

**Systems**

**IBM 3670 Brokerage  
Communication System  
Concepts and Configurator**

**IBM**

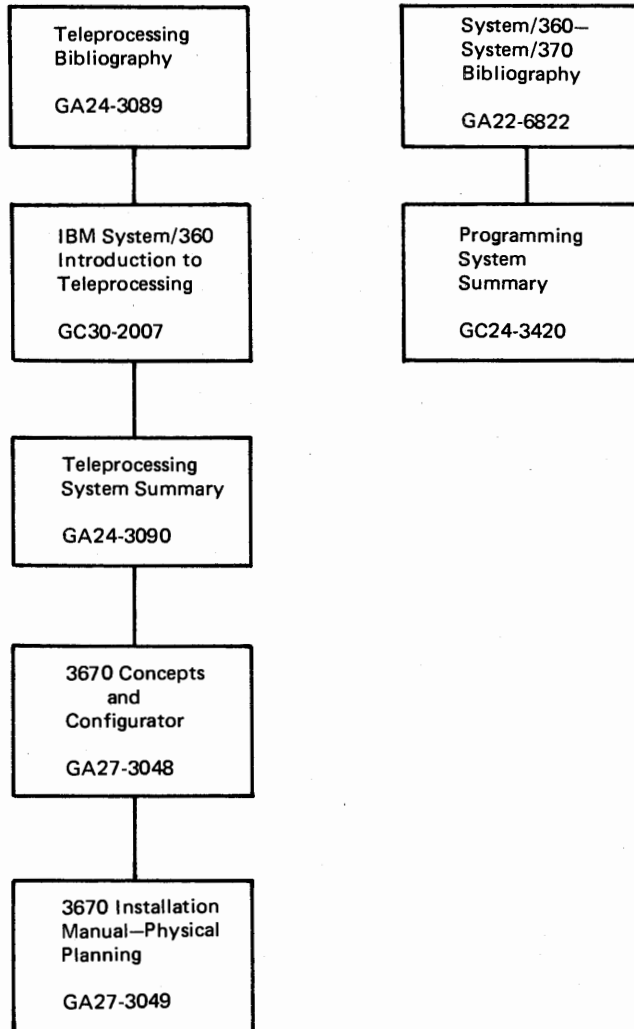
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## 3670 SRL Publications Availability Guide

Use this guide to determine what publications will best fulfill your individual requirements.



### First Edition (August 1971)

Changes are periodically made to the information herein; before using this publication in connection with the operation of IBM systems or equipment, refer to the latest SRL Newsletter for the editions that are applicable and current.

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This manual has been prepared by the IBM Systems Development Division, Publications Center, Department E01, P. O. Box 12275, Research Triangle Park, North Carolina 27709. A form for readers' comments is provided at the back of this publication. If the form has been removed, comments may be sent to the above address. Comments become the property of IBM.

## Preface

This manual presents the concepts of the IBM 3670 Brokerage Communication System and is written for two types of users: (1) primary users—management and supervisory personnel who are interested in an overall view of the system and its concepts, and (2) secondary users—operating and maintenance support personnel who are interested in a more detailed view of system concepts and operation.

Primary users include the customer executive, the customer installation manager or planner, IBM Data Processing marketing management, IBM Data Processing marketing representatives, and IBM Field Engineering management.

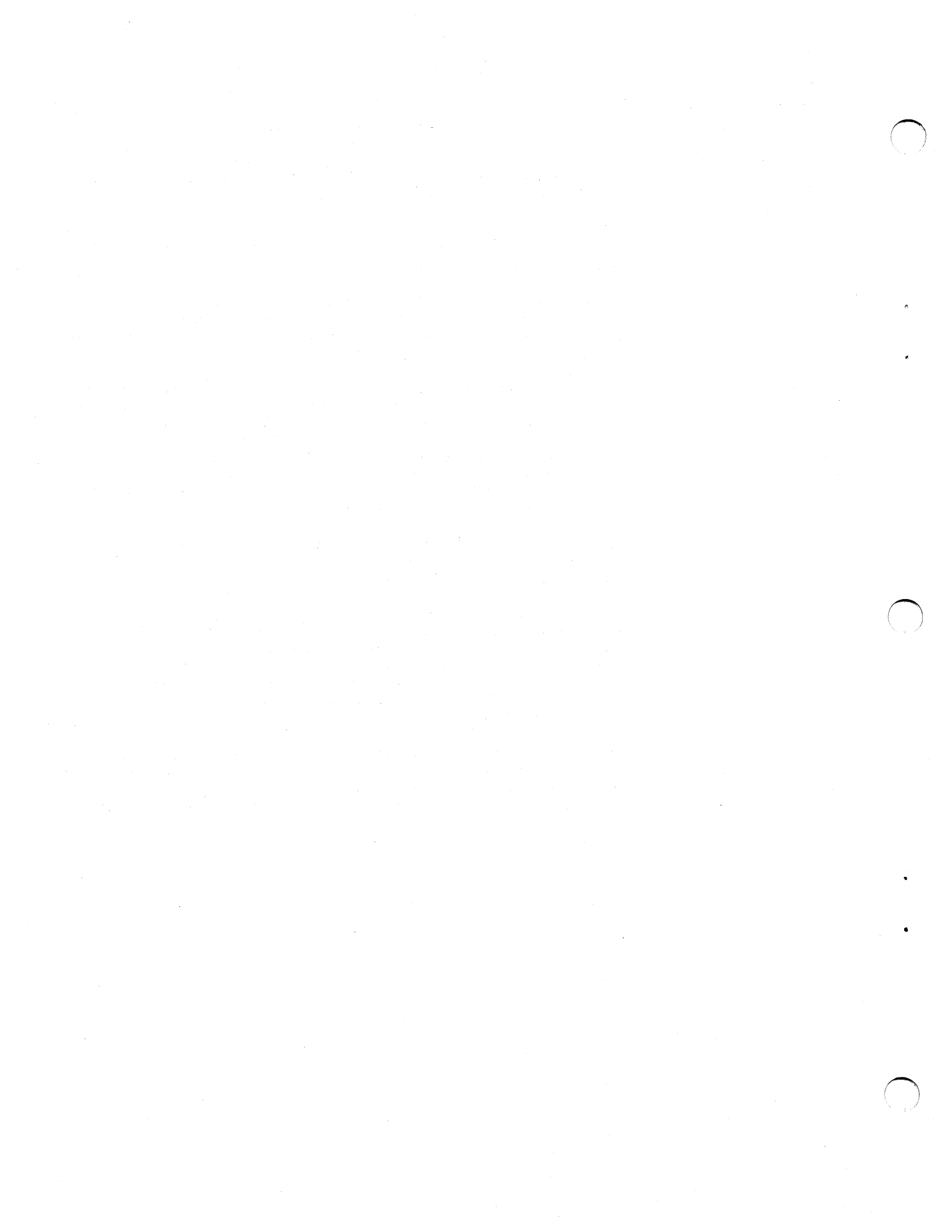
Secondary users include the customer systems analyst, the customer systems programmer, the IBM Data Processing systems engineer, the IBM Field Engineering physical planning representative, the IBM Field Engineering customer engineer for machine maintenance, and the IBM Field Engineering program systems representative.

To fulfill the need of both types of users, the manual's purpose and presentation is twofold. First, it provides an overview of hardware concepts to acquaint management and persons in support operations with the purpose, design highlights, program support, and market applications of the system. The manual's introduction presents the purpose of the Brokerage Communication System. The chapters following define individual components of the system, summarize highlights of design and operation, describe system features and program support, and discuss the varied 3670 applications. Sections on system organization and data protection complete the description.

Second, the manual provides the systems planner with technical information to aid in configuring a system best suited to his needs. Included are a block diagram and a listing of the units, features, and connections that can make up a system.

Users of this manual should be familiar with the contents of *IBM System/360, Introduction to Teleprocessing, GC30-2007*, and *IBM Tele-processing System Summary, GA24-3090*. The former manual offers concepts of teleprocessing to persons familiar with computer applications in the business field but who have not yet used long distance computing techniques and equipment. Appendix A of the latter manual is a communications facilities application guide useful in planning the system. Other related publications are indicated in the Publications Availability Guide.

Since the performance of any individual system depends on choices made by the customer and on the internal controls and capabilities of the customer's personnel, ultimate responsibility for any system must rest with the customer. IBM's obligations shall be limited to the express terms of contracts covering the lease or sale of equipment or the furnishing of services.



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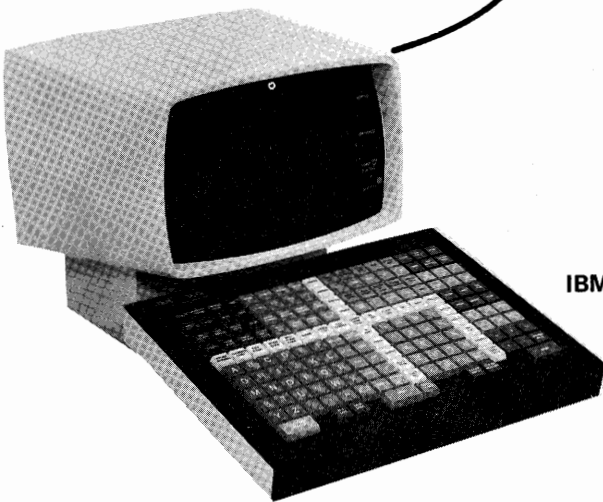


**IBM 3671 Shared Terminal Control Unit**



**IBM 3674 Printer-Keyboard**

**IBM 3673 Data Display**



**IBM 3672 Executive Console**

Units of the IBM 3670 Brokerage Communication System

# System Description

## Introduction

The brokerage industry's need for new and improved terminal and communications products has been steadily increasing. The IBM 3670 Brokerage Communication System meets this need as it provides brokerage firms with the capability of inquiry, direct ordering, and recordkeeping at the branch office level. This permits the inclusion of the branch offices in preparations for a total system environment. Figure 1 illustrates the 3670 in this system environment.

The 3670 is a subsystem designed to communicate with a TCAM\*-supported IBM System/360 or IBM System/370. Located in the brokerage branch office, the 3670 provides branch office personnel with realtime applications-oriented terminals as an integral part of their daily business activities. Thus, CPU-stored information supporting branch office operations is available from the firm's home office.

The 3670 offers visual access to a wide variety of dynamic market and securities data, including quotations, research opinions, ticker information, and trends. This information is provided via the home office CPU. The 3670 also offers the capability of direct order entry. An order entered at the branch office level is automatically transmitted to the home office CPU, where it may be relayed to the floor of any stock exchange. These functions, in addition to recordkeeping, are provided by the system components described in following paragraphs.

## Configuration Design

The IBM 3670 Brokerage Communication System consists of a shared terminal control unit and a number of independent applications-oriented input/output devices. The components of the IBM 3670 are:

- IBM 3671 Shared Terminal Control Unit
- IBM 3672 Executive Console
- IBM 3673 Data Display
- IBM 3674 Printer-Keyboards

Up to 12 applications-oriented executive consoles and 12 data displays may be attached to the basic control unit. A maximum of 24 executive consoles and 24 data displays can be attached to a control unit with the Display Expansion feature. The Printer-Keyboards Attachment feature provides control for the attachment of up to 8 printer-keyboards, independent of the Display Expansion feature. Figure 2 illustrates the 3670 in a typical branch office layout.

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\*TCAM = Telecommunications Access Method program (See "Appendix A. Glossary" for additional information.)

