terminals or printers. If a terminal or printer does not seem to be working properly, SYSTCM may be used to output fixed test data to the unit, and the output can be compared to the actual test data to determine whether the unit is failing. If the output data is not correct or the test fails, the service representative should be called.

SYSTCM can be selected from the 3791 operator panel or from any terminal. Tests for a 3793, 3277, or line printer may be selected from the operator panel or from any terminal. The test for a 2741 can be selected only from that 2741.

You should ensure that the terminal or printer to be tested is powered on and ready for output before initiating SYSTCM. If another terminal is to be tested, no one should be logged on that terminal.

When the SYSTCM test has been completed, the device being tested and the terminal used for SYSTCM selection will be ready for logon.

Operating Procedure

To select from the 3791 operator panel, press the ENTER FUNCTION button. From a terminal, SYSTCM or 999 should be entered.

The indication BC80 will signal successful activation of SYSTCM. It will be followed by the terminal logical unit address when SYSTCM is selected from a terminal.

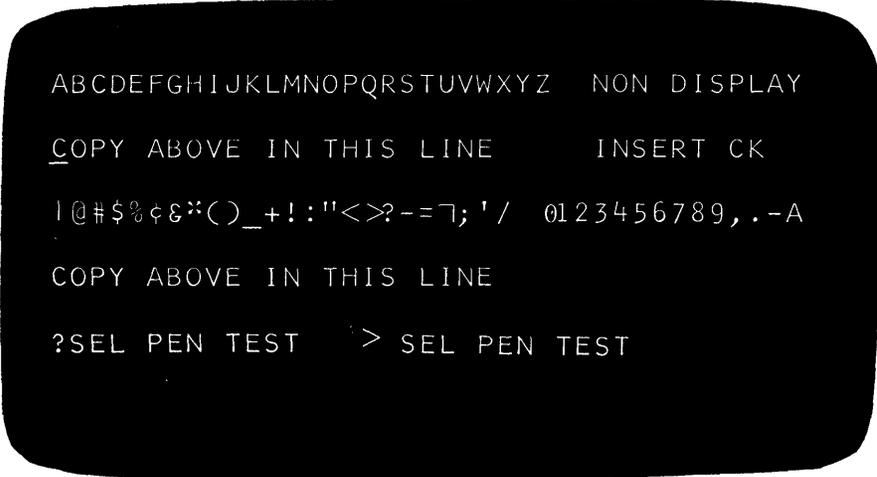
To select tests for 3793, 2741, or line printer from a terminal, simply enter the logical unit address of the unit to be tested followed by the character B.

To test a 3277, enter the logical unit address followed by 00AXB, where X is the number of the test pattern desired. (See Figure- 3-1 for the 3277 test patterns.)

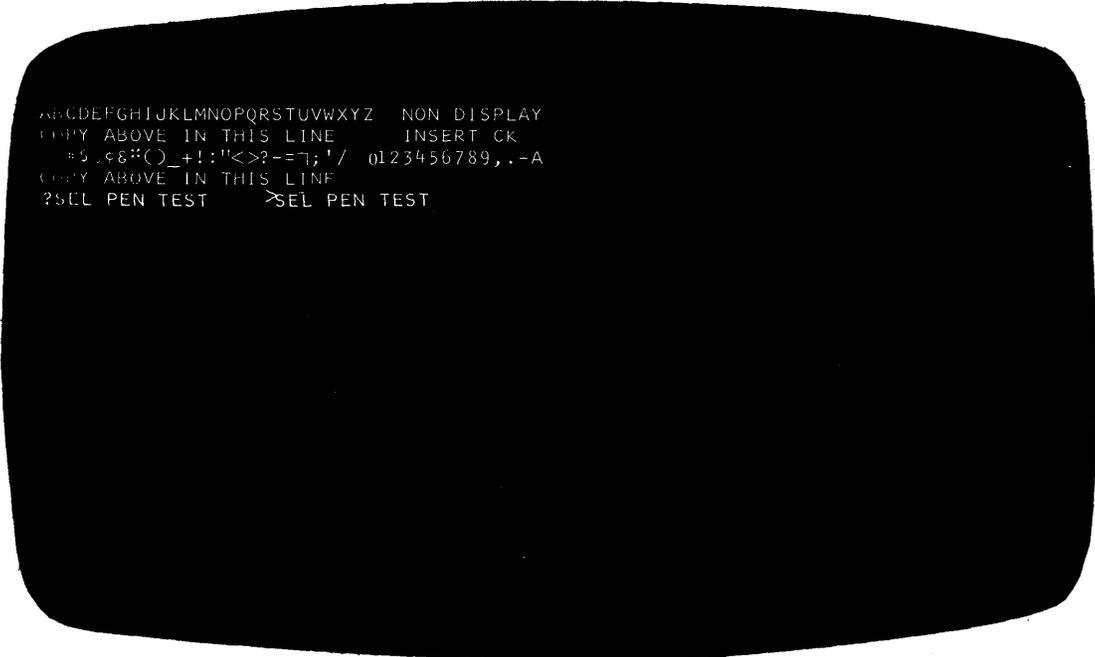
To select tests for 3793 or line printer from the 3791 operator panel:

- a. Set the Data/Function Select Switch to the first character of the logical unit address.
- b. Press the ENTER DATA switch.
- c. Repeat a and b for second character of the logical unit address.
- d. Set the Data/Function Select Switch to B and press the ENTER FUNCTION button.

Test Pattern 1



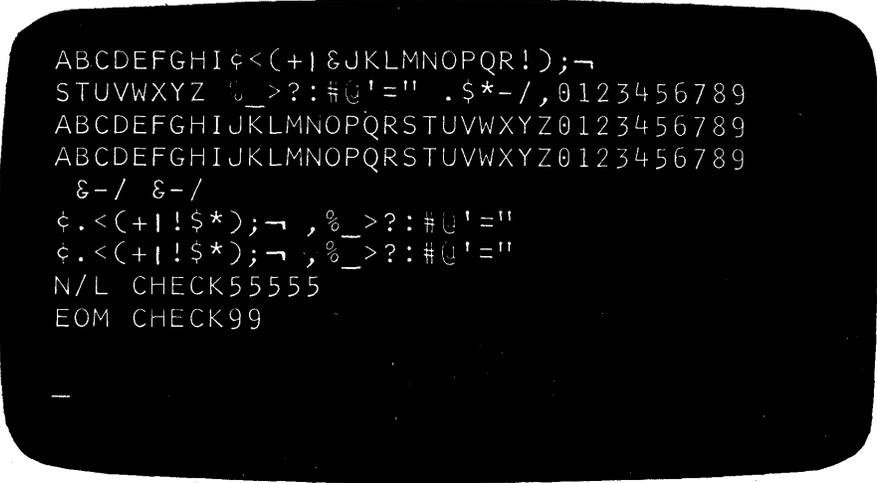
3277 Display Station Model 1



3277 Display Station Model 2

Figure 3-1. 3277 Test Patterns (1 of 3)

Test Pattern 3



3277 Display Station Model 1



3277 Display Station Model 2

Figure 3-1. 3277 Test Patterns (3 of 3)

3277 Display Station Tests

Note: Once the selected pattern is displayed, it will stay on the screen until manual intervention is taken.

