

SPERRY UNIVAC 90/30 System Processor

Operator Reference

This document contains the latest information available at the time of publication. However, Sperry Univac reserves the right to modify or revise its contents. To ensure that you have the most recent information, contact your local Sperry Univac representative.

Sperry Univac is a division of Sperry Rand Corporation.

FASTRAND, PAGEWRITER, SPERRY UNIVAC, UNISCOPE, UNISERVO, and UNIVAC are trademarks of the Sperry Rand Corporation.



Contents

PAGE STATUS SUMMARY

CONTENTS

1. INTRODUCTION

| | | |
|----------|--|-----|
| 1.1. | GENERAL | 1-1 |
| 1.2. | DESCRIPTION | 1-2 |
| 1.2.1. | Processor | 1-4 |
| 1.2.1.1. | System Console | 1-4 |
| 1.2.1.2. | UNISCOPE 100 Communications Output Printer (COP) | 1-4 |
| 1.2.2. | Input/Output Section | 1-4 |
| 1.2.2.1. | Integrated Peripheral Channel | 1-5 |
| 1.2.2.2. | Integrated Disc Adapter | 1-5 |
| 1.2.2.3. | Selector Channel | 1-5 |
| 1.2.2.4. | Multiplexer Channel | 1-5 |
| 1.2.3. | Main Storage | 1-5 |
| 1.3. | CONFIGURATION | 1-5 |

2. OPERATOR RESPONSIBILITIES

3. CONTROLS AND INDICATORS

| | | |
|--------|--|------|
| 3.1. | GENERAL | 3-1 |
| 3.2. | PROCESSOR CABINET CONTROLS AND INDICATORS | 3-1 |
| 3.2.1. | Operator/Maintenance Panel Controls and Indicators | 3-2 |
| 3.2.2. | Processor Cabinet Internal Controls and Indicators | 3-6 |
| 3.3. | STORAGE EXPANSION CABINET CONTROLS AND INDICATORS | 3-12 |
| 3.3.1. | Storage Expansion Cabinet Type 7024-00/01 | 3-12 |
| 3.3.2. | Storage Expansion Cabinet Type 7024-02/03 | 3-19 |
| 3.4. | I/O EXPANSION CABINET | 3-23 |

4. OPERATION

| | | |
|--------|---|-----|
| 4.1. | GENERAL | 4-1 |
| 4.2. | TURN-ON PROCEDURE | 4-1 |
| 4.2.1. | Processor Cabinet Initial Setup Procedure | 4-2 |
| 4.2.2. | Storage Expansion Cabinet Initial Setup Procedure | 4-2 |
| 4.2.3. | I/O Expansion Cabinet Initial Setup Procedure | 4-4 |
| 4.3. | TURN-OFF PROCEDURE | 4-4 |
| 4.4. | RECOVERY PROCEDURES | 4-4 |

5. OPERATOR-PERFORMED MAINTENANCE

| | | |
|------|----------------------------|-----|
| 5.1. | GENERAL | 5-1 |
| 5.2. | CLEANING OF AIR FILTERS | 5-1 |
| 5.3. | INDICATOR LAMP REPLACEMENT | 5-9 |

USER COMMENT SHEET

FIGURES

| | | |
|-------|--|------|
| 1-1. | UNIVAC 90/30 System Processor Central Hardware | 1-1 |
| 1-2. | Relationship of Processor to I/O Channels, Main Storage, and Peripheral Devices | 1-3 |
| 1-3. | UNIVAC 90/30 System Central Hardware Configuration | 1-6 |
| 3-1. | Location of Controls and Indicators | 3-1 |
| 3-2. | Operator/Maintenance Panel Controls and Indicators | 3-2 |
| 3-3. | Processor Cabinet, Right Side View (Doors Open) | 3-6 |
| 3-4. | Processor Cabinet Power Control Panel Controls and Indicators | 3-7 |
| 3-5. | Processor Cabinet Power Supplies Controls and Indicators | 3-9 |
| 3-6. | Location of Communications Adapter Circuit Breaker and Indicator | 3-11 |
| 3-7. | Storage Expansion Cabinet Type 7024-00/01, Front View (Doors Open) | 3-12 |
| 3-8. | AC Power Control Panel for Storage Expansion Cabinet Types 7024-00/01 and 7024-02/03 | 3-13 |
| 3-9. | DC Power Control Panel for Storage Expansion Cabinet Type 7024-00/01 | 3-14 |
| 3-10. | Storage Module DC Power Control Panel for Cabinet Type 7024-00/01 | 3-15 |
| 3-11. | Storage Expansion Cabinet Type 7024-00/01, Rear View (Doors Open) | 3-17 |
| 3-12. | +5-Volt Interface Assembly Regulator for Cabinet Type 7024-00/01 | 3-18 |
| 3-13. | Storage Module Bulk Power Supply for Cabinet Type 7024-00/01 | 3-18 |
| 3-14. | Storage Expansion Cabinet Type 7024-02/03, Front View (Doors Open) | 3-20 |
| 3-15. | Storage Module +5-Volt Power Regulator for Cabinet Type 7024-02/03 | 3-20 |
| 3-16. | DC Power Control Panel for Cabinet Type 7024-02/03 | 3-21 |
| 3-17. | Storage Expansion Cabinet Type 7024-02/03, Rear View (Doors Open) | 3-22 |
| 3-18. | 18.5/22.8-Volt Power Supply | 3-23 |

| | | |
|-------|--|------|
| 3—19. | I/O Expansion Cabinet, Front View (Doors Open) | 3—24 |
| 3—20. | I/O Expansion Cabinet Power Control Panel | 3—24 |
| 3—21. | I/O Expansion Cabinet +5-Volt Power Supply | 3—26 |
| 3—22. | I/O Expansion Cabinet +6, —12, +24-Volt Power Supplies | 3—27 |
| 5—1. | Location of Air Filters | 5—2 |
| 5—2. | Processor Cabinet Storage Air Filter (Front View of Cabinet) | 5—3 |
| 5—3. | Processor Cabinet Logic Pages Air Filter (Rear View of Cabinet) | 5—4 |
| 5—4. | Processor Cabinet Power Supplies Air Filter (Right Side View of Cabinet) | 5—4 |
| 5—5. | Processor Cabinet Communications Adapter Air Filter (Front View of System Console) | 5—5 |
| 5—6. | Type 7024—00/01 Storage Expansion Cabinet Air Filter (Typical View of Both Sides of Cabinet) | 5—5 |
| 5—7. | Type 7024—02/03 Cabinet Power Supply Air Filter (Front View of Cabinet) | 5—6 |
| 5—8. | Type 7024—02/03 Cabinet Storage Modules/Power Supplies Air Filter (Back View of Cabinet) | 5—6 |
| 5—9. | I/O Expansion Cabinet Air Filter (Rear View of Cabinet) | 5—7 |
| 5—10. | Processor Cabinet Operator/Maintenance Panel Indicators | 5—9 |
| 5—11. | Lamp Replacement | 5—10 |

TABLES

| | | |
|-------|--|------|
| 1—1. | Related Documents | 1—2 |
| 1—2. | UNIVAC 90/30 System Central Hardware Optional Expansion Features | 1—7 |
| 3—1. | Operator/Maintenance Panel Controls and Indicators | 3—3 |
| 3—2. | Processor Cabinet Power Control Panel Controls and Indicators | 3—8 |
| 3—3. | Processor Cabinet Power Supplies Controls and Indicators | 3—10 |
| 3—4. | AC Power Control Panel (Cabinet Types 7024—00/01 and 7024—02/03) Controls and Indicators | 3—13 |
| 3—5. | DC Power Control Panel (Cabinet Type 7024—00/01) Controls and Indicators | 3—14 |
| 3—6. | Storage Module DC Power Control Panel (Cabinet Type 7024—00/01) Controls and Indicators | 3—16 |
| 3—7. | Storage Module Bulk Power Supply (Cabinet Type 7024—00/01) Controls and Indicators | 3—19 |
| 3—8. | +5-Volt Interface Assembly Regulator (Cabinet Type 7024—00/01) Controls and Indicators | 3—19 |
| 3—9. | Storage Module +5-Volt Power Regulator (Cabinet Type 7024—02/03) Controls and Indicators | 3—21 |
| 3—10. | DC Power Control Panel (Cabinet Type 7024—02/03) Controls and Indicators | 3—22 |
| 3—11. | 18.5/22.8-Volt Power Supply (Cabinet Type 7024—02/03) Controls and Indicators | 3—23 |
| 3—12. | I/O Expansion Cabinet Power Control Panel Controls and Indicators | 3—25 |
| 3—13. | I/O Expansion Cabinet +5-Volt Power Supply Controls and Indicators | 3—26 |
| 3—14. | I/O Expansion Cabinet +6, —12, +24-Volt Power Supplies Controls and Indicators | 3—27 |
| 4—1. | Power Fault Summary | 4—5 |
| 4—2. | Processor Cabinet Recovery Procedures | 4—6 |
| 4—3. | Storage Expansion Cabinet Recovery Procedures | 4—9 |
| 4—4. | I/O Expansion Cabinet Recovery Procedures | 4—11 |
| 5—1. | Cabinet Filters | 5—8 |



1. Introduction

1.1. GENERAL

This manual contains the information and procedures for operating the central hardware (Figure 1—1) of the SPERRY UNIVAC 90/30 System Processor (90/30 system).

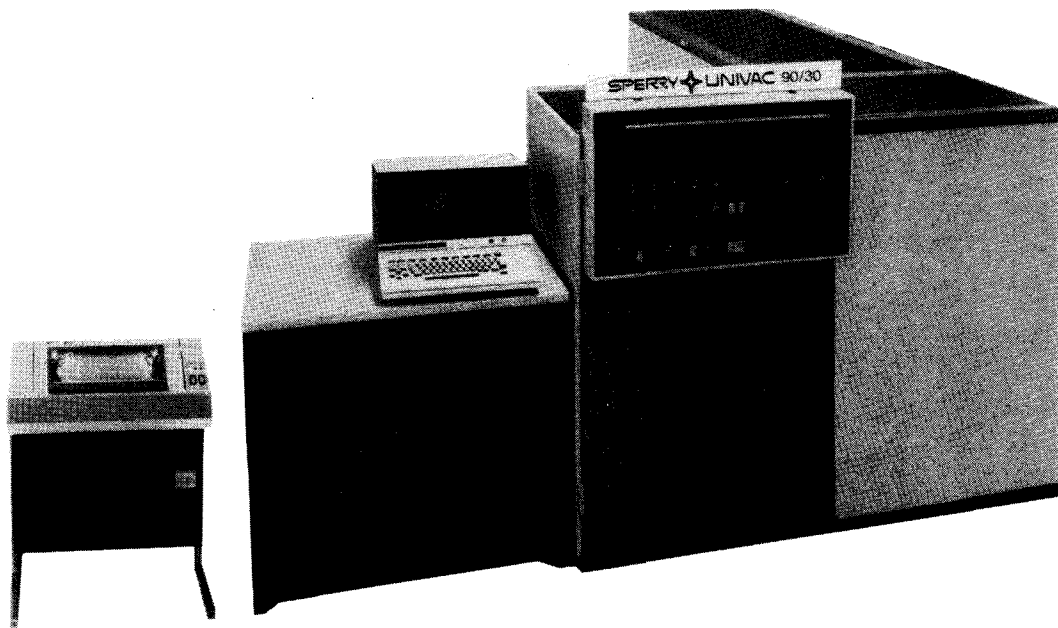


Figure 1—1. UNIVAC 90/30 System Processor Central Hardware

The central hardware consists of four cabinets:

1. 90/30 system processor type 3029—00/01 (processor cabinet)
2. Expansion cabinet type 7024—00/01 or type 7024—02/03 (optional features)
3. Expansion cabinet type 1921—00/01 (optional feature)
4. UNISCOPE 100 Communications Output Printer (optional feature)

The processor cabinet contains the processor, processor features, internal storage up to 65K, external storage interface, control storage, an integrated peripheral channel and related controls, an integrated disc adapter, power supplies, an operator/maintenance panel, system power control, and an attached UNISCOPE 100 Display Terminal (system console). The expansion cabinet type 7024—00/01 or type 7024—02/03 (storage expansion cabinet) contains up to 196K of main storage. The expansion cabinet type 1921—00/01 (I/O expansion cabinet) provides expansion capability for two selector channels and a multiplexer channel. The UNISCOPE 100 Communications Output Printer (COP) is a free-standing, self-contained unit which interfaces with the system console to provide a hard copy record of data.