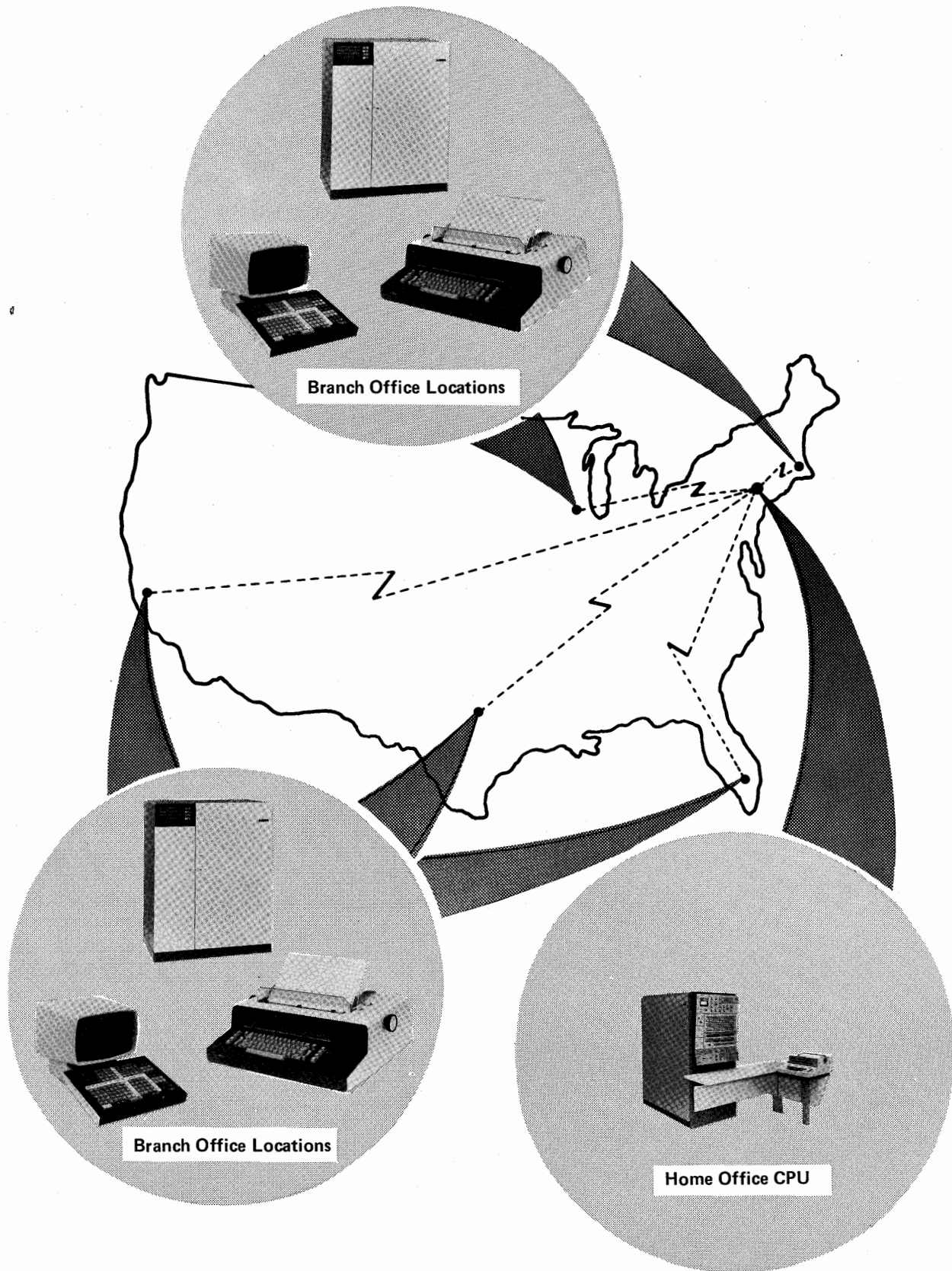
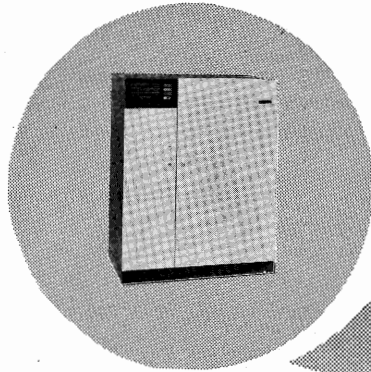
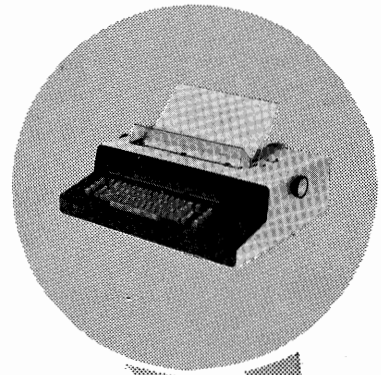


Figure 1. IBM 3670 in a Total System Environment

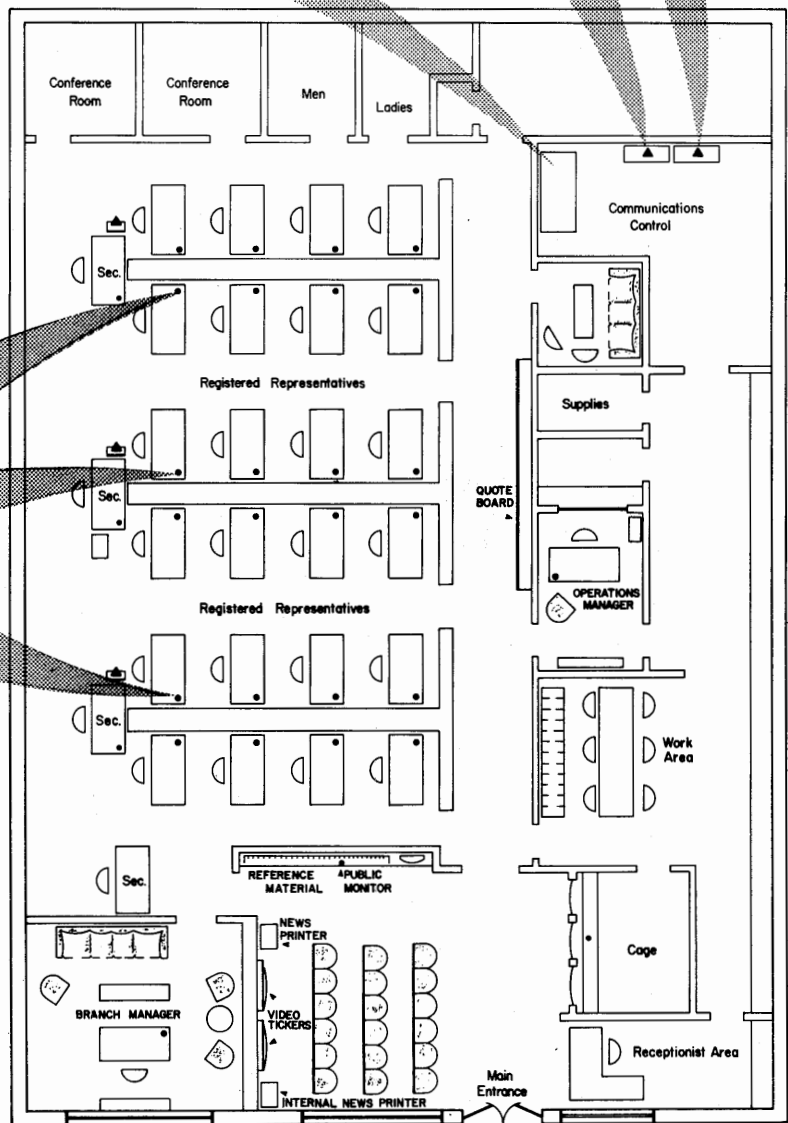
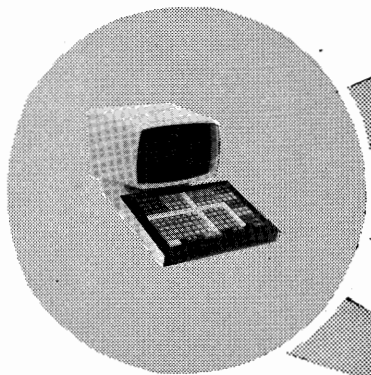
**Shared Terminal Control Unit**



**Printer-Keyboard**



**Registered Representative Terminal**



- Legend:**
- Registered Representative Terminal
  - ▲ Printer-Keyboard

Figure 2. IBM 3670 in a Typical Branch Office Layout

## **IBM 3671 Shared Terminal Control Unit**

The IBM 3671 Shared Terminal Control Unit, located in the brokerage branch office, provides storage and controls for the attached input/output devices. This unit controls data transfer within the 3670 configuration, and formats data flow between the 3670 and System/360 or System/370. Data flow between the CPU and the 3670 is under control of the 3670 and the Operating System TCAM program.

The control unit is available with two different display attachment capabilities which are defined in detail in "Configuration Considerations".

Variations in system configurations permit optional use of local storage areas. Each attached data display has an assignment of 1200 bytes of display storage. In system configurations not requiring the maximum number of displays, these unused storage areas usually associated with each display may be used for other purposes. They are described in "Functions", following in this manual.

## **IBM 3672 Executive Console**

The executive console is the key component of the 3670 system. It is a manual entry keyboard with a format especially designed for the registered representative. (See Figure 3.)

The registered representative can have available at his fingertips a selection of virtually every type of information he is likely to require in a normal day. The executive console's appropriately arranged keys, color coded and labeled with familiar terms, provide this selection from information stored in the CPU and in the control unit.

Individual key functions (as defined by the customer), used singly or in combination, provide a selection of information such as customer records, quotations, research opinions, and current market data. The variety of information that can be made available during discussions with customers is shown in Figure 6. Individual firms can tailor their data base to their specific requirements.

The executive console can also provide the capability of entering orders directly. To enter an order, the user selects the key words and phrases indicated by the keys and enters variables through the alphabetic and numeric sections. Words and phrases are positioned automatically by the format control logic of the control unit. Order data can be entered in any sequence, and errors in variable data can be corrected readily by pressing a field identifier key, which restores the unit to the correct field position for rekeying.

When an order is complete, it is sent to the CPU without intervention of any kind. The CPU, in turn, can perform an order-edit function, such as converting a customer number to a customer name, and return the edited order to the data display for verification. Thus, many complex formatting requirements are automatically satisfied without remembering a long set of rules. The 3672 Executive Console can be used for information retrieval and order entry with equal ease.