- If the test was selected from the 3791 operator panel or from the 3277 being tested:
 - a. Set the Data/Function Select Switch on the 3791 operator panel to D.
 - b. Press the ENTER FUNCTION switch. SYSTCM will terminate.
- If the test was selected from another terminal, enter D and SYSTCM will terminate.

2471 Communication Terminal Test

ROUTINE 02	ALL CHARACTERS
0123456789 abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNPOQRSTUVWXYZ	
ROUTINE 03	TILT/ROTATE/TURN
a/ctevgxhy&@bsdufwiz.,	
\$,r9o6m4k2-0q8!7n513jl	
a.efhbj\$noqk/,v/ys156	
8239740tzxu@lrpm-cigd&	
A?\$C9TrE6VoG4XmH2Yk+0	
=.J,;iLz%fNw+dFu*bQs -	
ROUTINE 05	FUNCTION TEST
1234567890	
1	
2	
3	

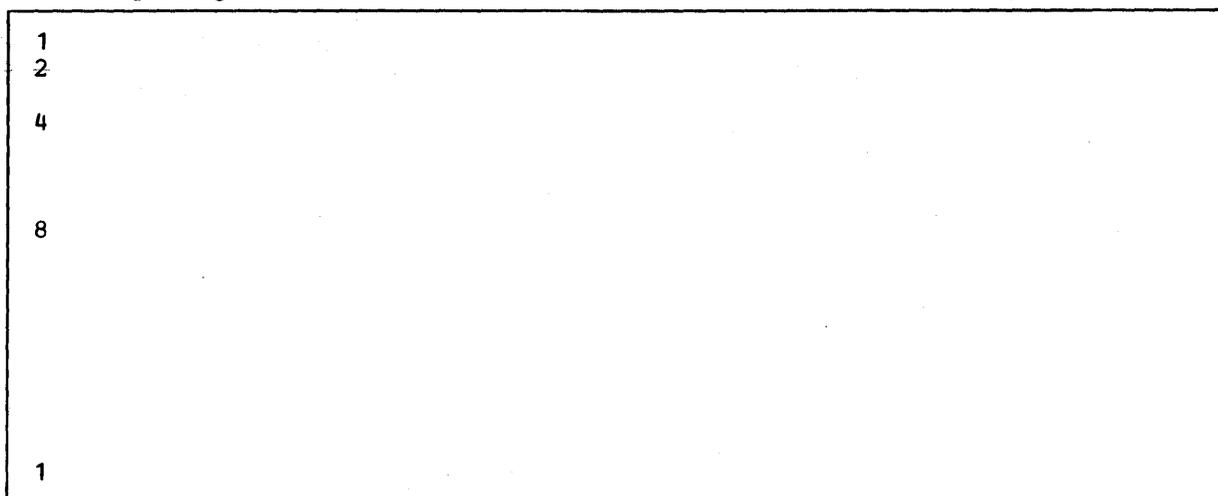
Note: These exact patterns will be output only by a standard print element. Use of a nonstandard print element will cause alterations in the output.

Line Printer Tests

There will be three patterns output to the line printer: a spacing test pattern, lines of Hs pattern, and all characters pattern.

The first pattern will appear the same for all line printers.

Line Spacing Test



The second pattern will print 16 lines with an H in every position (80 or 132 Hs per line, depending on print width).

The third pattern will check the printing of every character in each print position within a line. How many lines are printed and how each line will look depends on two factors: how many print positions (80 or 132) the printer has and how many different characters are on the print belt (64 or 96). The number of lines printed will be equal to the number of different characters on the print belt.

Each line will be filled with print (80 or 132 positions).

As each successive line is printed, each character is moved one position to the left. The character printed in position 20 on line 1 will be in position 19 on line 21, and so on.

Results for a 64-character print belt on a 132-position printer are shown in Figure 3-2.

Position	1	10	20	30	40	50	60
Line 1	ROUTINE 09						
1	1234567890#@/STUVWXYZ&,%JKLMNOPQR-\$*ABCDEFGHI+.'<(?!);-\>?:"`						
2	234567890#@/STUVWXYZ&,%JKLMNOPQR-\$*ABCDEFGHI+.'<(?!);-\>?:"`1						
3	34567890#@/STUVWXYZ&,%JKLMNOPQR-\$*ABCDEFGHI+.'<(?!);-\>?:"`12						
4	4567890#@/STUVWXYZ&,%JKLMNOPQR-\$*ABCDEFGHI+.'<(?!);-\>?:"`123						
5	567890#@/STUVWXYZ&,%JKLMNOPQR-\$*ABCDEFGHI+.'<(?!);-\>?:"`1234						
6	67890#@/STUVWXYZ&,%JKLMNOPQR-\$*ABCDEFGHI+.'<(?!);-\>?:"`12345						
7	7890#@/STUVWXYZ&,%JKLMNOPQR-\$*ABCDEFGHI+.'<(?!);-\>?:"`123456						
8	890#@/STUVWXYZ&,%JKLMNOPQR-\$*ABCDEFGHI+.'<(?!);-\>?:"`1234567						
9	90#@/STUVWXYZ&,%JKLMNOPQR-\$*ABCDEFGHI+.'<(?!);-\>?:"`12345678						
10	0#@/STUVWXYZ&,%JKLMNOPQR-\$*ABCDEFGHI+.'<(?!);-\>?:"`123456789						

This 64 character pattern will repeat to the left until 132 positions have been printed.