Operator information for the system console and the COP is provided in separate documents. The number and title of these documents are listed in Table 1—1, as well as documents which contain additional operator information for equipment used with the 90/30 system central hardware.

Table 1—1. Related Documents

| Document No. | Title |
|--------------|--|
| UP-7788 | UNISCOPE 100 Display Terminal, Operator Reference |
| UP-7939 | UNISCOPE 100 Communications Output Printer, Functional Description |
| UP-8086 | 0773 Printer Subsystem, Operator Reference |
| UP-8089 | 0717 Card Reader Subsystem, Operator Reference |
| UP-8088 | 0605 Card Punch Subsystem, Operator Reference |
| UP-8072 | 90/30 System Operations Handbook for Operators |

1.2. DESCRIPTION

Functionally, the central hardware of the 90/30 system consists of three types of equipment: a processor, input and output equipment, and main storage (Figure 1—2).

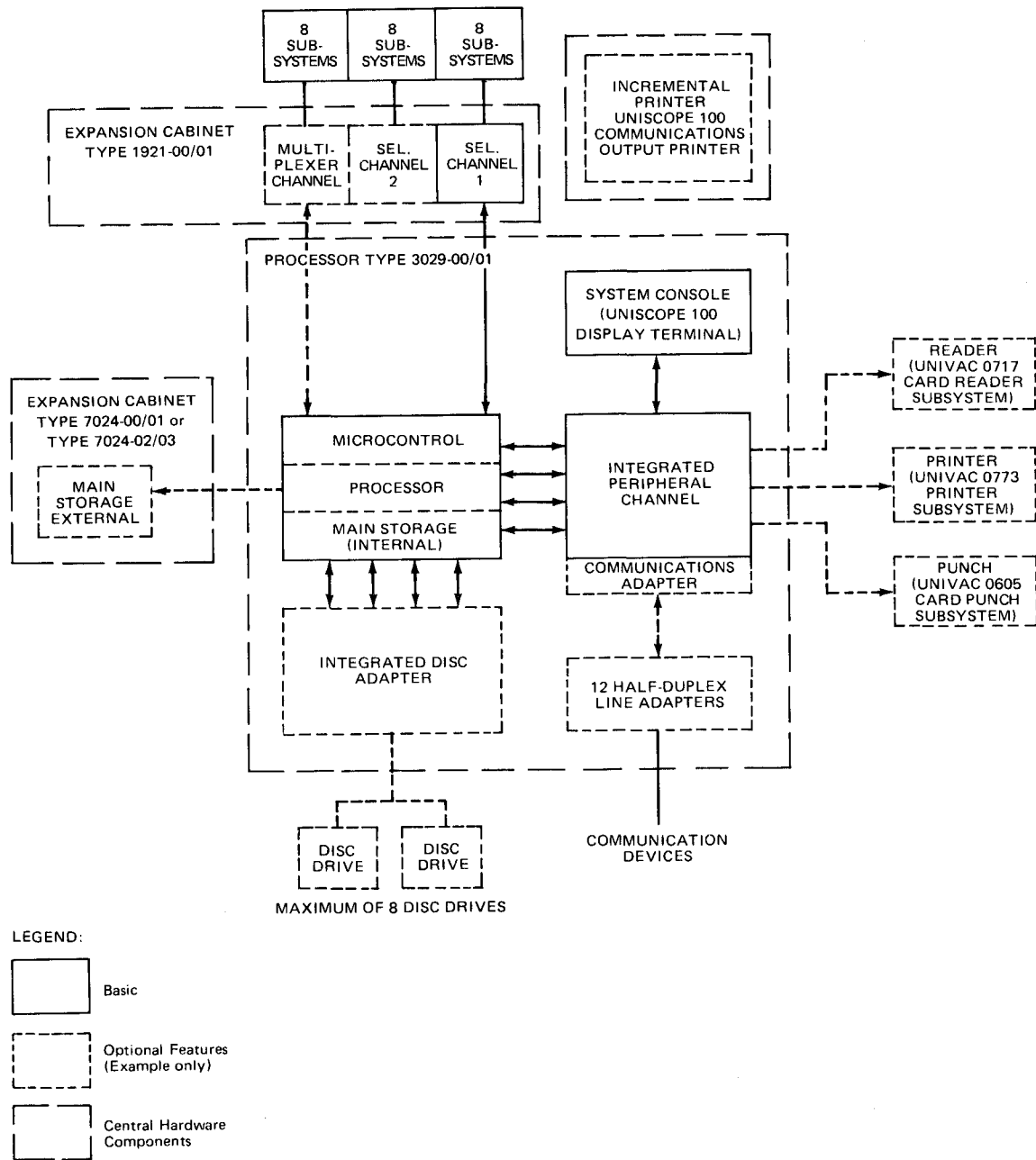


Figure 1-2. Relationship of Processor to I/O Channels, Main Storage, and Peripheral Devices

1.2.1. Processor

The processor is a general purpose, microprogram-controlled processor which includes the following:

- Basic instruction set
- 32 general registers, 8 working registers, and 8 floating-point registers (optional)
- Interval timer
- Stall timer
- Integrated peripheral channel
- Relocation registers
- System console
- Operator/maintenance panel
- 32K - byte internal main storage (expandable to 262K bytes)

1.2.1.1. System Console

The system console (UNISCOPE 100 Display Terminal) provides the main interface for operator interaction with the processor. The system console is a modified UNISCOPE 100 Display Terminal which accepts data from the keyboard of the console control unit, displays the data, and transfers the data to the integrated peripheral channel.

Data entered into the keyboard is displayed on the screen in a 64-character-per-line by 16-line format, providing a total display of 1024 characters. Displayable characters consist of the 64-character (including space) ASCII (American Standard Code For Information Interchange) set plus control characters.

1.2.1.2. UNISCOPE 100 Communications Output Printer (COP)

The COP is a free-standing auxiliary output device for the system console. Capable of printing at a maximum rate of 30 characters per second, the COP can produce from one to six printed copies on edge-sprocketed forms 11 inches long and 3-5/8 inches wide to 14-7/8 inches wide. Operation is asynchronous. The COP requires only ac power connection and an interface connection to the system console.

1.2.2. Input/Output Section

The input/output section initiates, directs, and monitors the transfer of data between main storage and the peripheral subsystems. After an I/O instruction is initiated, the data is transferred autonomously of other processor functions; i.e., the I/O and the processor operate concurrently. The I/O section consists of an integrated peripheral channel, an integrated disc adapter, a selector channel, and a multiplexer channel.

1.2.2.1. Integrated Peripheral Channel

The integrated peripheral channel (IPC) coordinates all information transfers between main storage and the integrated peripheral devices: system console, card reader, card punch, printer and communications adapter. The IPC is a half-duplex channel that transfers commands, data, status, and sense information. Input/output activity is initiated by the processor upon issuance of a start I/O instruction to IPC. This instruction results in the transfer of a command to the control logic of a specific peripheral device. The command specifies the type of operation to be performed and is executed on an individual basis. The high transfer rate of the IPC permits simultaneous operation of all integrated peripherals.

1.2.2.2. Integrated Disc Adapter

The integrated disc adapter (IDA) acts as a combination channel and control unit for the integrated disc device. The IDA is an optional feature because other disc subsystems are available to supply the minimum disc drive requirement (two).

1.2.2.3. Selector Channel

The selector channel controls the exchange of information between subsystems (up to eight) and processor main storage. The selector channel operates in the burst mode. (For example, one of eight possible subsystems retains control of the interface for duration of its input/output operation. Simultaneously, other subsystems can be executing previously initiated operations that do not involve data transfer over the input/output interface.) The processor initiates all input/output operations to the selected channel and the specific subsystem connected to the channel. When the operation is successfully initiated, the channel maintains control of the data transfers between main storage and the subsystem independently of the processor. Upon completion of the input/output operation, the status of the channel and the subsystem is presented to the processor.