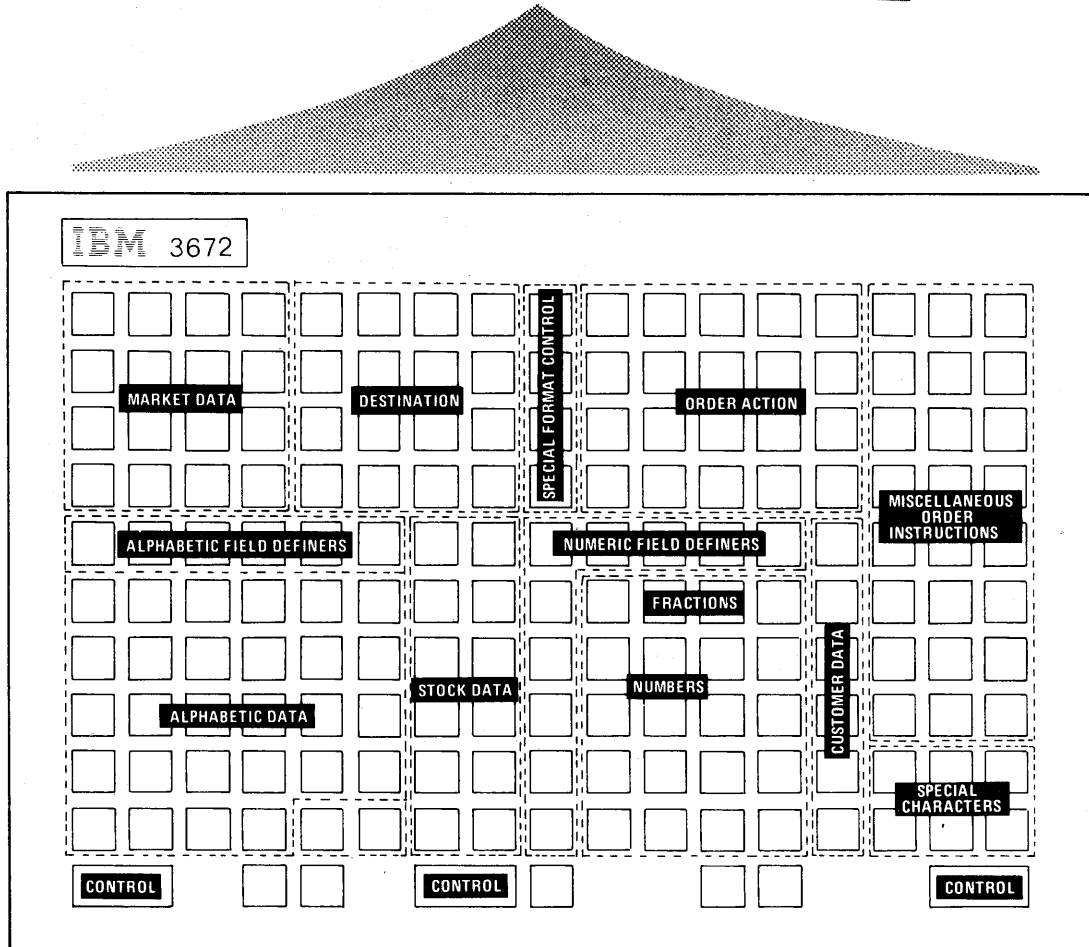
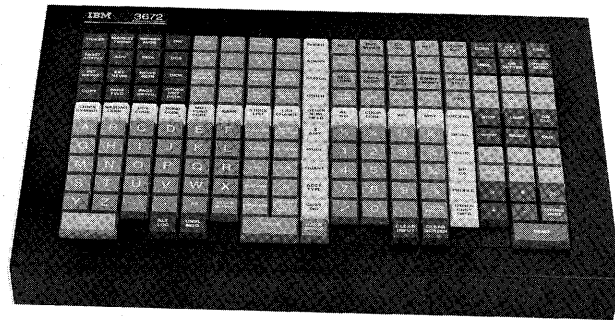
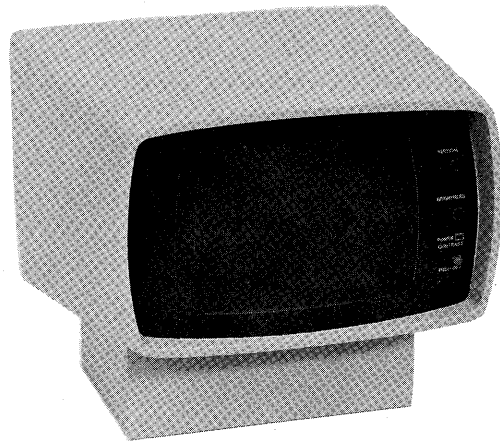


Figure 3. Executive Console Format

## IBM 3673 Data Display

Each executive console operates with a companion IBM 3673 Data Display. The data display is an independent, but interacting, part of the registered representative's functional unit. It is a desk-top display capable of presenting 1200 characters, in a format 40 characters wide by 30 lines high.

The 3673 displays the variety of marketing and customer data accessible by the executive console. It also displays outgoing messages, in their proper format, prior to transmission. The data display and the executive console are designed for convenient arrangement on a desk. See Figure 4.

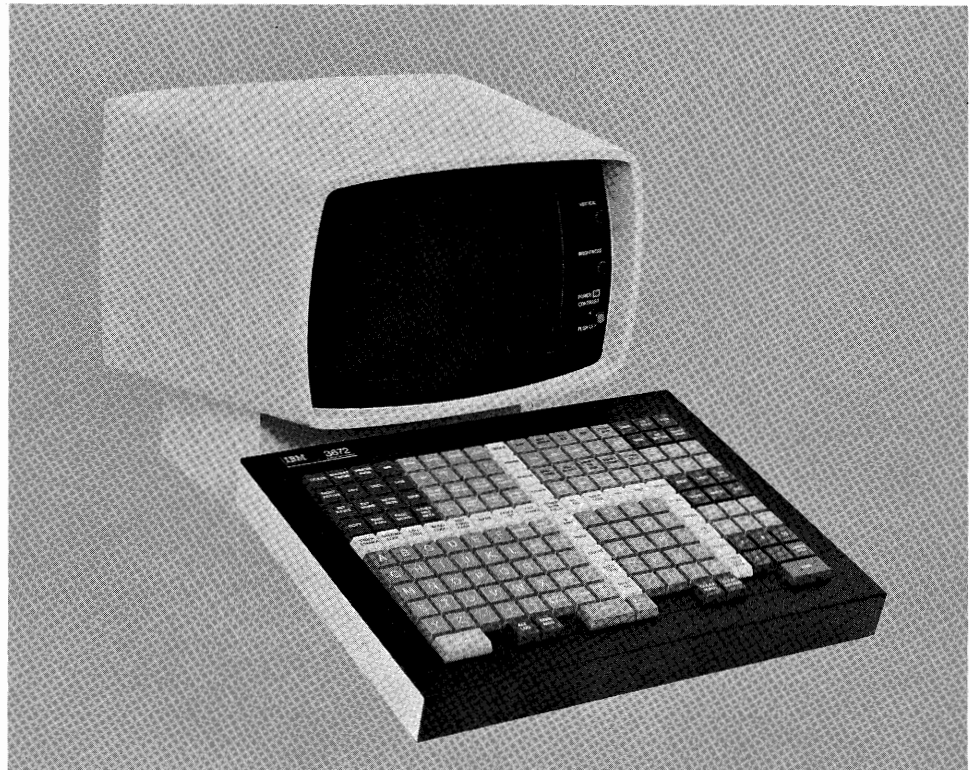


Figure 4. Registered Representative Terminal

The data display can be used for display applications that do not require keyboard control. An example is a display in the public viewing area of the branch office.

Information displayed on the data display screen results from modified EBCDIC data stored in a display buffer in the control unit. The control unit's character generator converts stored EBCDIC data into graphic characters for display.

Image regeneration is at a rate that assures a flicker-free display. Convenient controls provide suitable adjustment of the data display.

## IBM 3674 Printer-Keyboard

The IBM 3674 Printer-Keyboard provides branch office printed copy of a variety of reports essential to brokerage operation. These recordkeeping functions can be an automatic by-product of daily business operations. See "Applications", following, for a description of some of these printer-keyboard capabilities.

The printer-keyboard is a 15-character-per-second device similar in design and mechanical operation to the IBM Selectric<sup>®</sup> typewriter. Control switches and indicator lamps provide for a variety of applications to meet daily requirements of the branch office. Figure 5 shows the IBM 3674 Printer-Keyboard.

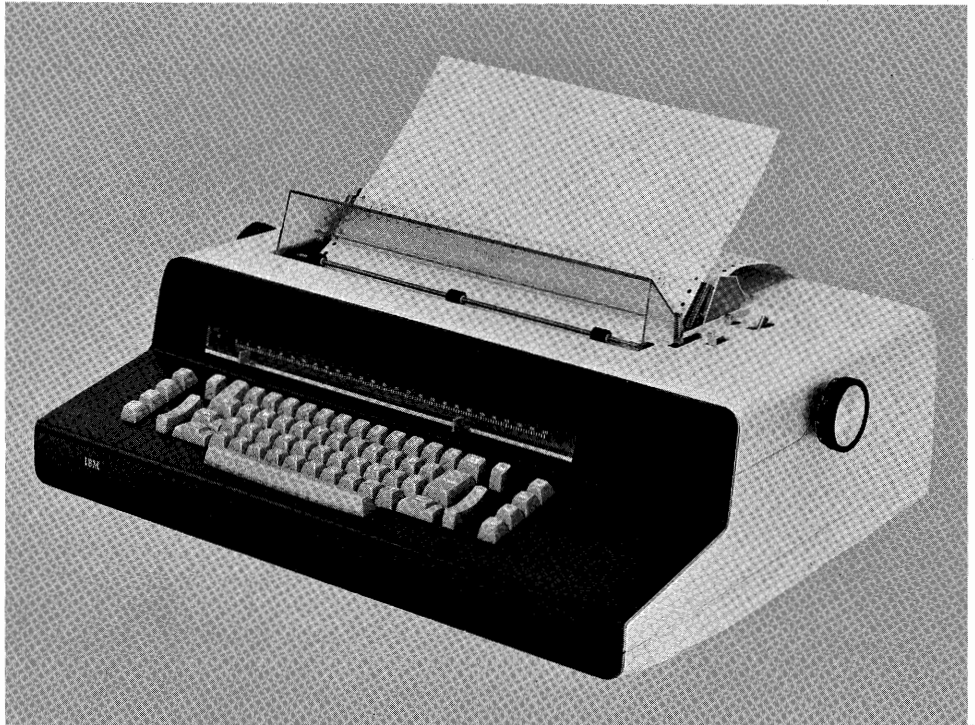


Figure 5. IBM 3674 Printer-Keyboard

The printer-keyboard may be used in one of three operating modes: (1) receive only mode, (2) data entry mode, or (3) typewriter mode. Only authorized personnel can change the operating mode, and these changes require control unit acceptance.

In receive only mode, the printer-keyboard operates as an output device; it prints data that has been received from the CPU. All manual operations performed with the keyboard are suspended when the unit is operating in this mode.



In data entry mode, the keyboard may be used for manual entry of data. All data keys, and the function keys, Tab, Carrier Return, and Line Feed, cause their code to be placed in the associated buffer for transmission to the CPU. As the data is entered into the buffer it is printed, to provide a log or audit trail.

Printing of keyed data can be suppressed to provide "password" security, which is described in "Data Protection", following in this manual. When an input message has been entered into the associated buffer, operation of the Send key signals the control unit to put this buffer in the queue for transmission to the CPU. The control unit then adds information to identify the source of the message.

In typewriter mode, all manual keyboard functions are active, but the keyed information is not buffered for transmission. The Send key does not function.

The keyboard and printer mechanisms operate independently through an electrical interface in the IBM 3671 Shared Terminal Control Unit.