56	-\>?:"`1234567890#@/STUVWXYZ&,%JKLMNOPQR-\$*ABCDEFGHI+.'<(?!);-						
57	\>?:"`1234567890#@/STUVWXYZ&,%JKLMNOPQR-\$*ABCDEFGHI+.'<(?!);-						
58	\>?:"`1234567890#@/STUVWXYZ&,%JKLMNOPQR-\$*ABCDEFGHI+.'<(?!);-\						
59	>?:"`1234567890#@/STUVWXYZ&,%JKLMNOPQR-\$*ABCDEFGHI+.'<(?!);-\						
60	?:`1234567890#@/STUVWXYZ&,%JKLMNOPQR-\$*ABCDEFGHI+.'<(?!);-\>						
61	:="`1234567890#@/STUVWXYZ&,%JKLMNOPQR-\$*ABCDEFGHI+.'<(?!);-\>?						
62	="`1234567890#@/STUVWXYZ&,%JKLMNOPQR-\$*ABCDEFGHI+.'<(?!);-\>?:						
63	"1234567890#@/STUVWXYZ&,%JKLMNOPQR-\$*ABCDEFGHI+.'<(?!);-\>?:						
64	`1234567890#@/STUVWXYZ&,%JKLMNOPQR-\$*ABCDEFGHI+.'<(?!);-\>?:="						

Figure 3-2. Line Printer Test Pattern

Error Conditions

If the terminal/printer output does not match that pictured above or if anything other than the success indication (XX00) comes out at the termination of SYSTCM, call your service representative after recording or saving the output.

ACTIVATE-DEACTIVATE-SHUTDOWN TERMINALS

Name: SYSTEM Number: 903

The function of SYSTEM is to activate 3792s or terminals or to deactivate 3790 terminals or cause a system shutdown. Deactivation of a terminal prohibits any further logons or selection of 3790 programs or modes on that terminal. The terminal may continue to be used until the operator logs off. The terminal cannot be used again until the terminal is reactivated or the 3790 system is reinitialized. Activation of a terminal allows logons (and program or function processing) on that terminal.

Some of the reasons for deactivating terminals or shutting down the system are:

- The office staff will be leaving and nobody should use the system until it is reinitialized (shutdown, deactivate all terminals).
- A terminal is defective and should not be used until repaired by the service representative (deactivate terminal).
- When the number of terminal users is to be restricted, as in the use of the SYSCOPY function.

Notes:

1. All terminals that are powered on are activated automatically when the 3791 is powered on. Terminals not powered on at initialization must be activated by SYSTEM.
2. When SYSTEM is selected from a 3277, it will issue STOP between actions. An acknowledgment must be done from the terminal to allow the next action to be requested.
3. Activate/deactivate options can be used for 3792(s) also.

Operating Procedure

After SYSTEM is selected, the following prompt will be presented:

* SEE SYSTEM OPTION GROUP --

The value 1, 2, 3, 4, or 9 may be entered to select SYSTEM options. Any other entry will cause RANGE to be issued. Reset to enable a valid input to be entered.

<u>Response</u>	<u>Action</u>
1	Activate one terminal or 3792. An additional prompt will be will be presented.
2	Deactivate one terminal or 3792. An additional prompt will be will be presented.
3	Deactivate all terminals (upon logoff request). <u>Note:</u> This option will also deactivate your terminal when you logoff. The system must be reinitialized to allow any logons. This will normally be used only at the end of the day.
4	Request automatic shutdown (power off) of entire 3790 system when no applications are in process. If SYSHOST (batch) has not been activated, this option will cause the 3791 to power down when the last operator logs off. If SYSHOST (batch) has been activated, the 3791 will be powered down after all operators have logged off and the host system (batch) program terminates with a power down request to the 3790.
9	Terminate SYSTEMM

* ENTER TERMINAL ADDRESS:

This prompt follows selection of option 1 or 2.

Enter logical unit address of the terminal or 3792 you want to activate or deactivate. A logical unit address is two characters long and each character must be in the range of 0 through 9, or A through F. Any other entry results in RANGE being presented. Reset the RANGE to enter valid input. See Appendix A for logical unit addresses.

* OPERATION COMPLETE

This message indicates that SYSTEMM has completed processing the selected option and will prompt for the next option.

* DEACTIVATION PENDING

The specified deactivation request has been accepted but the unit is in use and will be deactivated when the operator logs off. When using the 3277, a STOP will be issued after each action and SYSTEMM will continue when the STOP is acknowledged.

Error Conditions

* INVALID TERMINAL ADDRESS

This message is presented when the address you input is not a valid terminal or 3792 logical unit address. Check Appendix A for correct logical unit address(es) and enter valid address.

* OPERATION UNSUCCESSFUL

A terminal could not be activated. SYSTEMM will reprompt for option.

* 9020-TERMINAL IN USE

An operator is currently using the selected terminal. The deactivation cannot occur until the operator has completed the current function or program or logged off. SYSTEMM continues.

* 9021-TERMINAL UNAVAILABLE

The terminal could not be activated because power was not on or it was off-line. SYSTEM will reprompt for option.

* 6120-CANNOT ACTIVATE TERMINAL

The terminal could not be activated because a hardware error was detected. SYSTEM will reprompt for option.

Table 3-2. Control Operator Functions Used to Fulfill Major Control Operator Responsibilities

Category	Desired Action.	Use Function	When Used (Normally)
Data Sets	Backup on diskette.	SYSCOPY-931	As required
	Restore from diskette.	SYSCOPY-931	As required
	List status.	SYSLDISK-912	As required
	Initialize PRINT/TRANSACTION data sets.	SYSIMOD-934	Installation
	Update from host system	SYSHOST-959	Host update cycle
Diskette	Initialize (new or used)	SYSDINIT-933	As required
	Build for initialization.	SYSIBLD-935	Installation
	Create Transmit	SYSPACK-930	Host batch cycle
Host Communication	Start/End/Control	SYSHOST-959	Session requirement
	Diagnostics	SYSHOST-959	As required
	Preparation (transmit data)	SYSPACK-930	Host batch cycle
	Evaluation of host output	SYSLPROG-914 SYSLDISK-912	Host batch cycle
Installation	Build initialization diskette	SYSIBLD-935	Installation
	Set up Operator IDs (passwords)	SYSOPR-900	Installation
	Receive programs from host system	SYSHOST-959	Installation
	Initialize PRINT/TRANSACTION data sets	SYSIMOD-934	Installation
	Set host/2741 communication values	SYSIMOD-934	Installation
Operators	Add/delete IDs/passwords	SYSOPR-900	As required
	Change operator values, enable /disable	SYSOPR-900	As required
	List status	SYSOPR-900	As required
Printing	Initialize Print data set	SYSIMOD-934	Installation
	Print a group	SYSPRINT-904	As required
	Receive print output from host system	SYSHOST-959	Host batch cycle
	Test printer	SYSTEM-999	As required

(Cont)

Table 3-2. Control Operator Functions Used to Fulfill Major Control Operator Responsibilities (Cont)