1.2.2.4. Multiplexer Channel

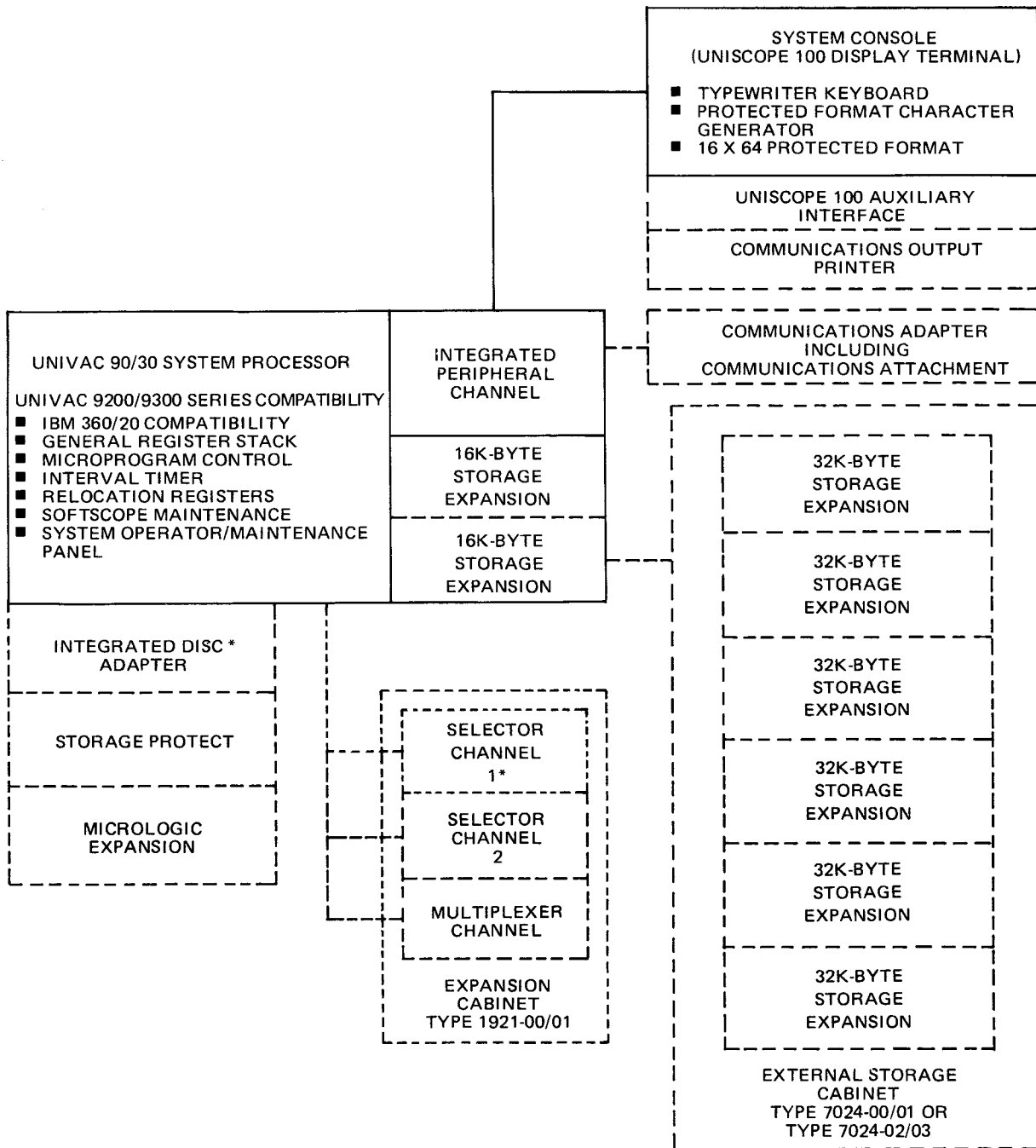
The multiplexer channel is similar in operation to the selector channel except that it operates in multiplexed mode. That is, the channel services several concurrently operating subsystems by assigning the input/output interface to a subsystem only long enough to transfer one or a few bytes of information. The multiplexer channel controls up to eight subsystems and initiates all input/output operations by issuing input/output instructions to a selected subchannel and subsystem. When the operation is successfully initiated, the multiplexer channel controls the flow of data between the main storage and the subsystem, independent of the processor. At the completion of the input/output operation, the status of the multiplexer channel is presented to the processor.

1.2.3. Main Storage

Main storage is of the semiconductor type with a 600-nanosecond half-word read/write cycle time. The minimum main storage is 32K bytes, expandable to 262K bytes. It is constructed in modular form and is packaged as an internal part of the processor in increments of 16K bytes up to and including 65K bytes. Storage requirements beginning with 65K bytes are provided in a separate cabinet in 32K-byte increments. Periodic refreshing of main storage is required to ensure data integrity. This refreshing of storage occurs automatically within the system. Power losses experienced by the system result in loss of all data in main storage.

1.3. CONFIGURATION

The minimum and expanded configurations of the central hardware are shown in Figure 1—3. The minimum configuration is indicated by solid boxes while the possible optional expansion features are shown by dashed lines. The exact configuration is determined by selection of the optional features which are listed and described in Table 1—2.



*Either a selector channel or an integrated disc adapter is required to complete a basic configuration.

LEGEND:

- Minimum configuration
- Optional expansion features

Figure 1-3. UNIVAC 90/30 System Central Hardware Configuration

Table 1--2. UNIVAC 90/30 System Central Hardware Optional Expansion Features

| Name | Description |
|---|---|
| Auxiliary interface | Provides a general-purpose parallel auxiliary interface to allow transfer of data displayed on the system console UNISCOPE 100 Display Terminal to the communications output printer. |
| Communications output printer (COP) | Provides a printer capable of printing hard copy of data displayed on the system console screen. The printer has a 64-character ASCII set with a print rate of 30 characters per second. |
| | Further information on the COP is found in the COP functional description, UP-7939, (current version). |
| Multiplexer channel | A channel with an 8-subsystem maximum configuration capability, eight active subchannels, and an 83k-byte data transfer rate. Maximum of one to a system. |
| Selector channels 1 and 2 | A channel with an 8-subsystem maximum configuration capability, one active subchannel, and a normal transfer rate of 833k bytes. Maximum of two to a system. Either a selector channel or an integrated disc adapter is required to complete the minimum UNIVAC 90/30 System. |
| Integrated Disc Adapter (IDA) | Provides the interface and control between the 90/30 system processor and up to eight drives, with a nominal data transfer rate of 625k bytes. Either an integrated disc adapter or a selector channel is required as part of the minimum 90/30 system. |
| Storage expansion | Provides a 16,384-byte storage increment that may be added to internal storage for a maximum of 65,536 bytes of storage. Internal storage must be expanded to maximum value before external storage (type 7024-00/01 or type 7024-02/03) can be configured. |
| External storage cabinet (type 7024-00/01 or type 7024-02/03) | Included with first 32,768 bytes of external storage, provides power supply, fans, and necessary hardware for external storage expansion from 32,768 bytes to 196,608 bytes in increments of 32,768 bytes using storage expansion and external storage expansion features. Maximum total storage (internal plus external) is 262,144 bytes. |
| External storage expansion | Provides a 32,768-byte storage increment that can be added to extend external storage capacity for a maximum of 196,608 bytes of storage. External storage cabinet is provided with the first 32,768 bytes of external storage. |
| Micrologic expansion | Provides a repertoire of 64 additional instructions, 4 registers (each 64 bits long), and expanded control storage. Provides micrologic for execution of 44 floating-point instructions in both long and short, and normalized and unnormalized formats, and micrologic for the execution of 20 additional nonprivileged instructions. |
| Storage protect | Provides read/write protection on access to main storage and two additional privileged instructions (SSK, ISK). Protects up to 262,144 bytes of internal and external storage. |
| Communications adapter, including communications attachment | Provides interfaces and control required to coordinate the transfer of data between this feature and a maximum of 12 half-duplex line adapters (LA). |



2. Operator Responsibilities

The operator is responsible for preparing the central hardware of the SPERRY UNIVAC 90/30 System (90/30 system) for operation and for performing functions required for efficient operation.

To assume his responsibilities, the operator must know the location and function of all controls, indicators, and circuit breakers of the central hardware.

The operator must:

- Turn the central hardware on and off, as required
- Change or clean air filters
- Correct faults due to removal of power
- Reset circuit breakers
- Replace indicator bulbs

In addition, the operator also must be familiar with the operating procedures of the integrated peripheral subsystems which are used with the central hardware to comprise the 90/30 system complex. These integrated peripheral subsystems are: UNIVAC 0773 Printer Subsystem, UNIVAC 0717 Card Reader Subsystem, UNIVAC 0605 Card Punch Subsystem, and UNIVAC 8416 Disc Subsystem. Operating information for these subsystems is contained in appropriate documents listed in Table 1—1.



3. Controls and Indicators

3.1. GENERAL

This section contains a description of the switches, controls, and indicators which are used to operate the SPERRY UNIVAC 90/30 System (90/30 system) central hardware. This includes the internal controls and indicators which are located within the 90/30 system processor type 3029—00/01 (processor cabinet), the external expansion cabinet types 7024—00/01 and 7024—02/03 (storage expansion cabinet), and the expansion cabinet type 1921—00/01 (I/O expansion cabinet). (See Figure 3—1.)

3.2. PROCESSOR CABINET CONTROLS AND INDICATORS

The controls and indicators of the processor cabinet are located on the operator/maintenance panel at the front of the cabinet, and inside the cabinet. The internal controls and indicators are accessible by opening the hinged doors at the right side of the cabinet and also by removing front and rear panels beneath the UNISCOPE 100 Display Terminal (system console) if the processor is equipped with the communications adapter.

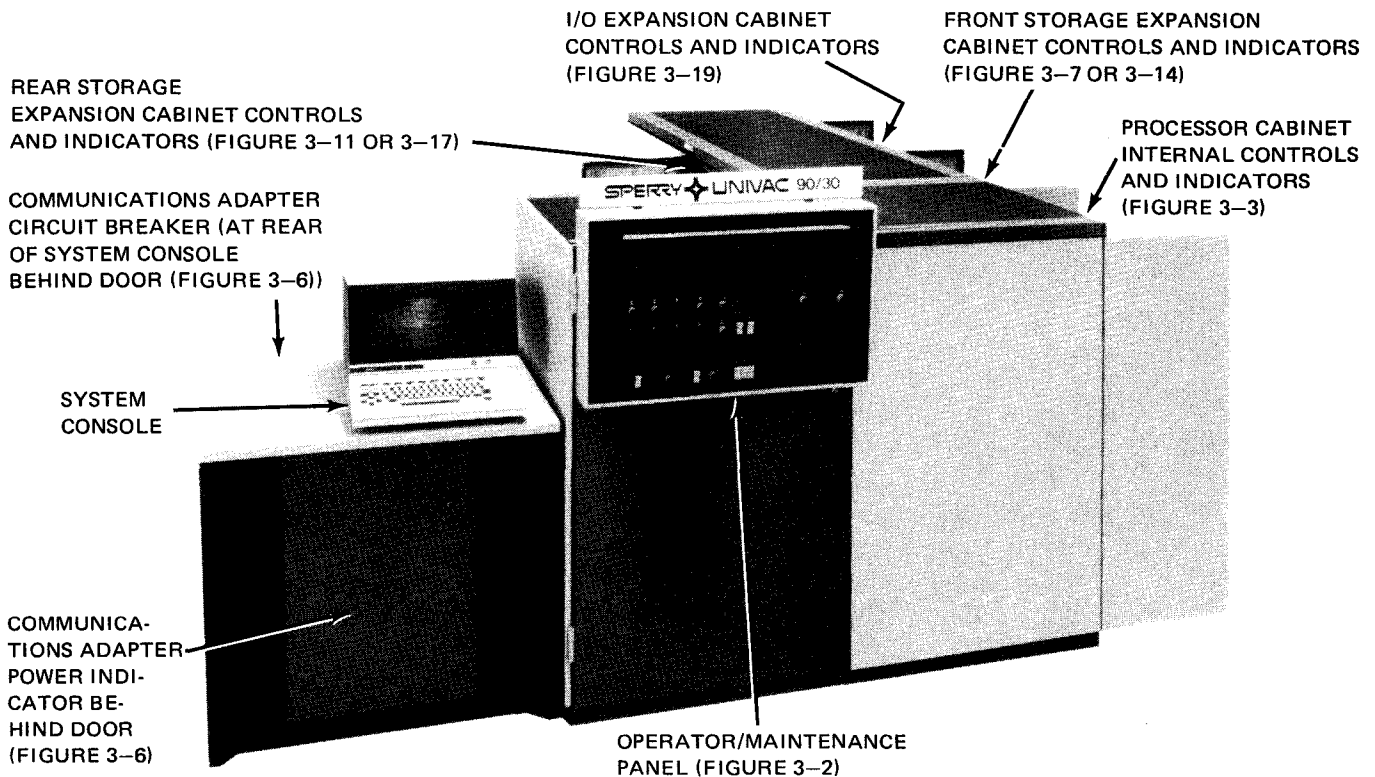


Figure 3—1. Location of Controls and Indicators

3.2.1. Operator/Maintenance Panel Controls and Indicators

The controls and indicators of the operator/maintenance panel are utilized in the course of executing processor and I/O operations, performing initial load, altering and displaying the contents of main storage, altering and displaying the contents of the processor registers, and displaying the contents of control storage, etc. These controls and indicators on the front of the processor are illustrated in Figure 3-2 and are described in Table 3-1.