## Display Expansion Feature

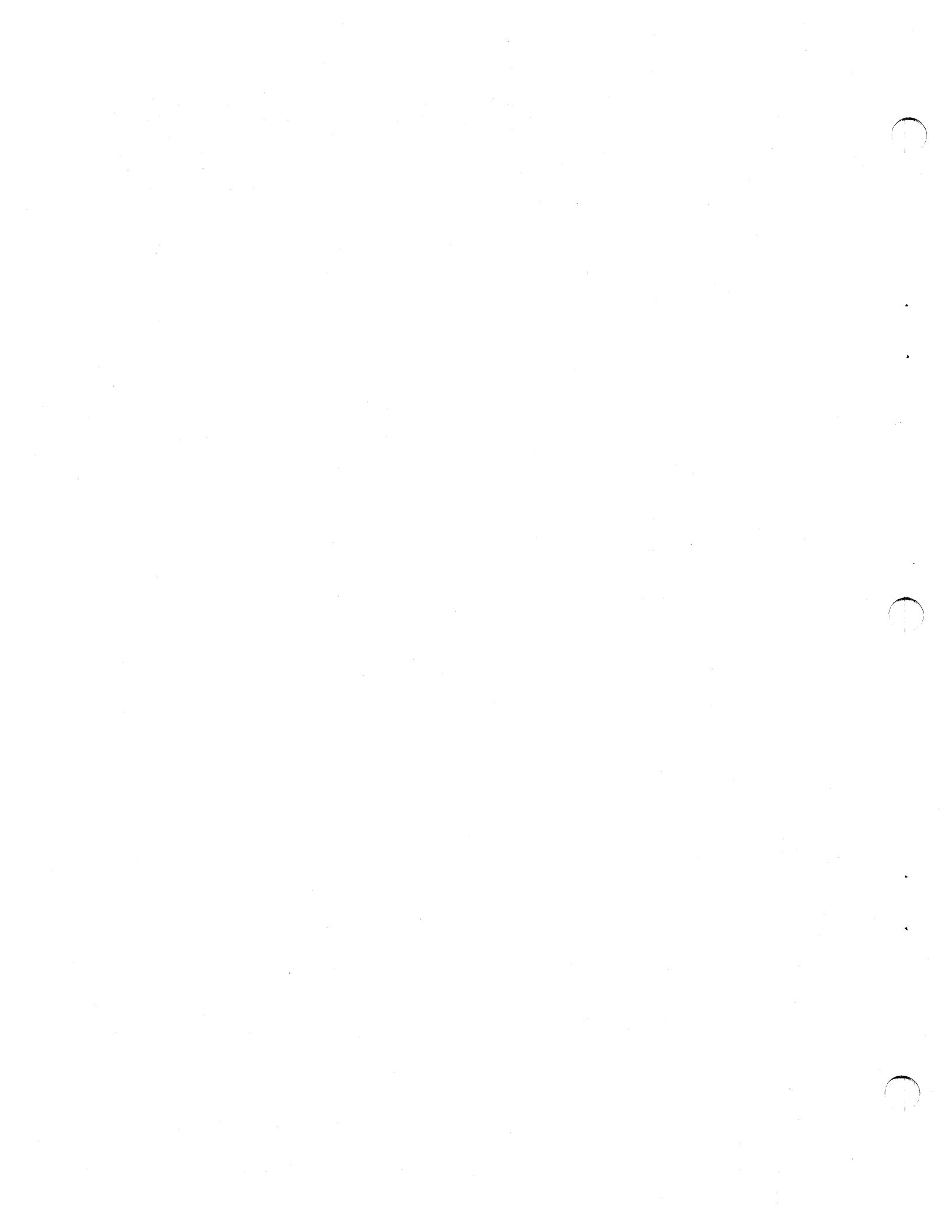
The Display Expansion feature provides for the attachment of an additional 12 data displays and 12 executive consoles. It also increases the 3671 storage capacity to accommodate these additional devices.

## Highlights of Design and Operation

Highlights of the design and operation of the 3670 include:

- Binary synchronous communications (BSC) with basic data-link control, operating in Extended Binary Coded Decimal Interchange Code (EBCDIC) and providing transmission checking. The 3670 communicates, multipoint, with any System/360 (Model 50 and above) or System/370 (Model 145 and above) that is program-supported by the Telecommunications Access Method for Operating System and that has an appropriate interface. Multiple 3670s can be intermixed with other BSC terminals and BSC-processor terminals in a multipoint configuration.
- Transmission speed of 4800 bits per second. Transmissions are over common-carrier, leased, duplex, voice-grade, multipoint communications channels or equivalent privately owned facilities.
- Buffering and control of internal operations, such as keyboard to printer, and of communications data rate to internal functions.
- Message buffering. The control unit can improve line utilization efficiency through its buffering of input data from several terminals and by receiving, in one message, the output data for several terminals.
- Applications-oriented layout of executive console keys, color-coded and labeled with familiar terms, facilitating information retrieval and order entry.
- Applications flexibility. Two levels of control provide the user with the capability of tailoring machine functions to his individual needs.
- Data for recordkeeping functions as an automatic by-product of daily business operations. These recordkeeping functions would be performed at the CPU by the user's application program.
- Uniform formatting discipline necessary for successful operation of shared facilities at stock exchanges and odd-lot houses.
- Data storage common to all registered representatives' displays, such as ticker updates, general market data, and news items. This information, when stored locally, is available without inquiry to the CPU and the resulting load on the communications line.
- Incremental print capacity. Print capacity can be tailored to a user's needs, with simultaneous printing on several printer-keyboards. Separate incoming messages are loaded into individual buffers at high speeds and are printed simultaneously at typewriter speeds. This buffered printing significantly increases communications line efficiency by reducing message transmission time. Printing applications are described under "Applications", following in this manual.

- Operator guidance. There are several types of operator guidance. One is the applications-oriented layout of the executive console with its color-coded keys and familiar terms. This makes use of the system possible with a minimum of training. Another type is visual display. To support the many conditions and special instructions that are permitted as modifiers to orders, functions of the individual keys can provide the proper format for display and transmission. This assures the accuracy and completeness of orders which require seldom-used modifiers.



# Programming Concepts

## Program Support

The IBM 3670 Brokerage Communication System, when connected to a communications network, communicates directly with an IBM System/360 or IBM System/370 CPU equipped with appropriate communications features. During communication, the 3670 is under programmed directions from the CPU.

Extended development of the Telecommunications Access Method (TCAM) for Operating System provides programming support for operation of the 3670. TCAM support of the 3670 includes the normal binary synchronous communication (BSC) terminal control and an additional capability for broadcast messages.

### TCAM Programming Support of Blocked Messages

TCAM concentrated message handling, when used with the 3670, provides an interface with TCAM at a terminal (or logical) message level. This support includes the following features that can assist the 3670 user:

- Blocking terminal messages for transmission to the 3670.
- Deblocking input 3670 messages into individual terminal messages.
- Segmenting input and output messages. The user interfaces to TCAM with terminal messages.
- Acting on user analysis of the 3670 printer status messages and scheduling output to the printers based on this status.

## Broadcast Messages

The broadcast feature is an efficient method of transmitting high-volume messages, generated at fixed-time intervals, to all terminals on a line; it can ease the problem of temporary system overload.

Highlights of the feature are:

- TCAM uses a fast-select method of line control to transmit broadcast messages. The control unit provides no response to these messages; this differs from normal line control.
- TCAM does not provide error recovery for broadcast messages.
- A main-storage broadcast message queue is built automatically as part of TCAM when the broadcast feature is defined. TCAM limits the size of this queue.
- The broadcast feature coexists with concentrated message handling, but TCAM does not block broadcast messages. If a message is to contain several logical messages, the user must place these blocked messages on the broadcast queue as one physical message.

## Two-Level Control Concept

Two levels of control are used within the 3671. The application statements, generated by the customer, specify the functions desired for his application. Control logic of the 3671 interprets the application statements and provides detailed control of the control unit. This two-level approach relieves the customer of much of the detailed functional programming.

Transactions are described using application statements assembled by the OS/assembler, formatted, and transmitted to the 3671 via the customer's application program and teleprocessing access method. The application statements reside in the control unit until replaced.

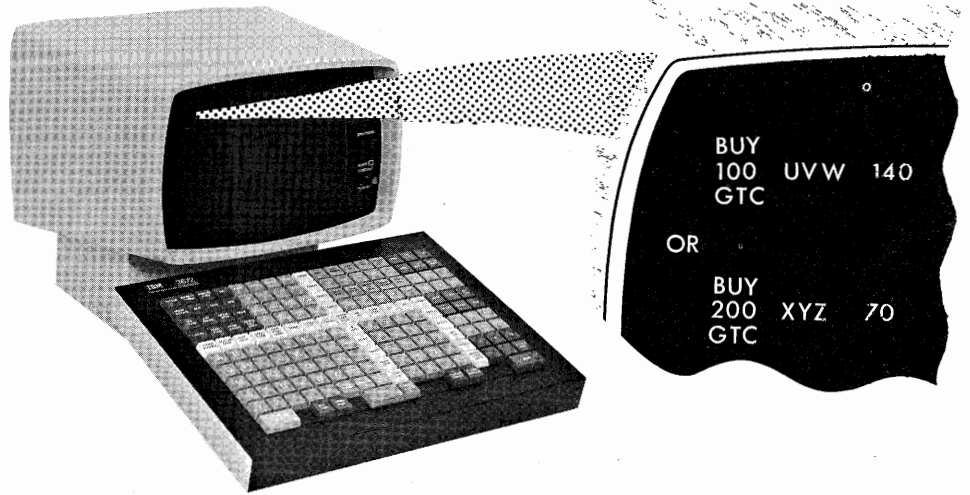
This two-level approach to functional control enables the 3670 to provide a variety of actions, including:

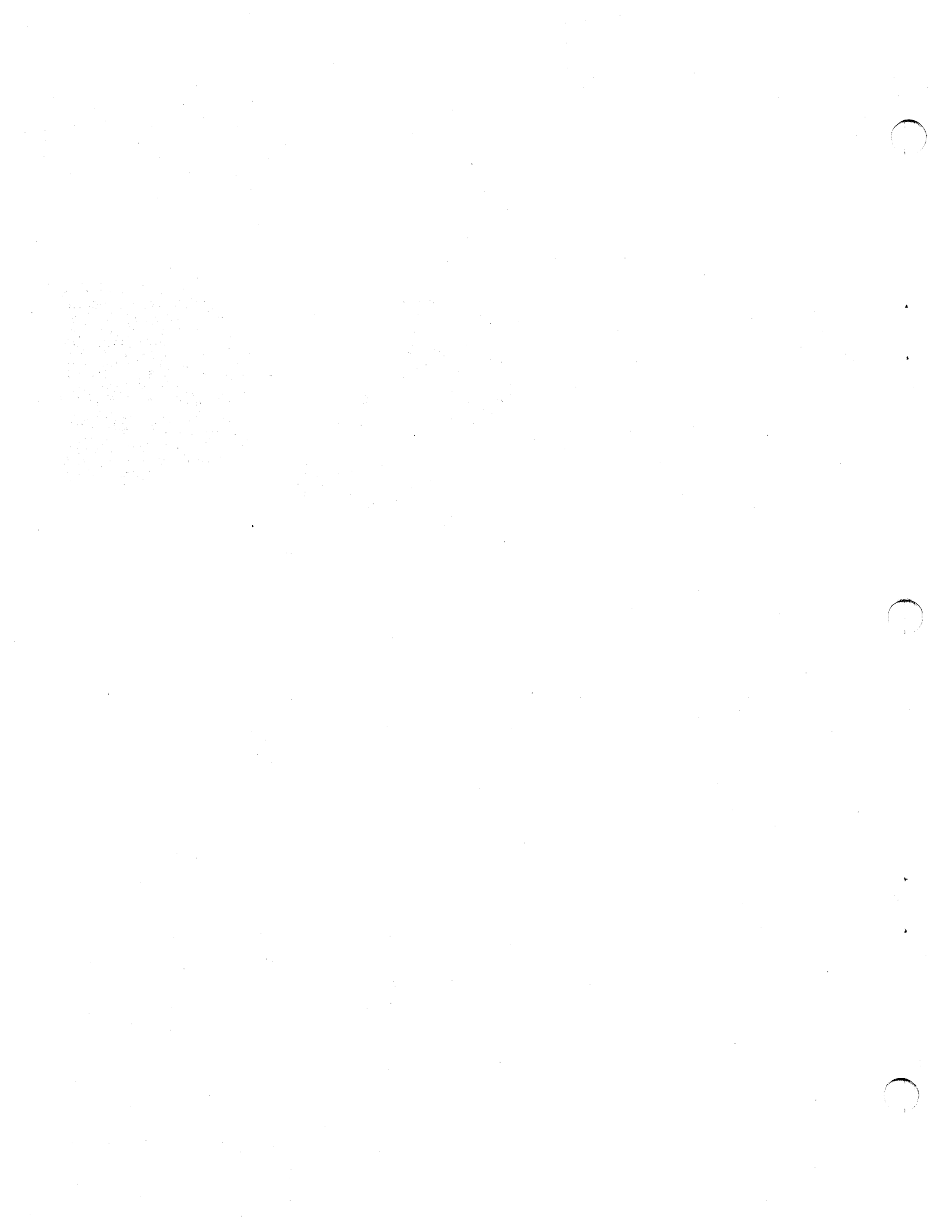
- **Format control:** Order entry is an example of the ability to control the format of a display and message transmission. The various types of orders are formatted to the user's requirements for display and transmission to the CPU. Parameters entered for an order are automatically placed in the correct format, depending upon the type of order.
- **Random input:** The 3670 will accept information from the executive console without regard to a set sequence and will automatically place it in the prescribed format. This capability is particularly desirable when entering a customer's order. Thus, the user can enter order information, for display, in the same sequence to which he has been accustomed when using a printed order form.
- **Simple field correction:** Because each function has a prescribed display position, a single field can be corrected without re-creating the entire order or message. Where a key is provided for a particular function, a single depression of that key will display the desired information and replace the incorrect entry. For example, if an order has been entered as a buy instead of a sell order, it can be changed to a sell order simply by pressing the SELL key.