Category	Desired Action.	Use Function	When Used (Normally)
Problem Recovery/ Errors	Retrieve (error) messages	REQ MSG	As presented
	List/clear condition-incident log	SYSLERR-978	As required
	Program problems	SYSLPROG-914	As required
	Disk/data set problems	SYSLDISK-912 SYSCOPY-931	As required As required
	Terminal problems	SYSTEM-903 SYSTEM-999	As required As required
Programs	Receive from host system	SYSHOST-959	Host batch cycle
	List Status	SYSLPROG-914	As required
	Termination Messages	REQ MSG	As presented
	Cannot be accessed	SYSLPROG-914 SYSOPR-900	As required As required
Status Listings	Operators	SYSOPR-900	As required
	Programs	SYSLPROG-914	As required
	Disk/data sets	SYSLDISK-912	As required
	Host communication (sessions)	SYSHOST-959	As required
Terminals	Enable/disable	SYSTEM-903	As required
	Problems (test)	SYSTEM-999	As required
Miscellaneous	Set date	SYSDATE-901	Each initialization
	Pack transaction data records	SYSPACK-930	As required

CHAPTER 4. PROBLEM RECOVERY PROCEDURES

INTRODUCTION

As a control operator, you will have certain responsibilities in ensuring your business organization the most productive use of its 3790 system. When the 3790 is not fully productive, it is up to the control operator to determine what part(s) of the system are not functioning properly and to take action to correct or have corrected the improperly functioning parts.

As examples:

<u>Problem</u>	<u>Action</u>
<ul style="list-style-type: none">• Incorrect terminal operator procedure.• Terminal malfunction.• 3790 program failure.• Controller malfunction.• Communications network failure.	<ul style="list-style-type: none">• Point out to terminal operator the correct procedure.• Notify service representative.• Gather failure data (if available) and notify host system programmer.• Notify service representative.• Notify common carrier personnel.

The previous examples show that it is the control operator's responsibility to:

1. Correct the problem when it is possible to do so; for example, a terminal operator's error.
2. Notify the correct service group when problems occur in the communications link, controller, auxiliary control unit, or terminal.
3. Notify the correct host system personnel when a 3790 program problem is encountered.

As a control operator responsible for identifying which part of your 3790 system operation is malfunctioning, the following section will assist you in determining where the problem most probably is occurring. The job of resolving problems to a given problem area consists of learning five steps:

1. How to identify problems.
2. How to isolate a problem (to one or more causes).
3. Recording problem information and reporting problems.
4. How to avoid problem recurrence.
5. Problem recovery.

IDENTIFYING PROBLEMS

Many problems within the 3790 system are simple to identify, such as a printer not printing, a program abnormally terminating or total system failure. This type of failure will almost always result in a visual failure indication or a system message with an associated System Message Number. (See 3790 Messages publication for a list of all System Message Numbers and their meanings.)

A second type of problem is one that is brought to your attention by a terminal operator; for example, terminal not operative, program giving erroneous results, or repetitive error indications being seen at the

terminal. These types of problems can usually be traced to causes such as operator error, program error, or a unit being disabled.

A third type of problem is the failure of the controller functions to perform properly. This type of problem can only be identified by knowing what the specified function(s) are supposed to accomplish and evaluating function messages and system conditions. As an example, if the list program function was selected and listed only half of the programs actually stored within the 3790, the control operator should be able to recognize that some sort of a problem existed.

A fourth type of problem, and usually the most difficult to analyze, is that of performance. Terminal operators will get used to the 3790 responding to function or program requests in a certain period of time. When the function or program responds slower than usually, the terminal operator(s) will view the 3790 as "performing poorly". This is often a subjective judgment and it becomes the responsibility of the control operator to determine whether there is an acceptable reason for longer response times -- such as many more terminal operators placing a much heavier load on the 3790 or whether there may be a problem with the 3790, the programs, or the terminal operators.

A fifth type of problem is the sporadic or intermittent problem that may manifest itself as any one of the four other types but does not happen consistently. Intermittent problems can be danger signals of larger problems to come and as such should not be totally ignored.

PROBLEM ISOLATION

Introduction

Once a problem has been identified, the next step is finding (isolating) the cause of the problem in order to correct it.

Problem isolation consists of two parts: tools and their use (technique). You have tools available such as error logs, system messages, and controller digit display output. The control operator studies the 3790 Operator's Guide to understand the functions of a 3790. Technique is the application of tools and judgment that leads to a speedy diagnosis; it is the ability to ask the right questions and look in the right places for information relating to the cause of the problem.

Sources of Information for Problem Isolation

The following sources of information can be used in problem isolation:

- Terminal input/output listings. These will give the cause and effect relationship between what is entered by the operator and how the program or controller functions respond.
- Listing of the condition incident log. For every failure of program, terminal or controller function, the 3790 will generate an error record. These records can be printed or displayed by use of the SYSLERR function described in Chapter 3.
- Control operator messages. For every nonrecoverable error other than system termination, a message will be queued for the control operator and can be retrieved using the message request function. These messages will contain data regarding the type of failure, location of the failure, and conditions (system status) at the time of failure. A complete listing of possible message types can be found in the 3790 Messages publication.

- 3791, 3792 operator panel sequenced displays. When a 3791 or 3792 fails, a four-character sequenced display on the operator switch and indicator panel will indicate the failure. The four sequenced characters represent a System Message Number which can be found in the 3790 Messages publication.
- Listing of disk status. The SYSLDISK function described in Chapter 3 can indicate what data sets exist, the characteristics of those data sets, and how much space is available on the disk(s).
- Listing of programs. The SYSLPROG function described in Chapter 3 will indicate what programs are stored on the 3790 disk storage, who has access to them, what device(s) they may be called from, whether they use the Transaction Data Set, and their names.
- Listing of the operator table. The SYSOPR function described in Chapter 3 will indicate all valid user IDs, the access allowed for each ID, the password, and whether the ID has been enabled to use the system.
- 3790 Operator's Guides.
- User-written 3790 Application (program) Guides/Procedures.
- Host console or printer listings. For 3790 programs that communicate directly to 3790 programs, error conditions within the 370 application or system may have output on the 370 console or printer.

Questions to Ask

The following represent some of the questions you can ask in order to eliminate or substantiate problem causes.

- Is the whole system or just a part of it "down" (malfunctioning)?
- Does the problem occur on only one terminal? One terminal type? All terminals?
- Does the problem occur for one operator? One class of operator? All operators?
- Is it a single program failure? Several programs? All programs?
- Has a failing program run successfully before? For this operator? For any operator?
- How has the system changed? New equipment? New installation? Program changes?
- If a failure is not consistent, what are the unique circumstances at the time of failure?

As can be seen from the list of questions, it is almost as important to know what is working as what failed. The reason is that problems may result from a number of different causes, and isolating to the most probable cause quickly will generally minimize the lost productivity of the operator, terminal, program, or system.