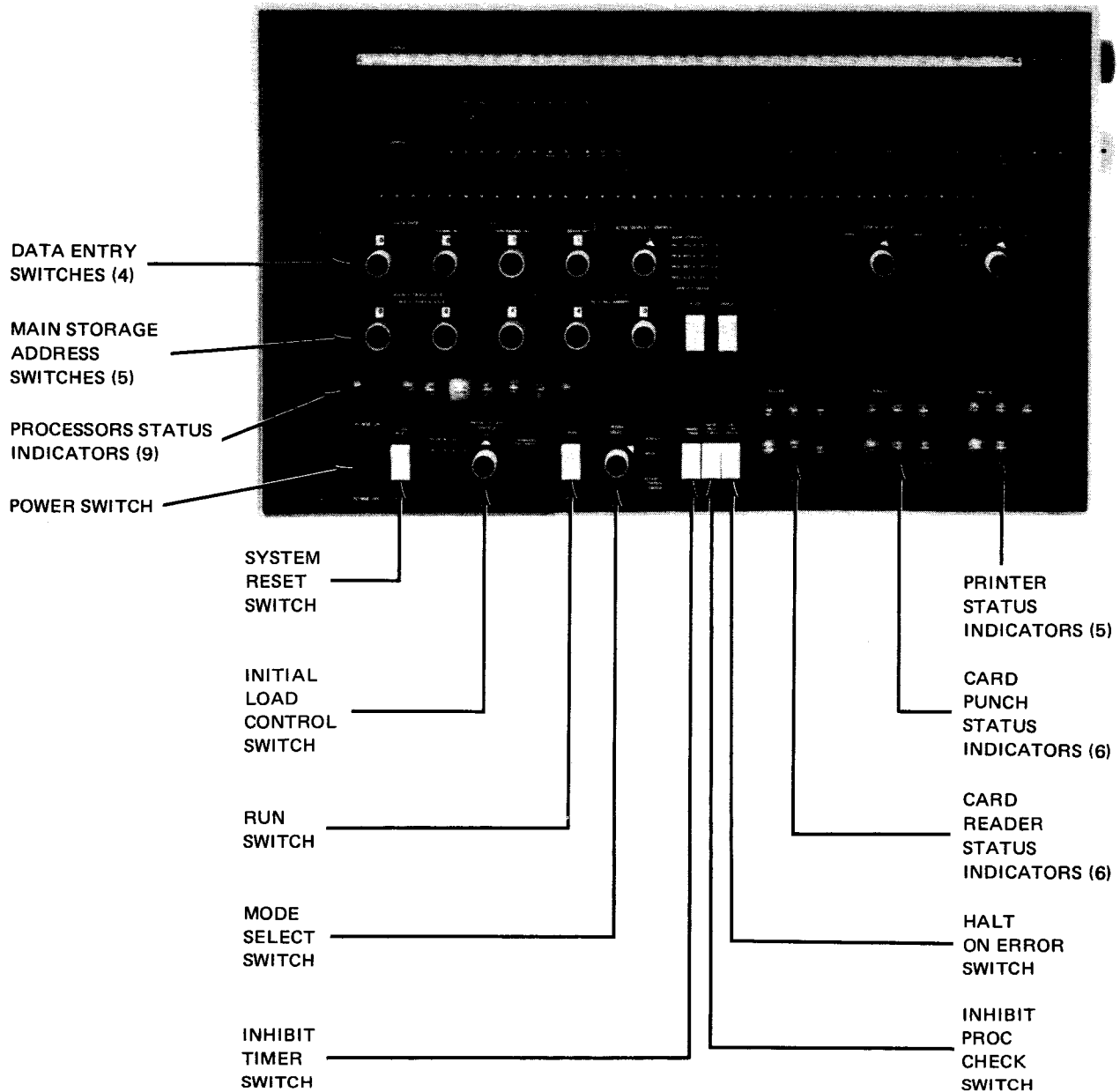


Figure 3-2. Operator/Maintenance Panel Controls and Indicators

Table 3-1. Operator/Maintenance Panel Controls and Indicators (Part 1 of 3)

| Control/Indicator | Function |
|----------------------------------|---|
| DATA ENTRY switches | Four, 16-position, hexadecimal-encoded switches — alter data in storage locations or processor registers, or select channel and peripheral device addresses when initially loading storage from a peripheral device. |
| MAIN STORAGE ADDRESS switches | Five, 16-position, hexadecimal-encoded switches — select main storage locations, control storage locations, or processor registers, the contents of which are to be altered or displayed. |
| CONTROL STORAGE ADDRESS switches | Three, most significant value switches — select address of control storage location whose contents are to be altered or displayed. |
| PROC REG ADDRESS switches | Two, least-significant value switches — select address of processor register whose contents are to be altered or displayed. |
| Printer status indicators | Five indicators which indicate operation of UNIVAC 0773 Printer Subsystem. A description of each indicator follows: |
| DEVICE CHECK indicator | When lit, indicates one of the following conditions exists in printer: <ul style="list-style-type: none"> ■ Lack of air flow from blower ■ Failure of ac power to print band motor ■ Print carriage assembly is not locked in operating position. ■ Ambient temperature within printer cabinet exceeds 134.6°F (57°C). |
| FORMS CHECK indicator | When lit, indicates paper form in printer is torn or jammed. |
| PRINT CHECK indicator | When lit, indicates a fault in printer actuator circuits or in print band in printer. |
| OUT OF FORMS indicator | When lit, indicates printer is out of paper forms. Indicator is initially lit when 6 inches of form is left below the print line. |
| PARITY CHECK indicator | When lit, indicates a parity error is detected in control of printer. |
| Card punch status indicators | Six indicators which indicate operation of UNIVAC 0605 Card Punch Subsystem. A description of each indicator follows: |
| DEVICE CHECK indicator | When lit, indicates one of following conditions exists in card punch: <ul style="list-style-type: none"> ■ Card punch cabinet interlock is open. ■ Ac power is off. ■ High-temperature early warning condition exists in card punch cabinet. |
| FEED CHECK indicator | When lit, indicates a card is jammed in card path or primary stacker of card punch. |
| PUNCH CHECK indicator | When lit, indicates a column in a card has been incorrectly punched or an overrun error has occurred. |
| HOPPER indicator | When lit, indicates card did not advance or input card hopper is empty. |
| READ CHECK indicator | When lit, indicates a data error or overrun error is detected. |
| VALIDITY CHECK indicator* | When lit, indicates a punching error (more than one punch is detected in rows 1 through 7 in one or more columns) has occurred when card punch is operating in translate mode. |
| Card reader status indicators | Six indicators which indicate operation of UNIVAC 0717 Card Reader Subsystem. A description of each indicator follows: |
| DEVICE CHECK indicator | When lit, indicates one of following conditions exists in card reader: <ul style="list-style-type: none"> ■ Card reader cabinet interlock is open. ■ Circuit breaker within card reader cabinet has tripped, removing power from card reader. ■ High-temperature early warning condition exists in card reader cabinet. ■ Over-temperature condition exists in motor or reader lamp in card reader cabinet. |

*To utilize this indicator, card punch must be equipped with Feature 1628-00.

Table 3-1. Operator/Maintenance Panel Controls and Indicators (Part 2 of 3)

| Control/Indicator | Function |
|-----------------------------|---|
| FEED CHECK indicator | When lit, indicates a jam in the card transport mechanism or output stacker. |
| READ CHECK indicator | When lit, indicates a read or overrun error occurred in card reader. |
| HOPPER indicator | When lit, indicates a card failed to feed or input hopper of card reader is empty. |
| TRANSFER CHECK indicator | When lit, indicates card was fed without a feed signal. |
| VALIDITY CHECK indicator | When lit, indicates a detection of punch error (multiple punches in rows 1 through 7 in one or more columns) when card reader is operated in translate mode. |
| HALT ON ERROR switch | A 2-position switch — forces the processor to halt immediately when a machine check occurs or an error condition causing channel status is detected. |
| INHIBIT PROC CHECK switch | A 2-position switch — prevents the processor from being halted by a nonrecoverable error. |
| INHIBIT TIMER switch | A 2-position switch — disables the interval timer of the processor. |
| MODE SELECT switch | A 4-position switch — selects processor mode of operation. The function of each switch position is as follows: NORMAL: Allows the processor to operate in normal mode (continuous processing). The processor remains in this mode until some action, hardware or operator initiated, causes selection of an alternate mode (instruction mode or cycle mode). INSTR: Allows the processor to operate in instruction mode, in which case one instruction is executed at a time and the processor enters the stopped state. CYCLE: Allows the processor to operate in the cycle mode. Each time RUN switch is pressed, one machine cycle of system operation is executed. RETAIN CONTROL STORAGE: Prevents the advancement of the control storage address register. In this position, it is possible to continually loop on a selected control storage microinstruction. |
| RUN switch | Momentary contact switch — initiates processing in one of the three selected modes. |
| INITIAL LOAD CONTROL switch | A 4-position switch — initially loads the control storage and loads a program into main storage from 90/30 system peripheral devices. The function of each switch position is as follows: CONT STOR LOAD: Permits loading of control storage from one of 90/30 system peripheral devices. CONTINUOUS READ · WRITE: Allows continuous reading or writing of main storage OFF: Allows initial load and continuous read/write functions to be deactivated. For normal mode processing, the switch is set to this position. PROGRAM LOAD: Allows program loading into main storage from one of 90/30 system peripheral devices. |
| SYSTEM RESET switch | A momentary contact switch which provides the means to clear: all system functions, processor, input/output channels, online subsystems, pending interrupts, and error conditions. |
| POWER switch | A 2-position switch — initiates application or removal of power to 90/30 system. |