In cases where pressing the function key is followed by erroneous information, pressing the function key again will clear the erroneous field. Correct data can then be entered. A change in order quantity illustrates this; the order quantity can be changed simply by pressing the quantity key again and then entering the proper numbers.

- **Position for display defined:** Control logic automatically positions the next data entry, as specified by application statements.
- **Multiple character display:** Control logic enables function keys to display indicators of variable length. Examples of this are the indicators BUY, CUST. NO., and SELL SHORT.
- **Data protection:** Security codes are imbedded in application statements. These security codes limit the execution of the statement to specified executive consoles. See the chapter, "Data Protection", following in this manual, for additional information on data security.
- **Transmission:** Transmission results from pressing the SEND key or from pressing certain function keys that also specify transmission. Function keys such as MARKET TREND, or TICKER can do two things: they can cause the message to be placed on the display and can cause the message to be transmitted to the CPU.
- **Message handling:** The two levels of control can be used (1) to build input messages to the host CPU, (2) to add the control characters to a message required by the CPU for processing, and (3) to place end-of-message (EOM) characters on the end of the message. It can also cause the password to be transmitted with the message.
- **Pre-stored label use:** The user can make use of headings and labels stored locally. Access to this information saves character transmission time on the communications line, thus improving the effective data rate.

- **Alternate data placement:** Control logic provides the user with the capability of virtually splitting the screen by changing the base line for display. An example requiring this capability is the alternate, or two-part, order. The buy order is displayed on the screen at a predetermined location specified by application statements. Normally, the next buy entry would replace the first in the same location. However, when an alternate order is indicated, by use of the OR function key, the second buy entry is displayed in an alternate location. Thus both orders are displayed together, as shown in the following example:





# Functions

## Data Compression/Expansion

When display data is located in the 3671 buffer area associated with a specific data display, it is expanded to accommodate the desired format for viewing. The same data, however, kept in CPU storage or in an intermediate buffer within the 3671, can be compressed to fit into fewer character positions.

The 3671 expands and formats this compressed data as it moves the data from local storage to a data display buffer area. This happens when a key on the executive console is pressed, requesting this particular data to be displayed.

Data compression can result in greater communications line efficiency and more efficient use of memory, both in the CPU and in the IBM 3671 Shared Terminal Control Unit.

## Dynamic Display Update

This function enables the 3671 to use incoming messages from the CPU to update the displays of registered representatives who are viewing a particular message at that time. The particular message can be either a temporary message or a message in common message storage. If it is in common message storage, after the update it will be held in the 3671 storage. If it is a temporary message, after distribution is complete, it will be discarded by the control unit. Therefore, anyone who requests the information after this time must wait until the next message is received from the CPU and appears on his data display. Dynamic ticker and news are examples of this function.

## Dynamic Ticker

The 3671 may receive a block of ticker information periodically from the CPU. This information may be transmitted in compressed form when this is provided for by the user's application program. This compressed data is then expanded by the 3671.

When the block is received, the 3671 distributes the information to all data displays that are showing the previous block of ticker information. The 3671 also distributes this information to all data displays that have requested ticker data since receipt of the previous block of ticker. After distribution is complete, the 3671 will discard the block of ticker.

## Stock List Update

The stock list update allows selection of up to 24 individual securities, with the system automatically monitoring the ticker for activity on these securities. When the stock list is being displayed on a data display, the 3671 monitors the incoming ticker and posts any activity concerning the selected securities on the screen of the display. When the stock list is not being displayed, the list is maintained and updated by the host CPU.

## Common Message Storage

Common message storage makes it possible for firms to store common data locally, rather than in the CPU. This local storage is a user option. With this function, operation of a key on the executive console moves the information from one of the intermediate buffers (where it may be in compressed form) to the data display. Having common data, such as trends, stored locally can have a favorable effect on communications line traffic. Without this function, the same key operation results in an inquiry to the CPU.



Buffered ticker and buffered news are examples of data the user may wish to place in common data storage. General market data such as averages and indices are examples of other buffered messages the user may place in common data storage.

The buffered ticker function provides an intermediate buffer within the 3671 for storing ticker messages between CPU updates. This means that when ticker data is requested, there is no delay in waiting for the next CPU transmission. As with the dynamic ticker, anyone watching ticker information automatically receives updates as they arrive from the CPU.

The buffered news function provides intermediate buffer storage, within the IBM 3671 Shared Terminal Control Unit, for news. Updates of this buffer take place automatically as news is received from the CPU.

Access to buffered news is by a single key on the executive console. This selects a routine that moves the news from the intermediate buffer to the data display. Anyone watching at update time will have the update automatically placed on his display.

## **Pre-Stored Labels**

Greater line efficiency is gained by local storage of common header and label information. For example, format headings and column labels can be stored locally and inserted into the format as the body information is moved from the communications buffer to a requesting user's data display.

## **User Storage**

This user storage is used for application statements, pre-stored labels, and common message storages. The allocation for each of these is controlled by the user, who can divide the buffer area as required by his applications.

A fixed amount of core storage in the 3671 is reserved for user storage. The size of this user storage can be increased by eliminating data displays and assigning the associated 1200-character buffers to user storage. Therefore, in a branch office configuration where the maximum number of devices is not installed, the unused display storage area may be used for user table area.

## **Data Displays for Public Viewing**

One or more data display buffers of the 3671 can be assigned for public viewing of selected data.

For example, one public display can be arranged to display ticker data while another is displaying news. The 3671 can update these displays automatically as it receives new information from the CPU. If a public display is used to display ticker, the buffer area associated with the display can act as the intermediate buffer discussed in "Common Message Storage", preceding in this chapter. Likewise, if a public display is used to display news, the buffer area associated with that display can act as the intermediate news buffer, thus freeing additional storage for other functions.

## Applications

Access to timely, quality information is necessary to every successful broker. This information is the key to productivity. It is information that has been analyzed, "personalized", categorized, and made available after being updated by reports from the various exchanges. It may include information from his research staff to guide him and his customer and also information on his customer's buying habits, holdings, and buying power.

### Registered Representative Support

Figure 6 shows the variety of information that can be made available to the registered representative. It also illustrates how the keys on the executive console are especially arranged and grouped for his convenience. The executive console provides him with easy access to this wide variety of information. It also increases his effectiveness by giving him the capability of direct order entry.

### Recordkeeping

The 3670 printing applications shown in Figure 7 illustrate the support given to branch office recordkeeping requirements. Production of hard copy is essential to brokerage branch office operations. Some basic printing applications are:

- Logging orders
- Printing execution reports from markets
- Printing confirmations (computed bills)
- Printing other reports
- Printing displayed information when a registered representative desires a printed copy of a response to an inquiry he has initiated. (Examples of this are customer account and research information.)

A basic branch office system will probably require several printer-keyboards. Depending upon the volume of business, some offices will need additional printer-keyboards conveniently located for retrieval of analysts' opinions.

As stated in the chapter, "Highlights of Design and Operation", preceding, print capacity can be tailored to the user's needs, with simultaneous printing on several printer-keyboards. Separate incoming messages are loaded into individual buffers at high speeds and are printed simultaneously at typewriter speeds. This buffered printing significantly increases communications line efficiency by reducing message transmission time.

Information Retrieval				Data Entry
Market Data	Stock Data	Customer Data	Hybrids	
Tickers Trends Changes Indexes Averages News Most Active Stock List	Current Quotations Last Price Range Research Price Range Earnings Dividends Opinions	Profile Money Line Holdings Detail Transactions Outstanding Orders	Industry Groups	Orders