Case Studies

1. The system has been running well. All the operators have been using their assigned terminals all morning using Program ABC. Operator 03 tells you that there must be something wrong with the program because it no longer works. What do you do?

- a. Check your message queue to see if any terminal or program error messages exist for Operator 03's terminal or Program ABC. If not,
 - b. Check whether the operator was using accepted procedures for Program ABC. If so,
 - c. Check the terminal to see if it can run other programs without error. If so,
 - d. Check operator keyed input and report it to host programming staff.
2. The system has been running well since service personnel installed an Engineering Change yesterday, but Operator 04 tells you that Program XYZ will not run on a 3793. What do you do?
- a. Check your message queue for error messages for terminal operator 04s 3793 or program XYZ. If none,
 - b. Use SYSLPROG to check:
 1. If XYZ exists. If yes,
 2. If XYZ can run on 3793. If yes,
 3. Operator access code.
 - c. Use SYSOPR to check terminal operator 04's access code against that of Program XYZ. If matched,
 - d. Check whether terminal operator was using accepted procedure for Program XYZ. If so,
 - e. Check whether any other operator has (or can) run Program XYZ successfully. If not,
 - f. Instruct terminal operators not to use Program XYZ, collect the 3793 paper used and report the problem to the host programming staff.

These theoretical problems could have been caused by terminal malfunction, controller malfunction, operator error, access code mismatch, etc. The important thing to gain from these case studies is an organized thought process that will allow you to:

- a. Fix the problem or
- b. Call the right person to have it fixed.

Point b is very important; if you call your host programmer when there was an operator error or if you call your service representative when there was a programming error, the result will be lost productivity and the time until the problem is fixed will be unnecessarily lengthened.

GATHERING AND REPORTING PROBLEM DATA

As the steps of problem isolation are executed, it is very important to record what was done and the results. If the control operator cannot fix the problem, then the service representative or the programmer will need data to allow him to solve and fix the problem. Whether it be a condition incident log printout, terminal listings, handwritten notes, formal trouble report, or whatever, the person you call for assistance will be more able to help you if you can give him the data that allowed you to isolate to a particular problem area. If the service personnel know what parts of a system are malfunctioning, it is very likely that they can bring the right tools and replacement parts with them so the

problem may be quickly corrected. If a programmer knows where a program is failing and with what data, the error can usually be corrected quickly.

AVOIDING PROBLEM RECURRENCE

Once a problem has been identified and isolated to a cause, but has not yet been fixed, it is important to continue to gain the most productivity possible from the 3790 system. In addition, it is time-consuming for the control operator to investigate and isolate the same problem over and over again.

Therefore, if any part of the system is failing, the use of that part should be restricted until it can be fixed and verified.

It is the responsibility of the control operator to inform the terminal operators of such restrictions. Examples are:

- Don't use a particular terminal until it can be repaired.
- Don't use a particular program (or program option) until it can be fixed.
- Don't use a particular operator or control operator function until it can be fixed.

PROBLEM RECOVERY

This section deals with four areas of problems: operations, programs, control operator/operator functions, and equipment (hardware).

Operations

The control operator is responsible for correcting problems regarding procedural usage of the system components. Service personnel should be called only when the documented system procedures do not work correctly or are inadequately described. This applies to the use of operator or control operator functions, terminals and printers, programs, and common carrier facilities.

Programs

The control operator is responsible for providing the following information to the host programmer for problem recovery:

- Any terminal/printer input and/or output associated with the failure including control operator message(s).
- Current program status (through SYSLPROG).
- Program usage data
 1. Runs for other terminal types or not.
 2. Runs for other operator (types) or not.
 3. Runs for other data input or not.

Operator/Controller Functions

The control operator is responsible for being familiar with all operator and controller functions as well as use of the 3790 Messages publication so that problems can be recognized and the correct action taken when:

- The 3791 or 3792 fails.

- Operator functions such as Logoff or Request Message fail.
- Invalid terminal error indications appear frequently.
- ~~The performance of certain (or all) functions becomes noticeably degraded without known cause (e.g., many more operators using the system).~~

The types of information to be gathered and actions to be taken vary slightly for the next four items.

- When the 3791 fails (other than power loss), the sequence display on the operator panel will output a four-digit System Message Number. Record the number. If no equipment failure is indicated (see 3790 Message publication), two options can be exercised after recording the system message numbers:

1. Go through a normal 3791 initialization sequence as described in Chapter 2.
2. Dump the contents of the 3791 storage for problem analysis by IBM, call the service representative, and proceed as in 1.

When the 3792 fails for a reason other than power loss, the System Message Number should be recorded and either of two options can be exercised:

1. Go through a normal 3792 initialization sequence as described in Chapter 2.
2. Cause a dump of the 3792 storage to be taken onto the 3791 disk.

- When a terminal operator or control operator function terminates abnormally or fails to provide the correct function (with no equipment failure indicated and no operator/procedural error), the service representative should be contacted. The control operator should attempt to identify both the conditions that cause the function to fail and any conditions under which the function performs properly (if any). It should also be noted whether the function worked previously under the same conditions or under any conditions. Use of the failing function should be restricted until the service representative can correct or bypass the failure.

- When invalid terminal error indications frequently appear (and no indication of equipment or operator error is evident), a procedure almost identical to that described above should be followed:

1. Identify conditions that work or fail.
2. Notify service representative.
3. Restrict usage (if practical) on conditions that are known to cause failure.

- When performance of certain (or all) functions and programs is noticeably degraded, it is very important to identify any changes in the 3790 system since the performance was viewed as (more) acceptable. Some of the areas of change are:

Personnel (different, more)
 Equipment (changed, new)
 Engineering Changes
 Programs (new, changed)
 Usage of terminal operator/control operator functions.
 Usage of disk (number of data sets, available space).
 Operating procedures (new, changed)

If only certain functions or programs seem to have unacceptable performance, it is also necessary to identify each of them. If only one program is performing poorly, the facts concerning that program

should be discussed with the host programming staff before contacting the service representative.