Table 3-1. Operator/Maintenance Panel Controls and Indicators (Part 3 of 3)

| Control/Indicator | Function |
|--|--|
| <p>Processor status indicators</p> <p>POWER CYCLING indicator</p> <p>POWER ON indicator</p> <p>TEST MODE indicator</p> <p>PROC CHECK indicator</p> <p>INITIAL LOAD indicator</p> <p>TEMP CHECK indicator</p> <p>CONTROL STORAGE CHECK indicator</p> <p>HPR STOP indicator</p> <p>RUN indicator</p> | <p>Nine indicators — indicate operation of 90/30 system. A description of each indicator follows.</p> <p>When lit, indicates power is being applied to or removed from 90/30 system. The indicator is extinguished when power sequencing is completed.</p> <p>When lit, indicates power sequencing is complete and power is applied to all components of 90/30 system.</p> <p>When lit, indicates one or more of following conditions exist:</p> <ul style="list-style-type: none"> ■ Retain control storage ■ Interval timer of processor is inhibited. ■ Processor is in instruction mode of operation. ■ Processor is in cycle mode of operation. ■ Processor is not stopped by nonrecoverable error. ■ Processor is set up to stop immediately when an error (machine check) occurs. ■ Control storage is initially being loaded. ■ Main storage is being loaded from one of 90/30 system peripheral devices. ■ Data is continuously being written into or read out of main storage. ■ Power control fault override <p>When lit, indicates processor has detected a nonrecoverable error or error is detected while processor is in halt-on-error operation.</p> <p>When lit, indicates processor is performing initial loading of control storage or initial loading of program into main storage.</p> <p>When lit, indicates processor has detected a high-temperature condition in processor cabinet.</p> <p>When lit, indicates processor has detected a nonrecoverable error due to a control storage read bus check, a control storage write bus check, or a control storage address exception.</p> <p>When lit, indicates any of following conditions:</p> <ul style="list-style-type: none"> ■ Processor has stopped under control of HALT and PROCEED instruction display point. ■ System was reset. ■ Processor was placed in instruction mode of operation. ■ Initial loading of control storage has been completed. ■ An unused location of control storage was addressed. <p>Indicator is lit: when system is processing, after system reset, during instruction mode of operation, during initial loading of control storage, or during initial loading of program.</p> |

3.2.2. Processor Cabinet Internal Controls and Indicators

Most of the internal controls and indicators in the processor cabinet are located behind hinged doors (on the right side of the cabinet) on power supplies, power regulators, and a power distribution panel (Figure 3—3). The power supplies and regulators provide dc operating power for the logic and the storage within the cabinet and for integrated peripheral subsystems. The power distribution panel is used to control the application of dc power (to integrated peripheral subsystems) and ac power (to integrated peripheral subsystems, system console, disc drive, and all power supplies within the cabinet). The status of temperature, air flow, and power supplies is indicated on the power distribution panel.

These internal controls and indicators are illustrated in Figures 3—4 and 3—5 and described in Tables 3—2 and 3—3.

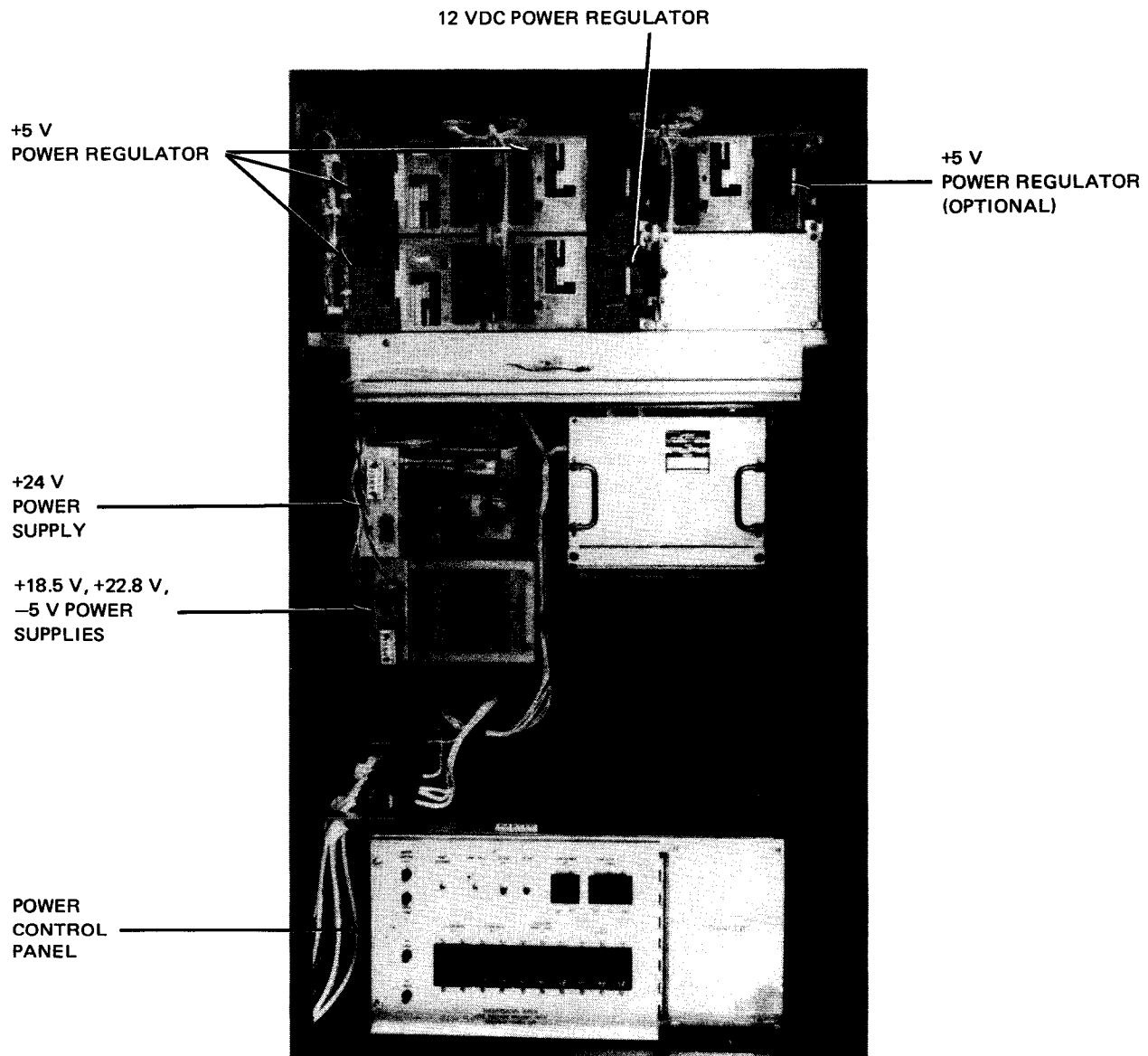


Figure 3—3. Processor Cabinet, Right Side View (Doors Open)

If the communications adapter is used as part of the system, the power indicator and circuit breaker for this item are located beneath the system console (Figure 3—6). The power indicator, when lit, indicates that dc power is supplied to the communications adapter feature. The circuit breaker controls application of +24 volt dc power to the communications adapter and also provides circuit protection.