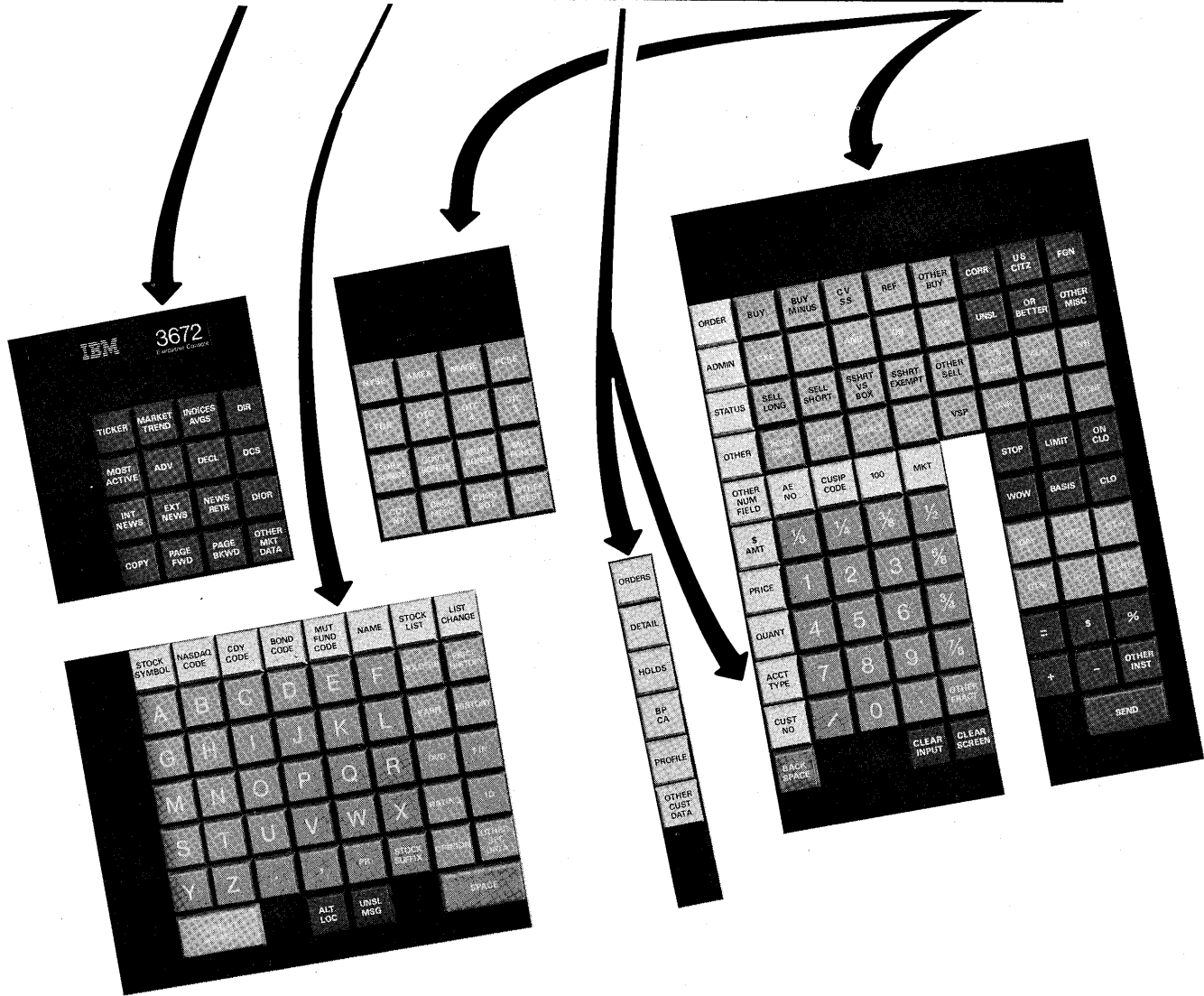


Figure 6. Applications of the 3670 for Registered Representatives

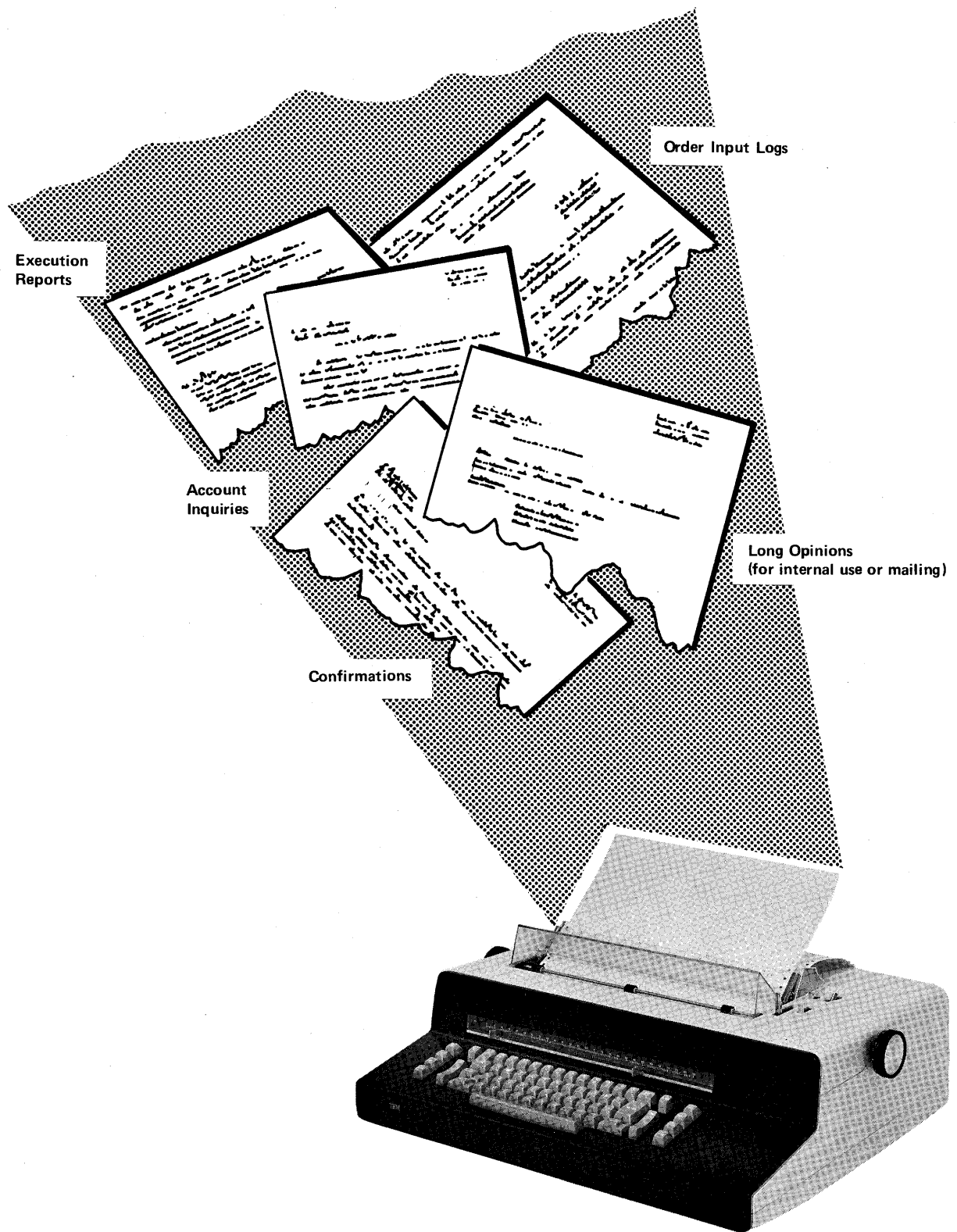
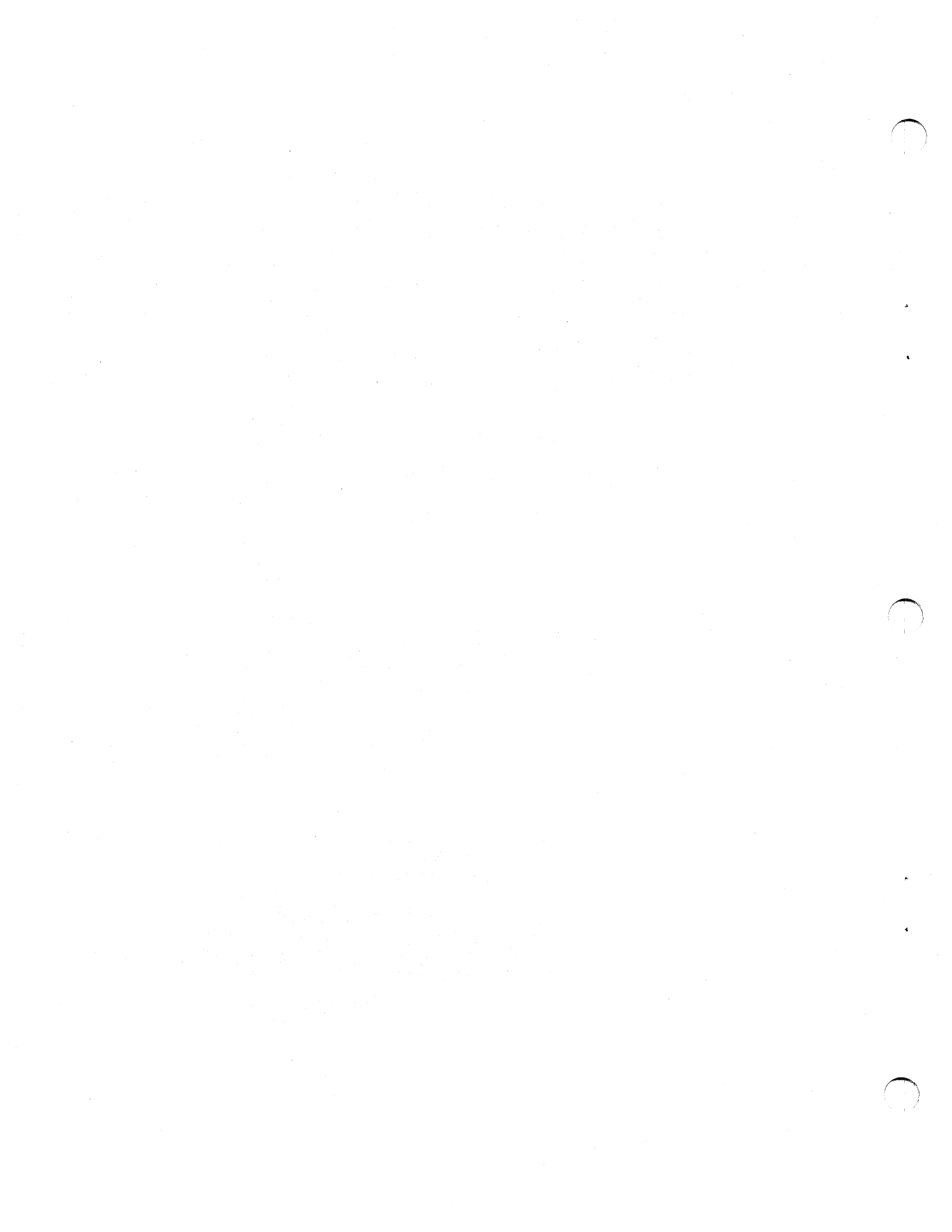


Figure 7. Branch Office Recordkeeping Applications



# System Organization

## Line Control

A binary synchronous communications (BSC) adapter controls data flow on the communications line and maintains synchronization between the CPU and the 3670. The 3670, using the EBCDIC (Extended Binary Coded Decimal Interchange Code) transmission code, operates with polling and selection.

The 3670 can be subjected to EBCDIC transparency in the network, even though it does not require transparency with its transmissions, except when transmitting diagnostic data to the CPU log file. Thus, it is compatible on communications networks with other BSC devices using transparency.

The basic data link control of the 3670 allows it to operate in a multipoint system with a variable number of 3670s and other BSC devices. Communication with a CPU is through an IBM 2701 or 2703 Transmission Control equipped with binary synchronous features.

## Message Formats

Communication from the CPU to the terminals on a 3670 is accomplished by polling and selection of the 3671 control unit. When the 3671 is polled, it will transmit, in a single message to the host CPU, the data it has gathered from its terminals and, when selected, it will accept a transmission from the CPU, which may include outputs for several different terminals. This concentrate-deconcentrate ability of the control unit can reduce network cost by allowing efficient management of a high-speed data link.

The format of a message to or from the 3670 is fixed, but the number of terminal input/output messages contained in the format may vary. Each terminal input is identified by a unique terminal address and delimited by a record separator character.

In addition to the normal selection of a single 3671 for output messages, the 3671 also has the capability of accepting a broadcast message from the CPU. With this facility, the CPU, by a single selection address, can send one message which will be received by all 3671s on a multipoint line. This gives an efficient means of distributing time-dependent data, such as ticker and news, to all the 3671s in a network.

## Message Checking

Communications systems designed primarily for processing financial data require checking capabilities not generally expected for systems involved only in administrative traffic. The 3670 operating in binary synchronous communications uses cyclic redundancy checking (CRC) to satisfy its message-checking requirements.

CRC is more efficient for higher speed transmissions than several other methods. Although cyclic redundancy checking in the communications field is relatively new, it has been successfully used in the IBM disk storage files for a number of years and found to be an excellent means of checking.



## **Data Protection**

### **CPU Data File**

Protection of the information in the CPU data file is of utmost concern in the brokerage industry. Therefore, access to this file is only through branch office shared control units operating over private lines and identified within the CPU by a polling list. Since the IBM 3670 Brokerage Communication System operates over private lines on a polling basis, it is not possible to gain access through a dialing procedure.

### **Branch Office**

In the brokerage branch office, data relating to the client's account, holdings, and transactions are of great importance. The account data must be kept secure from any non-employees who might be visiting in the brokerage office.

On the other hand, the client's account data must be available to the registered representative, his assistant, the bookkeeper and cashier, and also to the branch office manager.

One of the selling tools in the branch office is to make available to the public comparative statistics on stocks, bonds, and commodities. Public information also includes news and current prices.

To meet these objectives, the data display and executive console may be configured in the following ways.