Specific Problem Recovery Procedures

3791 or 3792 Will Not Power Up

<u>Problem</u>	<u>Possible Causes (Check in Sequence Listed)</u>	<u>Action to Take</u>
Power On Indicator will not light (3791), or the Logic On Indicator will not light (3792).	<ol style="list-style-type: none"> 1. Power plug on unit not plugged into wall or floor outlet. 2. Circuit breaker not turned on. 3. No power feed from power company. 4. 3791 or 3792 problem. 	<p>Plug power plug into outlet. Try power sequence again.</p> <p>Notify supervisory personnel.</p> <p>Call service representative.</p>

Line Printer

<u>Problem</u>	<u>Possible Causes</u>	<u>Action to Take</u>
Print registration on forms is not correct, slanting, or is variable.	<ol style="list-style-type: none"> 1. Incorrect adjustment of forms thickness control. 2. Foreign object in forms path. 	<ol style="list-style-type: none"> 1. Adjust forms thickness control to correspond with thickness of forms being used. 2. Power off 3791 or 3792. <u>Note:</u> Before powering off, ensure that all 3790 programs, host sessions, and functions have ended. Look for items such as paper clips, staples, and torn forms, and remove from forms path.

<u>Problem</u>	<u>Possible Causes</u>	<u>Action to Take</u>
	<p>4. Dirt in location of print area.</p> <p>5. Other electrical or mechanical problems.</p>	<p>4a. Power off 3791 or 3792. <u>Note:</u> Before powering off, ensure that all 3790 programs, host sessions, and functions have ended.</p> <p>b. Brush and clean paper dust away from print area.</p> <p>5. Notify service representative.</p>
Forms tearing off.	<p>1. Rear forms guide set too tight.</p> <p>2. Forms carton or forms stack not feeding squarely into rear forms chute.</p> <p>3. Foreign object in forms path in rear forms chute.</p>	<p>1. Adjust to touch forms.</p> <p>2. Move forms to feed correctly.</p> <p>DANGER Never place hands near print belt while power is on.</p> <p>3. Power off 3791 or 3792. <u>Note:</u> Before powering off, ensure that all 3790 programs, host sessions, and functions have ended. Look for items such as paper clips, staples, and torn forms, and remove from forms path.</p>

CHAPTER 5. DESCRIPTION OF OPERATOR PANELS ON THE 3791 AND 3792

INTRODUCTION

This chapter shows the locations (Figures 5-1 and 5-2) and describes the operations of all 3791 and 3792 switches and indicators. You should understand these switches and indicators well before operating the 3791 and 3792.

OPERATOR PANEL DESCRIPTIONS

Power On/Off and Indicator 4

The Power On/Power Off switch is a rocker-type switch that is operated by pressing the portion of the switch desired. When power is on, either the indicator next to the switch lights on the 3791 or the Logic On indicator lights on the 3792.

RESET Pushbutton 3

The RESET pushbutton initializes controls and selects basic unit tests when:

- 3791 - Data/Function Select switch is in position 0 through 7 and the previous power on sequence was not successful.
- 3792 - Data/Function Select switch is in position 0 through A, E, or F and the previous power on sequence was not successful.

Note: Pressing the RESET pushbutton with operators logged on will cause data to be lost.

Enter Function Pushbutton 6

This pushbutton is used in combination with the Data/Function Select switch to enter data, character by character, for the Test Control Monitor (SYSTCM) control operator function.

Enter Data Pushbutton 8

This pushbutton is used in combination with the Data/Function Select switch to enter data, character by character, for the Test Control Monitor (SYSTCM) control operator function.

Digit Display 2

The Digit Display can display two types of information:

1. It will display in a four-character sequence the status of the 3791 or 3792. There are five steps to the display of status. Steps are displayed as blank, character, characters, character, character and then back through the same stepping sequence. Characters will have values of 0 through 9 and A through F.

Example: If on 5 steps of the Digit Display we see:

(Blank)				
Step 1	Step 2	Step 3	Step 4	Step 5

then the number displayed is read as 257A

2. When used in combination with the Enter Data pushbutton (for controlling the Test Control Monitor (SYSTCM) function), the last character entered will be displayed.

Data/Function Select Switch 7

Data can be entered into the system by rotating the selector switch to any one of the 16 positions desired and pressing the Enter Data pushbutton. The character entered will then be displayed on the Digit Display.

Machine Check Indicator (3791) 1

When this indicator is on, control operator intervention is needed. This indicator is turned off by the RESET pushbutton.

Logic On Indicator (3792) 11

When this indicator is on, the 3792 is powered on.

Condition Indicator 10

When this indicator is on, data can be entered with the Enter Data pushbutton. It is also used in conjunction with the Digit Display to provide a visual indication of test results or unusual conditions.

Test Indicator 9

If this indicator is on, an off-line or on-line test (SYSTCM) is active in the unit.

Keylock (Special Feature) 5

If this special feature is installed, the 3791 and 3792 will not power on unless the key switch is activated by use of the special key supplied. Once power is on, the key may be removed from the 3791. The key cannot be removed from the 3792 without powering down the unit.