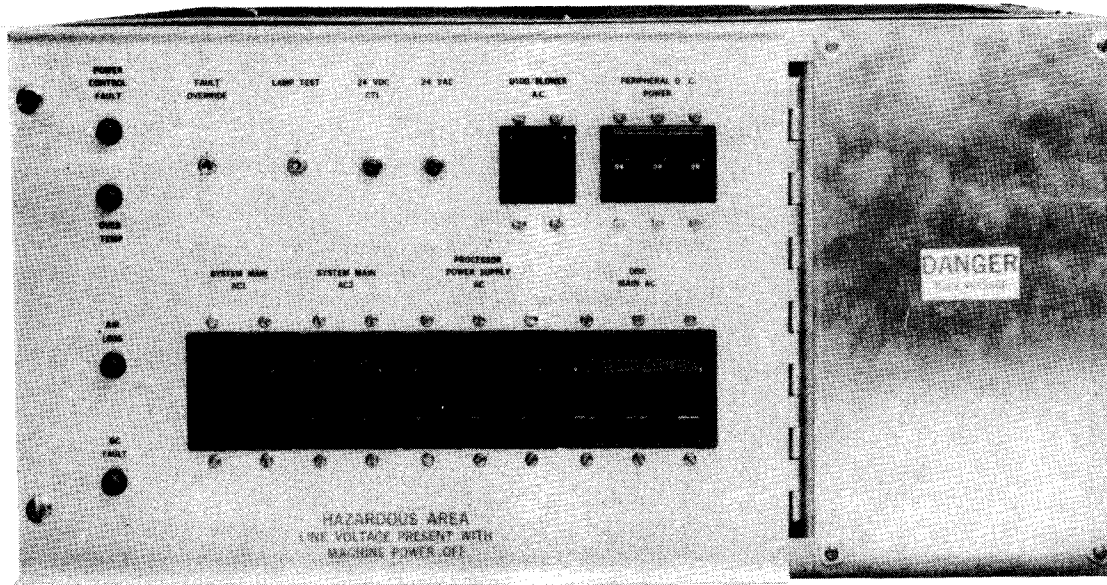


Figure 3—4. Processor Cabinet Power Control Panel Controls and Indicators

Table 3—2. Processor Cabinet Power Control Panel Controls and Indicators

| Control/Indicator | Function |
|---|--|
| FAULT OVERRIDE switch | A 2-position toggle switch which enables overriding an air loss fault (lack of air flow in processor cabinet) or dc power fault (marginal operation or loss of +5 volt, -12 volt, +18.5 volt, or +22.8 volt power supply). This switch is to be used by maintenance personnel only. |
| LAMP TEST switch | A 2-position toggle switch which checks validity of four indicators (POWER CONTROL FAULT, OVER TEMP, AIR LOSS, and DC FAULT indicators) when in up position by causing indicators to light. |
| SYSTEM MAIN AC1 circuit breaker | A 2-position circuit breaker — controls application of main ac power through a line voltage auto transformer to UNIVAC 0773 Printer Subsystem, to UNIVAC 0605 Card Punch Subsystem, and to 24-volt transformer providing power to ac relays and indicators of processor cabinet; automatically removes ac power if UNIVAC 0773 Printer Subsystem, UNIVAC 0605 Card Punch Subsystem, or 24-volt power supply requires excess current. |
| SYSTEM MAIN AC2 circuit breaker | A 2-position circuit breaker — controls application of main ac power to UNIVAC 0717 Card Reader Subsystem and to U100/BLOWER A.C. circuit breaker; automatically removes ac power if UNIVAC 0717 Card Reader Subsystem, system console, or processor blowers require excess current. |
| PROCESSOR POWER SUPPLY AC circuit breaker | A 2-position circuit breaker — controls application of main ac power to all power supplies within processor cabinet; automatically removes ac power if power supplies require excess current. |
| DISC MAIN AC circuit breaker | A 2-position circuit breaker — controls application of main ac power to UNIVAC 8416 Disc Drive Units used with the processor; circuit breaker automatically removes ac power if disc drives require excess current. |
| 24 VDC CTL circuit breaker | Thermal-pushbutton circuit breaker — controls +24-volt dc power to operator/maintenance panel and the power control circuits; automatically removes power when abnormal amount of +24-volt current is required. |
| 24 VAC circuit breaker | Thermal-pushbutton circuit breaker — controls 24-volt ac power to power control circuits; automatically removes power when abnormal amount of 24-volt ac current is required. |
| U100/BLOWER A.C. circuit breaker | A 2-position circuit breaker — controls ac power to system console and blower motors in processor cabinet; automatically removes power when abnormal amount of power is required. |
| PERIPHERAL D.C. POWER circuit breaker | A 2-position circuit breaker — controls dc power to four integrated peripheral subsystems (UNIVAC 0773 Printer Subsystem, UNIVAC 0717 Card Reader Subsystem, UNIVAC 0605 Card Punch Subsystem, and UNIVAC 8416 Disc Subsystem). Circuit breaker removes dc power if any one of integrated peripheral subsystems requires excess amount of dc current. |
| POWER CONTROL FAULT indicator | When lit, indicates that low-voltage power which controls the power sequencing of processor cabinet is inoperative or marginal. |
| OVER TEMP indicator | When lit, indicates an over-temperature condition has occurred within processor cabinet or one of three integrated peripheral subsystems (UNIVAC 0773 Printer Subsystem, UNIVAC 0717 Card Reader Subsystem, or UNIVAC 0605 Card Punch Subsystem). |
| AIR LOSS indicator | When lit, indicates loss of air flow across logic pages within cabinet due to an air restriction (dirty air filter) or inoperative blower within the processor cabinet. |
| DC FAULT indicator | When lit, indicates a loss or marginal operation of one of dc power supplies within processor cabinet or communications adapter. |

+5 VDC POWER
REGULATOR (A19)
CIRCUIT BREAKER

+5 VDC POWER
REGULATOR (A19)
INDICATOR

+5 VDC POWER
REGULATOR (A20)
INDICATOR

+5 VDC POWER
REGULATOR (A20)
CIRCUIT BREAKER

+5 VDC POWER REGULATOR
(A21) INDICATOR

+5 VDC POWER
REGULATOR (A21)
CIRCUIT BREAKER

+5 VDC POWER
REGULATOR (A22)
CIRCUIT BREAKER

+5 VDC POWER
REGULATOR
(A22) INDICATOR

-12 VDC
POWER
REGULATOR
(A23)
CIRCUIT
BREAKER

+24 VDC POWER
SUPPLY (A4)
CIRCUIT
BREAKER

+18.5 V,
+22.8 V,
-5 VDC
POWER
SUPPLY
(A17) CIRCUIT
BREAKER

-12 VDC
POWER
REGULATOR
(A23)
INDICATOR

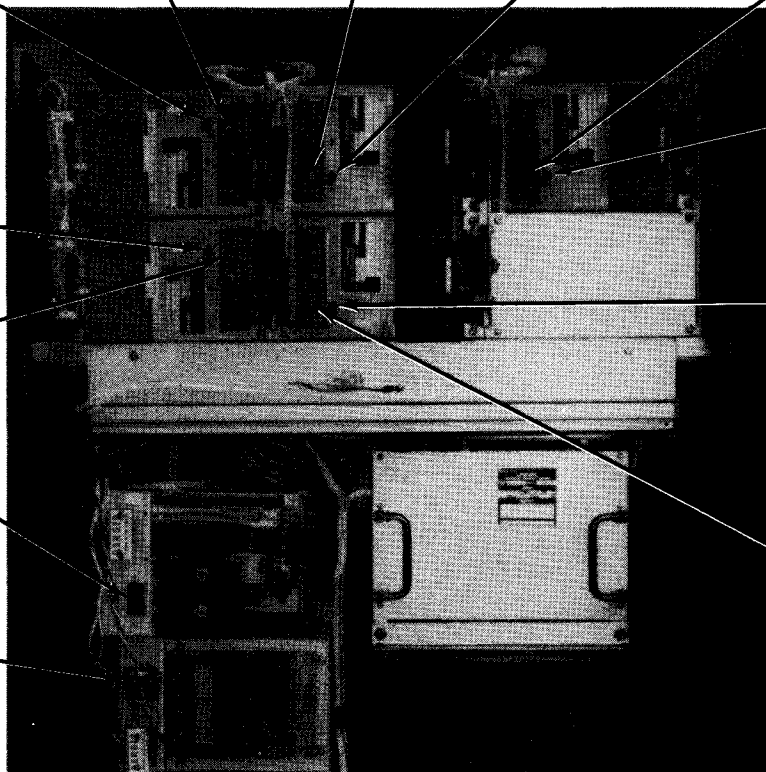
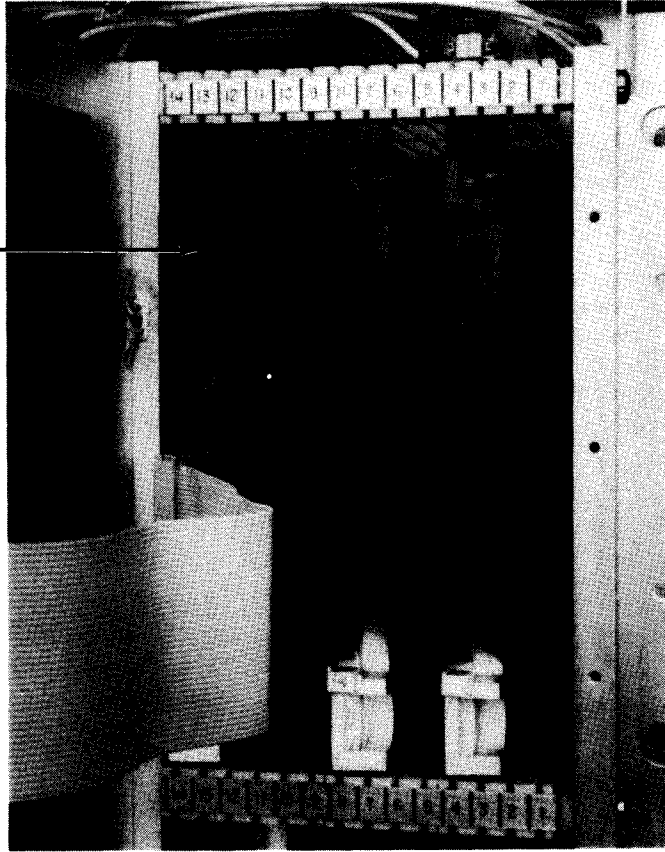


Figure 3-5. Processor Cabinet Power Supplies Controls and Indicators

Table 3-3. Processor Cabinet Power Supplies Controls and Indicators

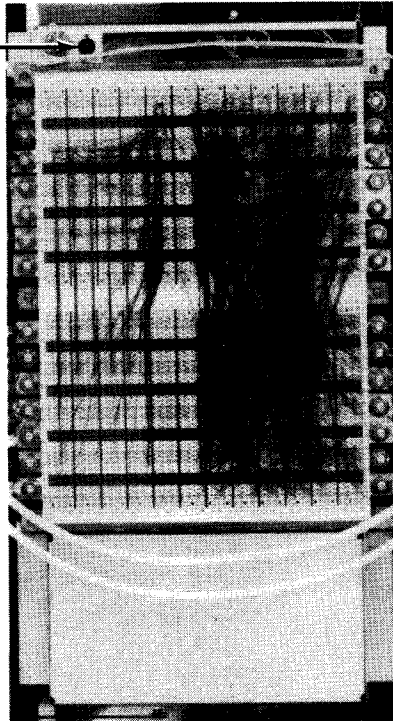
| Control/Indicator | Function |
|--|---|
| +18.5 V, +22.8 V —5 Vdc power supply (A17) circuit breaker | A 2-position circuit breaker — controls application of dc power (+18.5 volt, +22.8 volt, and —5 volt) to main storage of processor cabinet when set to up position; automatically removes power when abnormal amount of current is required by main storage. |
| +24 Vdc power supply (A4) circuit breaker | A 2-position circuit breaker — controls +24-volt dc power to integrated peripherals (UNIVAC 0773 Printer Subsystem, 0717 Card Reader Subsystem, 0605 Card Punch Subsystem, and UNIVAC 8416 Disc Subsystem), processor power control panel, status indicators on processor operator/maintenance panel and communications adapter; automatically removes dc power if any of these items require excess current. |
| +5 Vdc power regulator (A22) indicator | When lit, indicates +5-volt dc power is applied to integrated peripherals (UNIVAC 0773 Printer Subsystem, 0717 Card Reader Subsystem, and 0605 Card Punch Subsystem), main storage of processor cabinet, and operator/maintenance panel. |
| +5 Vdc power regulator (A22) circuit breaker | Pushbutton circuit breaker — controls +5-volt dc power to integrated peripherals (UNIVAC 0773 Printer Subsystem, 0717 Card Reader Subsystem, and 0605 Card Punch Subsystem), main storage of processor cabinet, and operator/maintenance panel; automatically removes power when abnormal amount of current is required by any one of integrated peripherals or main storage, or operator/maintenance panel. |
| +5 Vdc power regulator (A19) circuit breaker | Pushbutton circuit breaker — controls +5-volt dc power to part of processor logic (logic pages 1 and 2); automatically removes power when abnormal amount of current is required by processor logic. |
| +5 Vdc power regulator (A19) indicator | When lit, indicates +5-volt dc power is applied to part of processor logic (logic pages 1 and 2). |
| +5 Vdc power regulator (A20) indicator | When lit, indicates +5-volt dc power is applied to part of processor logic (logic pages 3 and 4). |
| +5 Vdc power regulator (A20) circuit breaker | Pushbutton circuit breaker — controls +5-volt dc power to part of processor logic (logic pages 3 and 4); automatically removes power when abnormal amount of current is required by processor logic. |
| +5 Vdc power regulator (A21) indicator | When lit, indicates +5-volt dc power is applied to communications adapter. |
| +5 Vdc power regulator (A21) circuit breaker | Pushbutton circuit breaker — controls +5-volt dc power to communications adapter; automatically removes power when abnormal amount of current is required. |
| —12 Vdc power regulator (A23) circuit breaker | Pushbutton circuit breaker — controls —12-volt dc power to processor logic (logic pages 1, 2, 3, and 4), UNIVAC 0773 Printer Subsystem, UNIVAC 0717 Card Reader Subsystem, UNIVAC 0605 Card Punch Subsystem, communications adapter, and memory power supply (A17); automatically removes —12-volt dc power when abnormal amount of current is required by any one of these components. |
| —12 Vdc power regulator (A23) indicator | When lit, indicates —12-volt dc power is applied to processor logic (logic pages 1, 2, 3, and 4), UNIVAC 0773 Printer Subsystem, UNIVAC 0717 Card Reader Subsystem, UNIVAC 0605 Card Punch Subsystem, communications adapter, and memory power supply (A17). |

DC
POWER
INDICATOR



a. Front View of System Console Portion of Processor Cabinet

24 VDC
CIRCUIT
BREAKER



b. Rear View of System Console Portion of Processor Cabinet

Figure 3-6. Location of Communications Adapter Circuit Breaker and Indicator

3.3. STORAGE EXPANSION CABINET CONTROLS AND INDICATORS

The controls and indicators of type 7024—00/01 and type 7024—02/03 storage expansion cabinets are discussed in the following text. In each type of cabinet, the controls and indicators are located within the cabinet behind hinged doors at the front and rear of the cabinet. Access to the controls and indicators is gained by pulling the handle up on each door and opening the doors.