### **Registered Representative Terminal**

The registered representative terminal, consisting of one data display and one executive console, provides access to all public data and to client accounts for a specific registered representative. This type of terminal also provides access to all public data and all client accounts for the branch manager or for back office cage or accounting personnel.

At the registered representative's desk, the client's account data is protected by the following measures:

1. The character size on the data display limits viewing to the immediate area around the registered representative's desk.
2. The data display, independent of the executive console, can be turned toward, or away from, visiting clients. In case the registered representative has a client visiting at his desk at the time he receives a telephone call from another client which necessitates an inquiry into the latter's account, the data display may be readily turned away from the visitor's view.
3. Passwords may be employed by the user to limit the customer account data to authorized personnel only. To safeguard the use of code words, the ability to inhibit password printing and display is provided in the shared terminal control unit.

### **Public Quotation Device**

A data display and executive console located in the public area can provide a quotation device where a client may request, and cause to be displayed, the public or nonconfidential data available within the system.

### **Public Ticker Display**

The branch office also may place video displays (with no keyboard) in the public area, to continuously display the news and ticker information.



## Supervisory Terminal

In order to arrange for the variations in use of the terminals just described, the data display and executive console adapter channels are structured by the daily start-up routine and may be altered from a supervisory terminal.

By restructuring, the adapter channel may be equipped to:

1. Provide a full service terminal, such as a data display and an executive console, with access through the proper passwords, to both public and private information and with the capability of executing orders.
2. Provide a limited service terminal, such as a data display and a executive console, for access, by inquiry, to public information only.
3. Provide a separate data display (with no executive console) to display a fixed category of public information.

After daily start-up, a terminal can be restructured by the user from a designated supervisory terminal in a controlled area. This ability to restructure terminals from a supervisory unit makes possible the following typical security procedure.

All terminals would be placed in a secure mode by the daily start-up routine. Each registered representative could be required to sign on and sign off with designated control personnel who would activate the individual terminal's adapter channel from a designated supervisory terminal. In addition to having his terminal's adapter channel activated, the registered representative would need access to the client's account number and would also be required to use the proper password.

After the terminal had been structured to function as a full service terminal, the registered representative, by using a keying routine on his executive console, could return the terminal to a secure mode at any time.

## Printer-Keyboard

In the brokerage branch office, printers may be used in three locations: (1) the public area, (2) the open office area, and (3) the operations area.

In the public area, printers are used to print news. Since news is public information, the only security required is to inhibit the keyboard and control buttons to prevent the entry of data or the changing of the mode of operation.

In the open office area, the printer is used to provide, upon request by the registered representative, hard copy of available public information pertaining to individual securities, such as research opinions and statistics. The only security required is to inhibit the keyboard and control buttons to prevent the entry of data or the changing of the mode of operation.

In the operations area, the printer-keyboards are used for administrative traffic, report writing, and key data entry. The printer is normally in a receive only mode, with the keyboard inactive and the control buttons active, to permit mode changes as required.

In order to provide the variations required, each printer-keyboard is structured by the daily start-up routine to: (1) place the printer in receive only mode and deactivate the keyboard and control buttons or (2) place the printer in a receive only mode with the keyboard deactivated but with the control buttons active, to permit mode changes by the operator.

After the daily start-up routine, a unit can be reassigned by the user, from the designated supervisory terminal.

## Program Support for Data Protection

Password recognition and authorization, as well as data protection routines, are provided by the user's application program.

# Configuration Considerations

## Introduction

The information given here will aid in selecting the configuration of the IBM 3670 Brokerage Communication System best suited to the user's needs. It also identifies the specify and special features available. However, before using this configurator information, the reader should be familiar with the contents of the manual up to this point.

Physical dimensions, cable connections, communications facility requirements, etc., are defined in *IBM 3670 Brokerage Communication System, Installation Manual—Physical Planning, GA27-3049*.

## Specify Features

Specify features are items that are required (in most cases) for the basic operation of the system. The features available for each unit are categorized as those common to all machines, unless noted otherwise.

Wherever there is a choice between similar specify features (such as voltage, code, nomenclature, etc.), the features are grouped together, and one of these must be specified when the facility is ordered. Specify features listed individually are ordered only if the feature is desired, unless noted otherwise. Therefore, all the specify features for each unit within the chosen configuration should be reviewed when the system is ordered. A listing of all specify features for units of the 3670 system is given under "Specify and Special Features", following in this manual.

## Special Features

Special features are generally ordered as desired, but all the special features for each unit within the chosen configuration should be reviewed when the system is ordered, since certain features are required. A listing of all special features for units of the 3670 system is given under "Specify and Special Features".

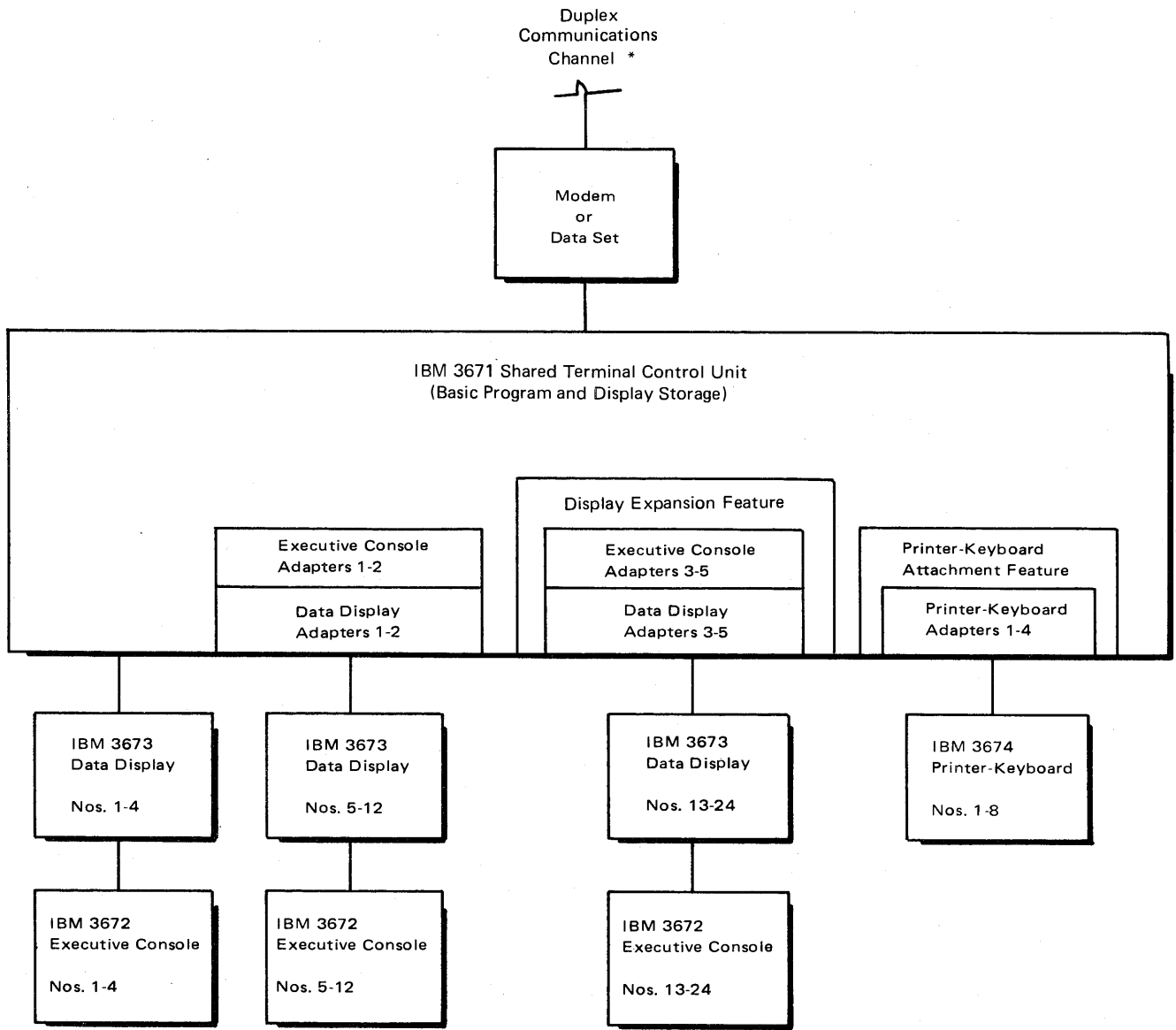
## Configuration Restrictions

The IBM 3671 Shared Terminal Control Unit contains the circuitry necessary to operate the system, and it must be included in each configuration. The maximum number that may be multidropped on a line is limited by the communications load imposed on the network. Contact your local IBM sales representative for assistance with your requirements.

The IBM 3673 Data Display and the IBM 3674 Printer-Keyboard are attached to the shared terminal control unit. The IBM 3672 Executive Console is attached to the data display; therefore, an IBM 3673 Data Display is required for each executive console ordered.

## Unit Availability

Figure 8 illustrates the availability of, and attachment for, units of the IBM 3670 Brokerage Communication System.



Maximum Number of Units Attachable to the IBM 3671 Shared Terminal Control Unit		
Attachable Units	Basic Program and Display Storage	Basic Program and Display Storage plus Display Expansion Feature
IBM 3672 Executive Console **	12	24
IBM 3673 Data Display	12	24
IBM 3674 Printer-Keyboard	8	

\*Communications facilities information is contained in Appendix A of IBM Teleprocessing System Summary, GA27-3090-3 or later edition. (Appendix A was added to GA27-3090-3 by Technical Newsletter.)

\*\*The Executive Console must be attached to a Data Display.

Figure 8. IBM 3670 Brokerage Communication System Configurator

## Specify and Special Features

### IBM 3671 Shared Terminal Control Unit

These features apply to all machines unless noted otherwise.

*Code Specify Features*

9902 208V ac, 1-Phase, 60-Hz (U.S. and Canada)

9904 230V ac, 1-Phase, 60-Hz (U.S. and Canada)

9986 Power Cord, 6 feet

Power Cord, 15 feet (shipped if F/C 9986 is not specified)

*Modem Cable*

A standard 10-foot cable is provided. If a longer cable is required, specify Feature Code 9021 and indicate length, in feet, as a quantity from 11 to 25. No cable ordering form is required.

9041 Color: Red

9042 Color: Yellow

9043 Color: Blue

9046 Color: White

*Code Special Features*

3800 Executive Console Adapter

3220 Data Display Adapter

5750 Printer-Keyboard Attachment

5740 Printer-Keyboard Adapter

3250 Display Expansion Feature

### IBM 3672 Executive Console

These features apply to all machines unless noted otherwise.

*Code Specify Features*

None

*Code Special Features*

None

### IBM 3673 Data Display

These features apply to all machines unless otherwise noted.

*Code Specify Features*

None

*Code Special Features*

None

## IBM 3674 Printer-Keyboard

These features apply to all machines unless noted otherwise.

**Code Specify Features**

9435 Six lines per inch  
 9436 Eight lines per inch

**Code Special Features**

9509 Pin Feed Platen (factory installation only)

When Feature Code 9509 is specified, one of the following feature codes must also be specified, in accordance with the line spacing and hole-to-hole width of the forms which will be used.