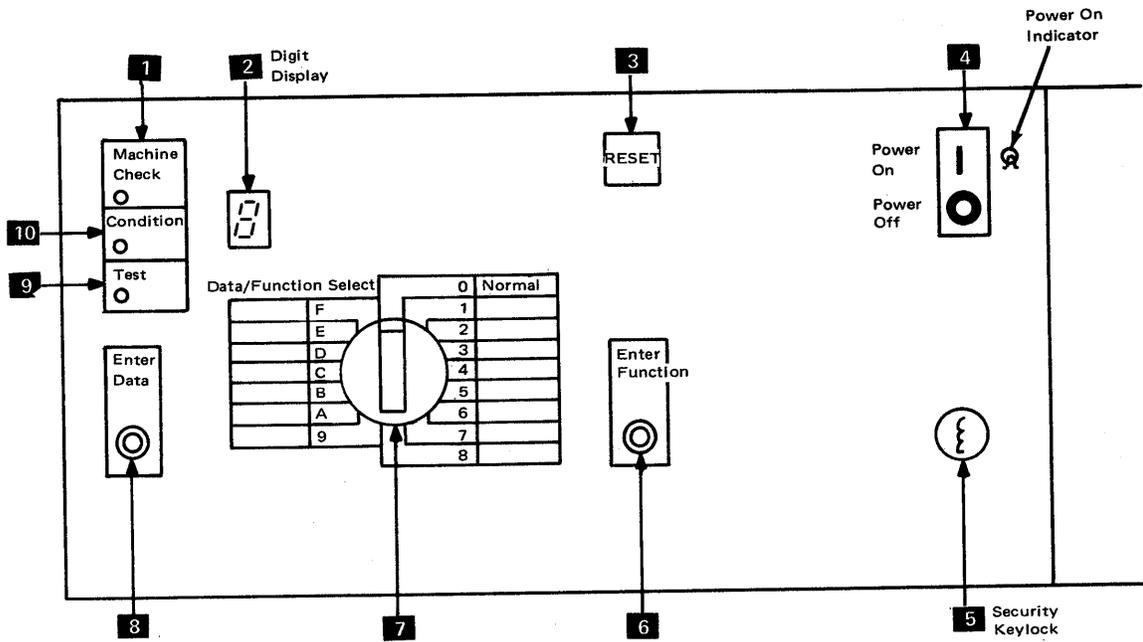


Figure 5-1. 3791 Operator Panel

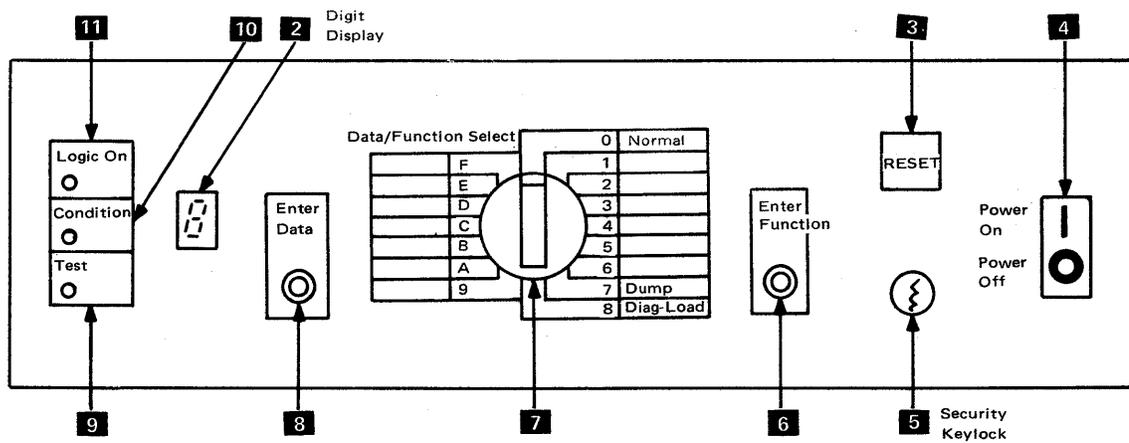


Figure 5-2. 3792 Operator Panel

APPENDIX A. YOUR 3790 COMMUNICATION SYSTEM CONFIGURATION

INTRODUCTION

This appendix provides formatted sheets that show unit types, functional options, Logical Unit Addresses, ID numbers, and physical locations of all the components that make up your 3790 Communication System. These sheets provide the permanent record of all of the above items and should be updated whenever components are added or removed from the System.

PURPOSE

These sheets should be properly filled out at installation time to provide information for:

1. Programming personnel at the host system.
2. Service personnel at the 3790.
3. The control operator for isolation and recovery from 3790 system problems. You will be directed to the following physical configuration charts from time to time by the Problem Recovery Procedures.

Failure to fill out these forms can affect maximum system performance in the area of problem recovery, in addition to causing unnecessary delays when operating control operator functions.

3791 Controller and Attached Units

Unit Type	Serial Number	No.	Logical Unit	Location
3791 Controller		1		
3277 Display Stations (only the first 8 logical unit addresses are currently available)		1	09	
		2	0A	
		3	0B	
		4	0C	
		5	0D	
		6	0E	
		7	0F	
		8	18	
		9	19	
		10	1A	
		11	1B	
		12	1C	
		13	1D	
		14	1E	
		15	1F	
		16	28	
3793 Keyboard-Printer (maximum number is 4)		1	10	
		2	11	
		3	12	
		4	13	
* Line Printer		1	14	3791

* Cannot be deactivated by the control operator function SYSTEM.

3792 Auxiliary Control Unit and Attached Units

Unit Type	Serial Number	No.	Logical Unit	Location
3792 Auxiliary Control Unit		1	88	
3793 Keyboard-Printer (maximum number is 4)		1		
		2		
		3		
		4		
2741 Communications Terminal		1		
		2		
* Line Printer		1		

3792 Auxiliary Control Unit and Attached Units

Unit Type	Serial Number	No.	Logical Unit	Location
3792 Auxiliary Control Unit		2	98	
3793 Keyboard-Printer (maximum number is 4)		1		
		2		
		3		
		4		
2741 Communications Terminal		1		
		2		
* Line Printer		1		

* Cannot be deactivated by the control operator function SYSTEM.

3792 Auxiliary Control Unit and Attached Units

Unit Type	Serial Number	No.	Logical Unit	Location
3792 Auxiliary Control Unit		3	A8	
3793 Keyboard-Printer (maximum number is 4)		1		
		2		
		3		
		4		
2741 Communications Terminal		1		
		2		
* Line Printer		1		

* Cannot be deactivated by the control operator function SYSTEM

APPENDIX B. OPTIONS LISTING TABLE

SYSPACK_OPTION_GROUP_1

TO MOUNT ANOTHER DISKETTE, ENTER 2
TO TERMINATE, ENTER 9:

SYSPACK_OPTION_GROUP_2

TO MOUNT ANOTHER DISKETTE, ENTER 2
TO CONTINUE, ENTER 3
TO TERMINATE, ENTER 9:

SYSPACK_OPTION_GROUP_3

TO DELETE RECORDS, ENTER 1
TO KEEP RECORDS, ENTER 2:

SYSPACK_OPTION_GROUP_4

TO CONTINUE, ENTER 3
TO TERMINATE, ENTER 9:

SYSPRINT_OPTION_GROUP

TO DELETE PRINTED RECORDS, ENTER 1
TO KEEP PRINTED RECORDS, ENTER 2

SYSTEM_OPTION_GROUP

TO ACTIVATE ONE TERMINAL OR 3792, ENTER 1
TO DEACTIVATE ONE TERMINAL, ENTER 2
TO DEACTIVATE ALL TERMINALS, ENTER 3
TO REQUEST SHUTDOWN, ENTER 4
TO TERMINATE, ENTER 9:

SYSLERR_OPTION_GROUP

TO PRESENT THE MOST RECENT INCIDENT REPORT, ENTER 10
TO PRESENT ALL INCIDENT REPORTS, ENTER 11
TO PRINT ALL INCIDENT REPORTS ON LINE PRINTER, ENTER 12
TO PRESENT INCIDENT REPORT COUNT, ENTER 13
TO SET INCIDENT TYPE TO ALL, ENTER 20
TO SET INCIDENT TYPE TO ALL DEVICE ERRORS, ENTER 21
TO SET INCIDENT TYPE FOR DEVICE LU XX, ENTER 21XX
TO SET INCIDENT TYPE TO MACHINE CHECK ONLY, ENTER 22
TO SET INCIDENT TYPE TO MACHINE CHECK FOR LU XX, ENTER 22XX
TO SET INCIDENT TYPE TO SYSTEM ONLY, ENTER 24
TO SET INCIDENT TYPE TO SPECIFIC SYSTEM INCIDENT XX, ENTER 24XX