3.3.1. Storage Expansion Cabinet Type 7024—00/01

The controls and indicators at the front of this cabinet (Figure 3—7) are located on an ac power control panel, a dc power control panel, and one or two storage modules. If the second storage module (designated as module 1) is installed, it is mounted directly above the first storage module (designated as module 0); the controls and indicators are located on a dc power control panel and a maintenance panel (Figure 3—7). The maintenance panel is not used by the operator except to ascertain that all switches are in the down position for online mode. The controls and indicators for other panels are illustrated in Figures 3—8 through 3—10 and are described in Tables 3—4 through 3—6.

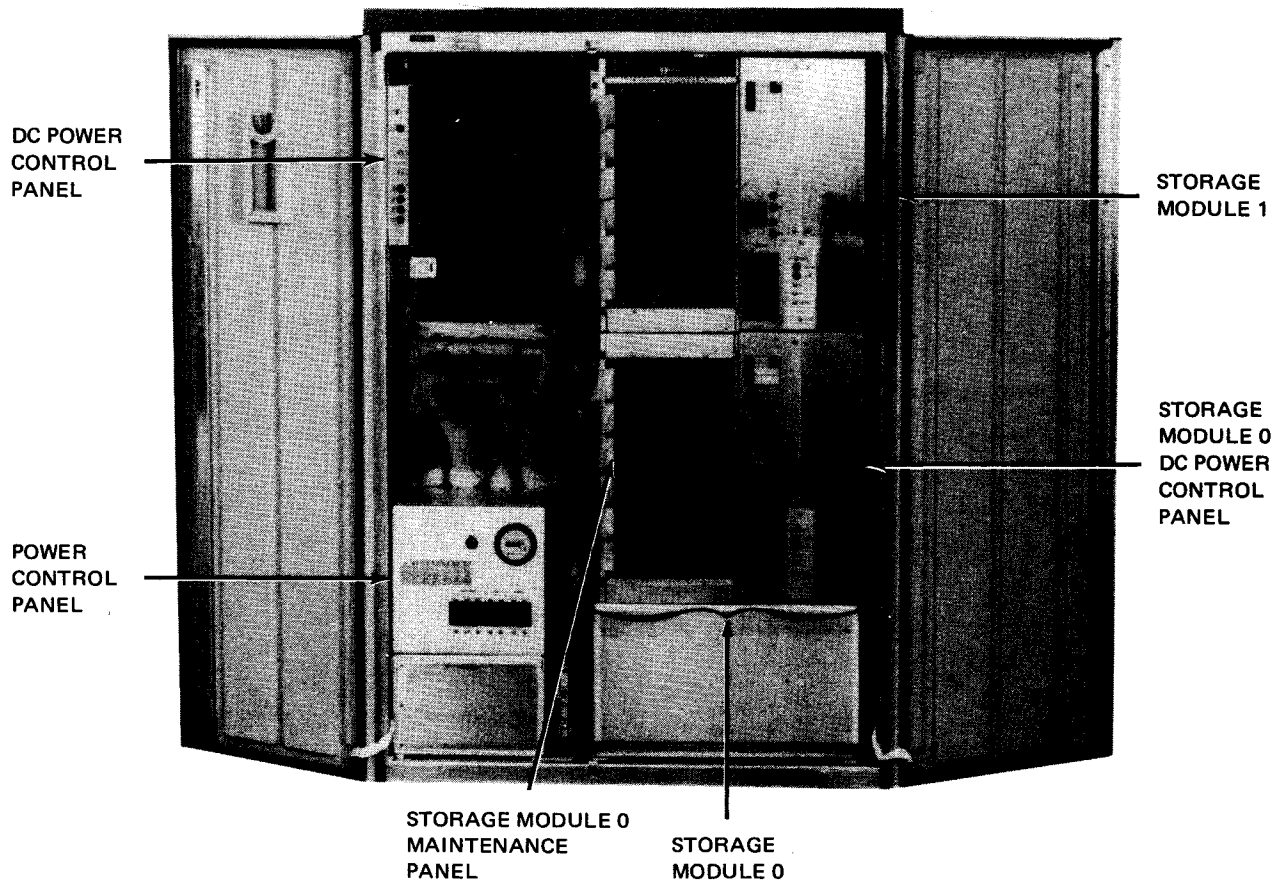


Figure 3—7. Storage Expansion Cabinet Type 7024—00/01, Front View (Doors Open)

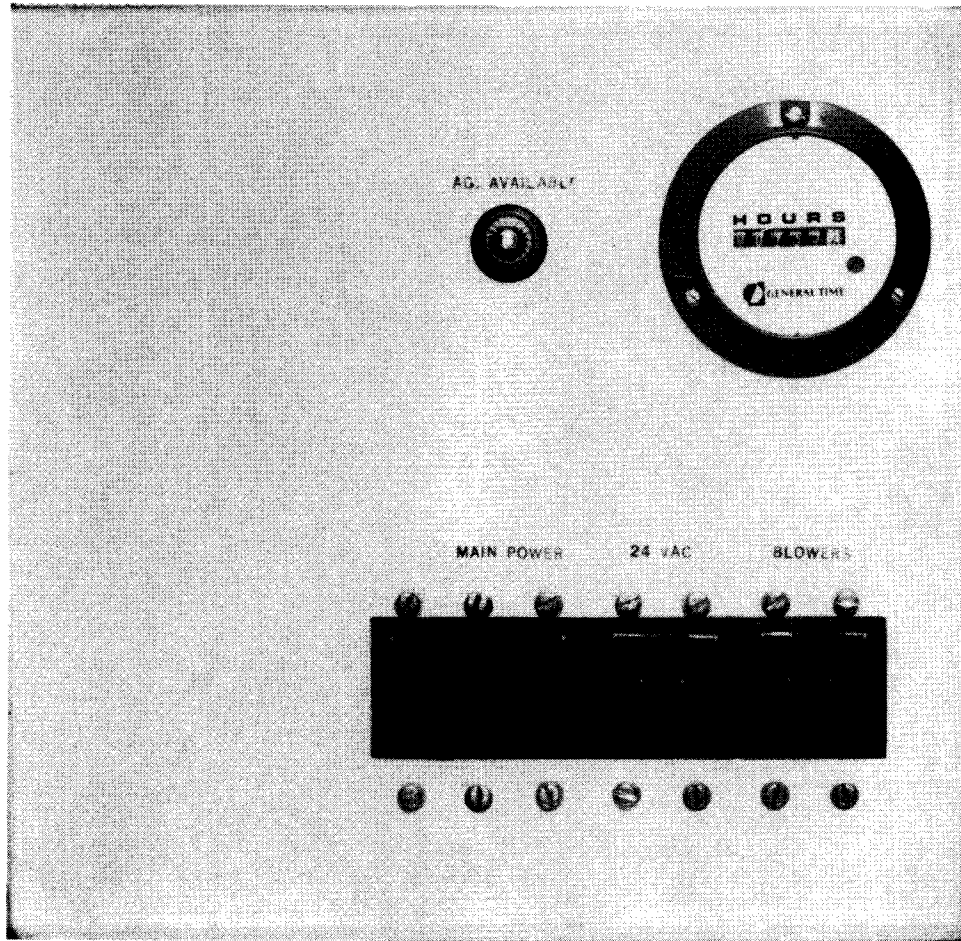


Figure 3-8. AC Power Control Panel for Storage Expansion Cabinet Types 7024-00/01 and 7024-02/03

Table 3-4. AC Power Control Panel (Cabinet Types 7024-00/01 and 7024-02/03) Controls and Indicators

| Control/Indicator | Function |
|----------------------------|---|
| AC AVAILABLE indicator | When lit, indicates ac power is present at cabinet. |
| HOURS meter | Indicates, in hours, total amount of time that ac power is applied to bulk power supplies. |
| MAIN POWER circuit breaker | Controls application of main ac power to cabinet when set to up position; automatically removes power when abnormal amount of current is required by components in cabinet. |
| 24 VAC circuit breaker | Controls application of 24-volt ac power to cabinet when set to up position; automatically removes power when abnormal amount of current is required. |
| BLOWERS circuit breaker | Controls application of ac power to blowers when set to up position; automatically removes power when abnormal amount of current is required by blower motors. |



Figure 3-9. DC Power Control Panel for Storage Expansion Cabinet Type 7024-00/01

Table 3-5. DC Power Control Panel (Cabinet Type 7024-00/01) Controls and Indicators

| Control/Indicator | Function |
|----------------------|---|
| LAMP TEST switch | Pushbutton switch — tests the five indicators (MAINT MODE, DC ON, HI TEMP, AIR LOSS, and OVER TEMP indicators) on dc power control panel. |
| MAINT MODE indicator | When lit, indicates one or more of the storage modules are offline. |
| LOCAL REMOTE switch | A 2-position toggle switch — controls application of dc power from either dc power control panel of storage expansion cabinet or operator/maintenance panel of processor cabinet. |
| OFF ON switch | A 2-position toggle switch — controls application of dc power to storage expansion cabinet locally when LOCAL REMOTE switch is set to LOCAL position. |
| DC ON indicator | When lit, indicates dc power is applied to each storage module. |
| HI TEMP indicator | When lit, indicates a high-temperature condition exists in one or more of the storage modules. |
| AIR LOSS indicator | When lit, indicates loss of air flow within cabinet. |
| OVER TEMP indicator | When lit, indicates an over-temperature condition exists in one or more of the storage modules. |