Feature Code for Line Spacing		Overall Forms Width	Hole-to-Hole Width	Writing Line
6 Lines/Inch	8 Lines/Inch			
9151	----	5-3/4"	5-1/4"	4-5/8"
9152	9272	6-1/2"	6"	5-3/8"
9153	9273	8"	7-1/2"	6-7/8"
9154	9274	8-1/2"	8"	7-3/8"
9155	9275	9-1/2"	9"	8-3/8"
9156	----	9-7/8"	9-3/8"	8-3/4"
9157	----	10-3/8"	9-7/8"	9-1/4"
9158	9278	10-1/2"	10"	9-3/8"
9159	9279	10-5/8"	10-1/8"	9-1/2"
9160	9280	11-3/4"	11-1/4"	10-5/8"
9161	9281	12"	11-1/2"	10-7/8"
9167	9287	13"	12-1/2"	11-7/8"
9162	9282	13-5/8"	13-1/8"	12-1/2"

## Appendix A. Glossary

Some of these terms have been defined or described in greater detail in *IBM System/360, Introduction to Teleprocessing, GC30-2067*. They are repeated here for the reader's convenience.

**bit.** Contraction of "binary digit", the smallest unit of information in a binary system. A bit may be either a one or a zero.

**BSC.** Binary synchronous communications (bi-sync), a line control procedure for communicating. It can be expressed in several data codes (eight-bit EBCDIC is used for the 3670), the only requirement being that the code must include the required line control characters and these characters must be used according to specified rules.

**buffer.** A temporary (in-process) storage device used to compensate for a difference in the data flow rate or in the time of occurrence of events, when data is transmitted from one device to another.

**byte.** A sequence of adjacent binary digits operated upon as a unit; it is usually shorter than a word.

**core.** (magnetic core) A configuration of magnetic material that is, or is intended to be, placed in a spatial relationship to current-carrying conductors and whose magnetic properties are essential to its use. In the shared terminal control unit described in this manual, it is used to retain a magnetic polarization for the purpose of storing data.

**CPU.** Central processing unit.

**data set.** A device provided for attachment of a communications channel to business machine equipment. It can be a simple interface converter or a complex modem. Many manufacturers use the term in identifying the types of modulating-demodulating equipment (modems) they manufacture to connect business machine equipment with communications channels. A modem is a data set, but a data set is not necessarily a modem.

**Note:** Do not confuse the term "data set" as used in this manual with the programming term applying to a block of records.

**EBCDIC.** Extended Binary Coded Decimal Interchange Code. This eight-bit code is one of the two basic codes used in System/360. The other is an extended version of USASCII, called eight-bit USASCII or USASCII-8. Only the EBCDIC transmission code is used in 3670 communications.

**hard copy.** A printed copy of machine output in a visually readable form (printed reports, messages, etc.).

**inquiry.** An interrogation of the linked terminal station as to status or identification in the control state.

**memory.** (storage) A device into which data can be inserted, where it can be retained, and from which it can be obtained when desired.

**message.** A sequence of words or symbols which is complete in itself. A typical message consists of a header, text, and an end-of-message control character.

**modem.** A contraction of "modulator-demodulator", it refers to signal conversion equipment that provides modulation and demodulation of binary data for transmission.

**multipoint line.** A line or circuit which connects several stations; sometimes called a "multidrop line" (within IBM).

**polling.** A technique by which each of the terminals sharing a communications line is periodically interrogated to determine if it requires servicing. The multiplexer or control station sends a coded inquiry called a "poll" which, in effect, asks the terminal selected, "Do you have anything to transmit?"

**realtime (system).** Data processing (computing) which is concurrent with physical events in such a way that the results of the computing operations are available to influence the sequence of events and vice versa.

**selection.** Addressing a terminal and/or a component on a selective calling circuit.

**storage.** (memory) A device into which data can be inserted, where it can be retained, and from which it can be obtained when desired.

**synchronization.** The "lock and key" between a transmitter and a receiver that keeps the two in step with each other.

**TCAM.** Telecommunications Access Method (an IBM-developed program). TCAM is a versatile, realtime, I/O control teleprocessing program. As a queued level access method with data management facilities, it controls the transfer, editing, and processing of data from remote stations to main storage. It also provides a high-level, flexible message control language for the flow of message traffic from one remote station to another and between remote stations and any applications programs.

**terminal.** Any device capable of sending and/or receiving information over a communications facility.

**terminal, applications-oriented.** A terminal especially designed to receive source data in an environment associated with the applications to be performed and capable of transmission to and from the system of which it is a part.

**transparency.** A transmission mode in which control characters are treated as data.



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(Where more than one page reference is given, the major reference is first.)

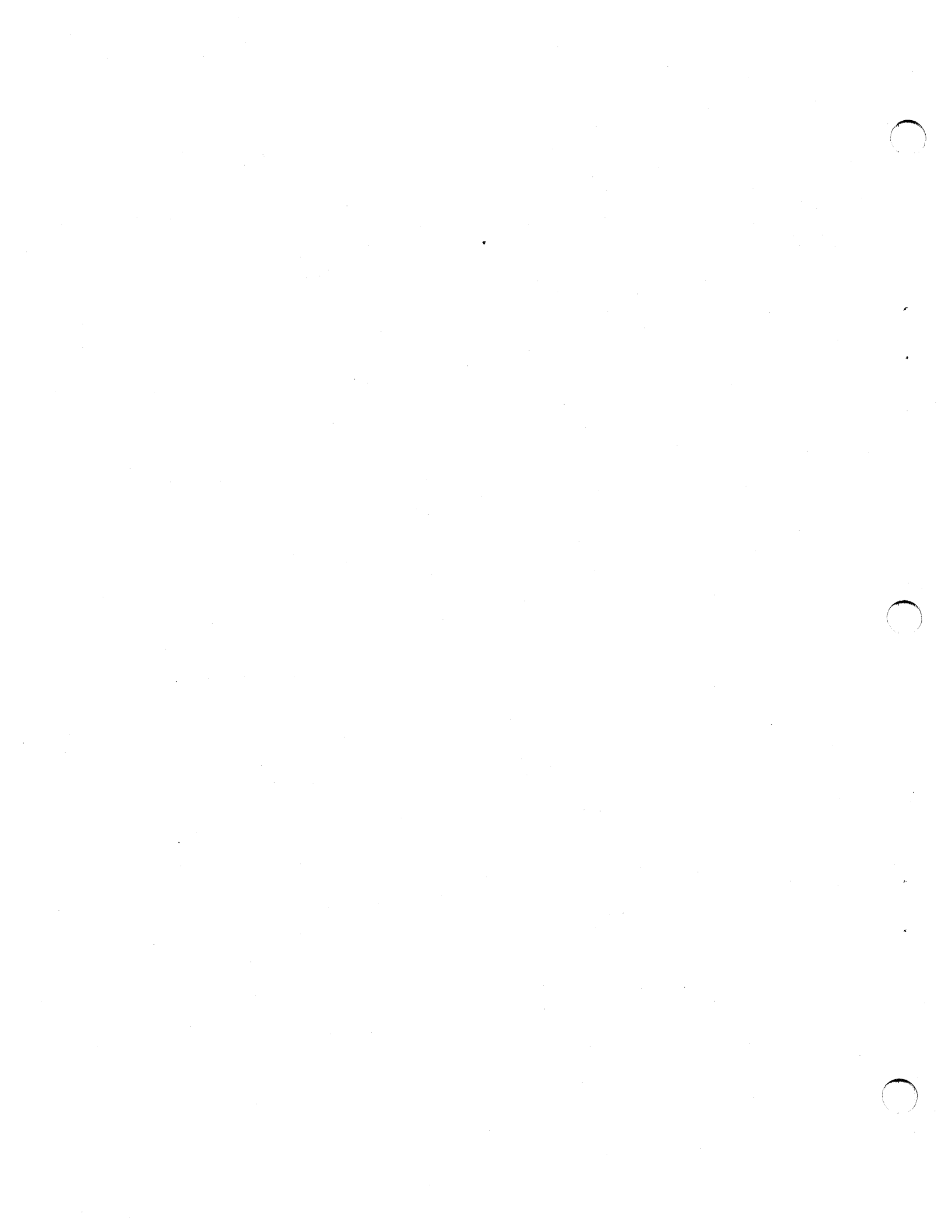
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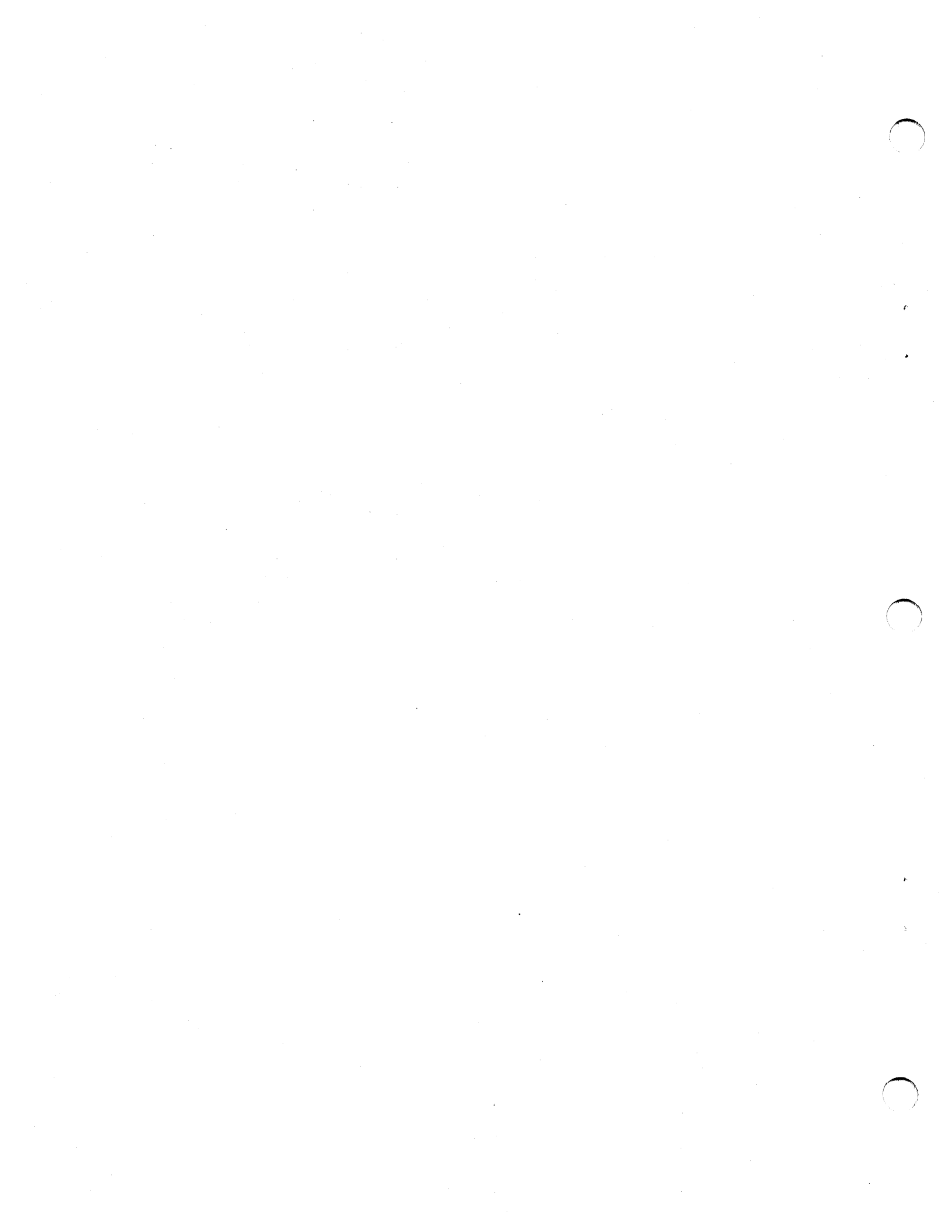


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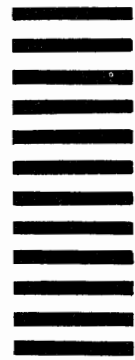
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