SYSLERR OPTION GROUP

TO SET RANGE TO ALL SEQUENCE NUMBERS, ENTER 3
TO SET RANGE TO SEQUENCE NUMBER XXXX, ENTER 3XXXX
TO SET RANGE HIGHEST (XXXX) TO LOWEST (YYYY), ENTER 3XXXXYYYY
TO CLEAR CONDIDION INCIDENT LOG, ENTER 8
TO TERMINATE, ENTER 9

SYSHOST OPTION GROUP 1

TO ENABLE SESSIONS, ENTER 1
TO DISABLE SESSIONS, ENTER 2
TO SET LINE SPEED OR SWITCHED/NONSWITCHED INDICATORS, ENTER 3
TO RUN DIAGNOSTICS, ENTER 4
TO DISPLAY STATUS OF SESSIONS, ENTER 5
TO UPDATE AND/OR DISPLAY BATCH ID, ENTER 6
TO TERMINATE, ENTER 9:

SYSHOST OPTION GROUP 2

FOR BATCH, ENTER 7
FOR APPLICATION SESSIONS, ENTER 8
FOR BOTH BATCH AND APPLICATION SESSIONS, ENTER 9:

SYSHOST OPTION GROUP 3

FOR HIGH-SPEED, ENTER 12
FOR LOW-SPEED, ENTER 13
FOR SWITCHED MODEM, ENTER 14
For NONSWITCHED MODEM, ENTER 15:

SYSHOST OPTION GROUP 5

FOR ADD, ENTER 41
FOR DELETE, ENTER 42
FOR PRESENT, ENTER 43:

SYSLDISK OPTION GROUP

FOR STATUS, TYPE, AND DESCRIPTION FOR ONE OR ALL DATASETS, ENTER 1
FOR COUNT OF FREE BLOCKS/DISK AND TOTAL COUNT, ENTER 2
FOR BOTH PREVIOUS OPTIONS, ENTER 3

SYSOPR OPTION GROUP

TO SPECIFY ADD, ENTER 1
TO SPECIFY CHANGE OF ACCESS CODE, ENTER 2
TO SPECIFY CHANGE OF PASSWORD, ENTER 3
TO SPECIFY DELETE, ENTER 4
TO SPECIFY ENABLE, ENTER 5
TO SPECIFY DISABLE, ENTER 6
TO SPECIFY LIST, ENTER 7
TO TERMINATE, ENTER 9:

APPENDIX C. SYSLERR CONDITION INCIDENT LOG DESCRIPTION

The 3791 controller records selected system events in a condition incident log. This log resides on disk storage. Each event is identified by an incident type and a sequence number. Sequence numbers are assigned in order of occurrence sequentially from 1 to 4095. The log will wrap around at 4096, starting over at 1, and any previous recording will be overwritten. There are three types of incident records:

- Type 1 records are associated with equipment failures.
- Type 2 records are recorded for control logic failures.
- Type 4 records are for various system events such as 3791 or 3792 initialization setting the date, or shutdown (SYSTEM).

1	2	3	4	5
1=TYPE1 REC	SEQ-xxxx	NA-xx	PA-xx	LU-xx
6	7		8	
C-Code	B-STAT-xx		C-FR-xx	
12	13		14	
X-STAT1-xx	X-STAT2-xx		S-FR-xx	
15	16	17	18	
D1-xxxx	D2-xxxx	D3-xxxx	D4-xxxx	

Type 1 Log Record Description

Field 1	Type 1	Indicates a Type 1 record, equipment failure.
Field 2	SEQ	A 4-digit decimal sequence number ranging from 0001 to 4095.
Field 3	NA	The number of functions or programs that were active at the time of the failure.
Field 4	PA	The equipment address for which the record was made.
Field 5	LU	The logical unit for which the record was made.
Field 6	C-CODE	A completion code that identifies the number of retries performed and whether they were successful.
Field 7	B-STAT	Equipment status.
Field 8	C-FR	The device operation active at the time of the failure.
Field 9,10	X-STATX	System status information.
Field 11	S-FR	The system operation in process at the time of failure.

Type 4 SYSCOND Definitions

<u>SYSCOND</u>	<u>Description</u>	<u>D-Fields</u>
01	System date log record recorded each time date set	D03 = Year D04 = Month D05 = Day
02	3791 initialization record recorded each time 3791 initialized	D01 = XY X=8=Power on Init. X=0=Reset Init. Y=OP Panel Setting
03	Local version recorded each time 3791 Init.	D01,D02,D03,D04=Version No.
04	3791 failure, recorded each time 3791 fails with FXXX digit display	D03,D04 contain FXXX number
05	3791 shutdown recorded each time automatic power down occurs	Not used
06-08	Not used	
09	Patch record, recorded each time patch by Service Rep. to alter operating code	D03 = Year D04 = Month D05=Day
0A,0B	Control storage block threshold exceeded recorded each time threshold exceeded	D03 = No. active FPIDs D04,D05=No. storage blocks
0C	Dynamic disk space threshold exceeded recorded each time threshold exceeded	D03=No. active FPIDs D04,D05=No. disk blocks available
0D	LOGON reject recorded each time logon rejected due to insufficient storage	D03=No. activeFPIDs D04,D05=No. storage blocks available
0E	Transmit Data Set Full recorded each time data set is full	Not Used
0F	ABEND data set full recorded each time data set full	Not Used
10-15	Not Used	
16	Too many alternate sectors, recorded each alternate used over threshold	D02=No. active FPIDs D05=No. remaining alternates D06=Disk LU that exceeded threshold

<u>SYSCOND</u>	<u>Description</u>	<u>D-Fields</u>
17	up to 1920 blocks of available disk space have been lost due to a disk failure (LU 21) lost tracks may not be on LU 21	Not Used
18	Print or Transaction data set has been lost due to disk failure	D01 = disk LU D02 = data set No.
19	Not Used	
20	Remote host attachment failures	D01-D05 contain maintenance information
21-81	Not Used	
82	3792 start record recorded when a 3792 completes power on initialization	D01=88=first 3792 98=second 3792 A8=third 3792
83	3792 reset recorded each time 3792 completes reset Initialization	D01=88=first 3792 98=second 3792 A8=third 3792 D02-D05=code level number
84	3792 failure recorded each time 3792 fails with FXXX abend digit display	D01=88-first 3792 98=second 3792 A8=third 3792 D02,D03=FXXX code

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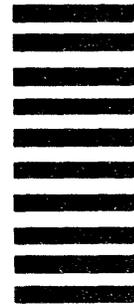
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