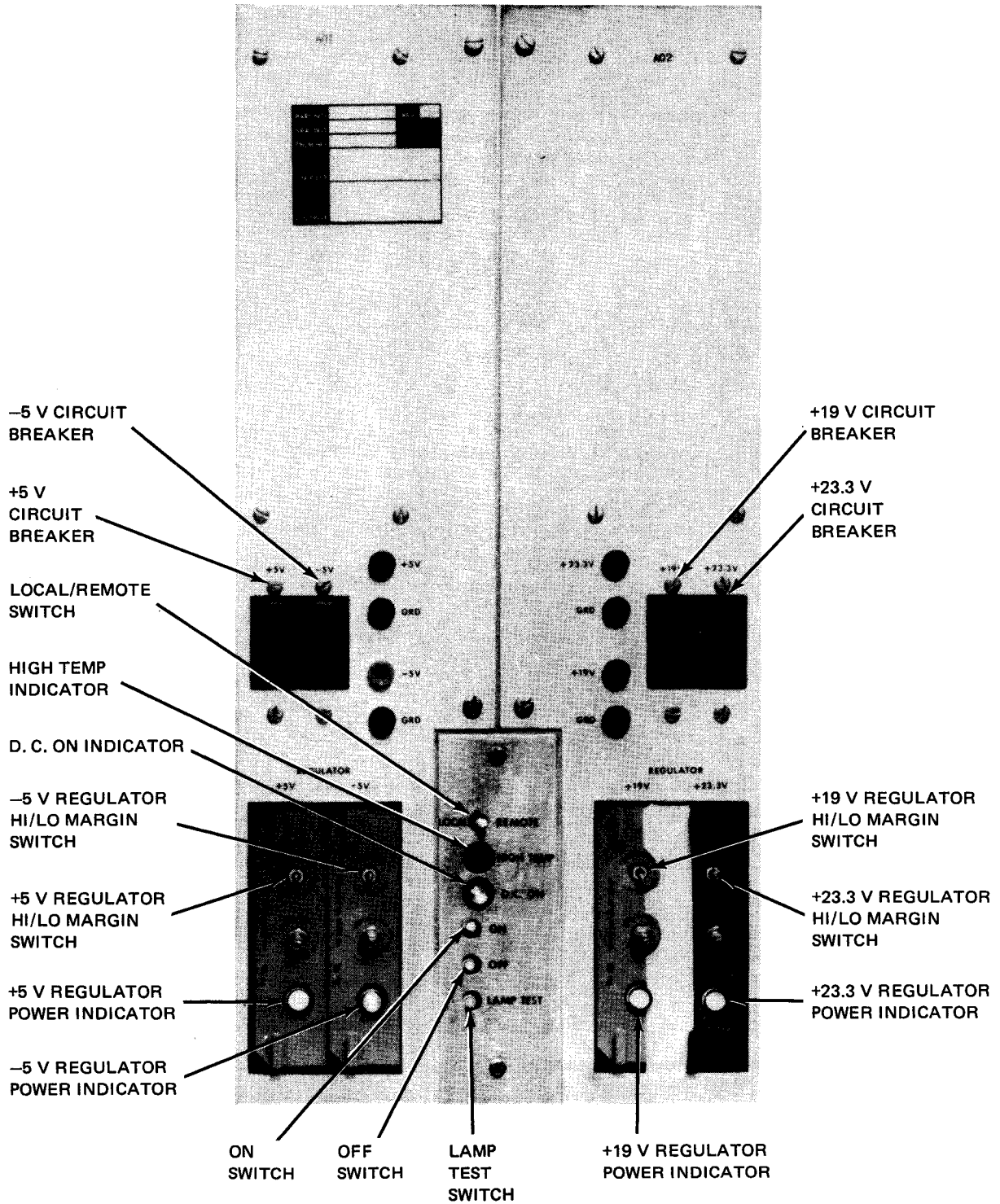


Figure 3-10. Storage Module DC Power Control Panel for Cabinet Type 7024-00/01

Table 3—6. Storage Module DC Power Control Panel (Cabinet Type 7024—00/01) Controls and Indicators

| Control/Indicator | Function |
|--------------------------------------|---|
| +5V circuit breaker | Controls application of preregulated dc power to +5 volt power regulator when set to up position; automatically removes power when abnormal amount of current is required by +5 volt power regulator. |
| —5V circuit breaker | Controls application of preregulated dc power to —5-volt power regulator when set to up position; automatically removes power when abnormal amount of current is required by —5-volt power regulator. |
| +19V circuit breaker | Controls application of preregulated dc power to +19-volt power regulator when set to up position; automatically removes power when abnormal amount of current is required by +19-volt power regulator. |
| +23.3V circuit breaker | Controls application of preregulated dc power to +23.3-volt dc power regulator when set to up position; automatically removes power when abnormal amount of current is required by +23.3-volt dc regulator. |
| +19V REGULATOR HI/LO MARGIN switch | A 3-position toggle switch — controls marginal testing of +19-volt regulator. For normal operation, switch is set to center position. |
| +23.3V REGULATOR HI/LO MARGIN switch | A 3-position toggle switch — controls marginal testing of +23.3 volt regulator. For normal operation, switch is set to center position. |
| +23.3V REGULATOR power indicator | When lit, indicates +23.3-volt dc power is applied. |
| +19V REGULATOR power indicator | When lit, indicates +19-volt regulator is energized. |
| LAMP TEST switch | Pushbutton switch — tests the D.C. ON indicator and HIGH TEMP indicator on the storage module. |
| OFF switch | Pushbutton switch — removes regulated dc power to storage module. |
| ON switch | Pushbutton switch — applies regulated dc power to storage module. |
| —5V REGULATOR power indicator | When lit, indicates —5-volt regulator is energized. |
| +5V REGULATOR power indicator | When lit, indicates +5-volt regulator is energized. |
| +5V REGULATOR HI/LO MARGIN switch | A 3-position toggle switch — controls marginal testing of +5-volt regulator. For normal operation, switch is set to center position. |
| —5V REGULATOR HI/LO MARGIN switch | A 3-position toggle switch — controls marginal testing of —5-volt regulator. For normal operation, switch is set to center position. |
| D.C. ON indicator | When lit, indicates dc power sequencing is complete. |
| HIGH TEMP indicator | When lit, indicates temperature is excessive. Indicator goes out when operating temperature returns to normal. |
| LOCAL/REMOTE switch | A 2-position toggle switch — controls application of dc power from either storage expansion cabinet (LOCAL position) or processor cabinet operator/maintenance panel (REMOTE position). For normal operation, the switch is set to REMOTE position. |

The controls and indicators at the rear of the storage expansion cabinet (Figure 3—11) are located on a +5-volt interface assembly regulator, a storage module bulk power supply (maximum of four identical bulk power supplies, one for each storage module, can be housed in the cabinet), and one or two identical storage modules. The number of storage modules incorporated into the cabinet is determined by the features which are selected for the cabinet (Table 1—2). The controls and indicators of the storage modules at the rear of the cabinet are identical to those at the front of the cabinet (Figure 3—10 and Table 3—6). The controls and indicators for the +5-volt interface assembly regulator and a bulk power supply are illustrated in Figures 3—12 and 3—13 and are described in Tables 3—7 and 3—8.

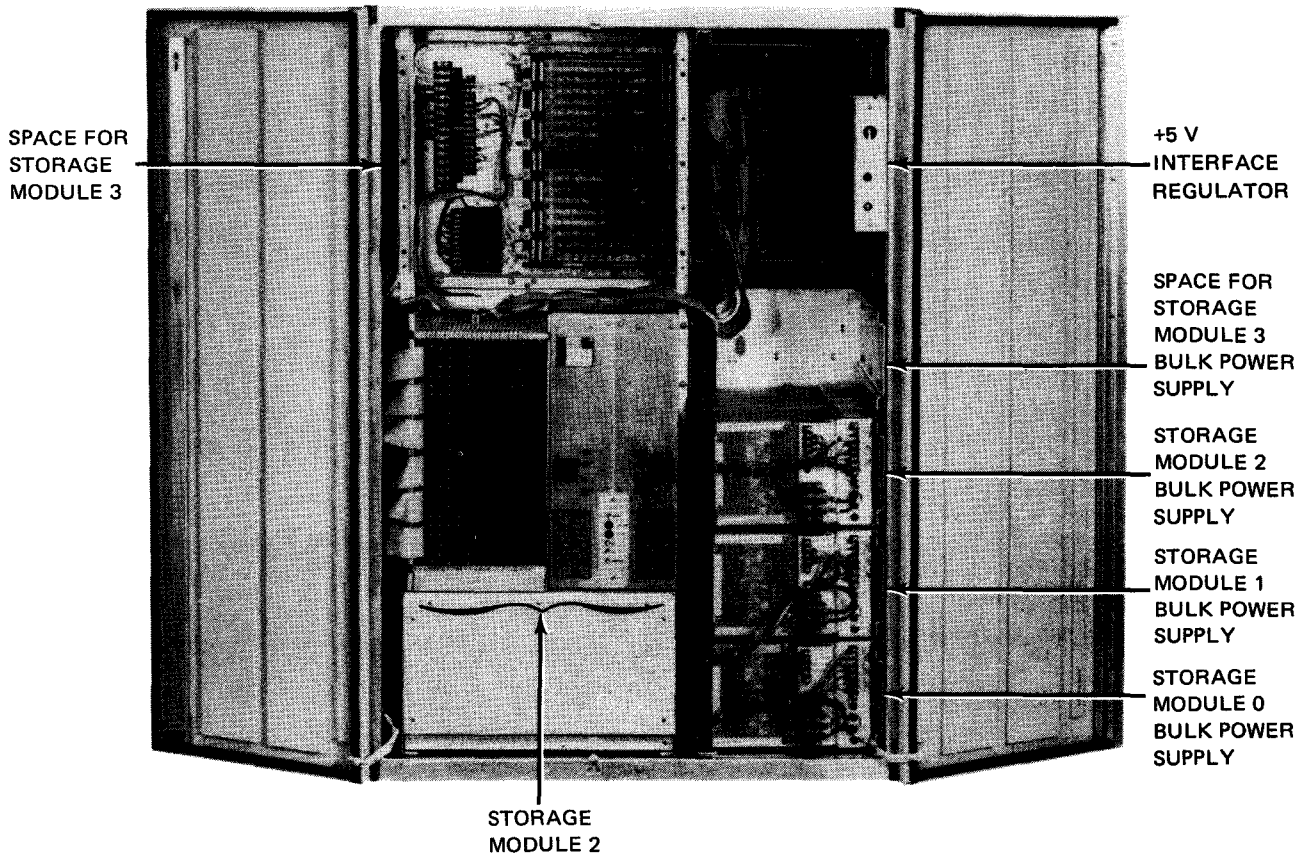


Figure 3—11. Storage Expansion Cabinet Type 7024—00/01, Rear View (Doors Open)

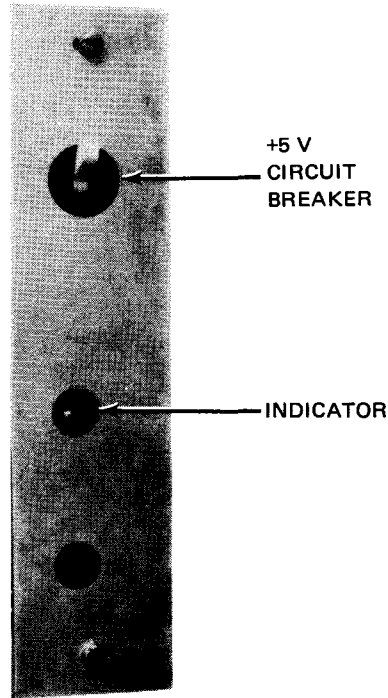


Figure 3-12. +5-Volt Interface Assembly Regulator for Cabinet Type 7024-00/01

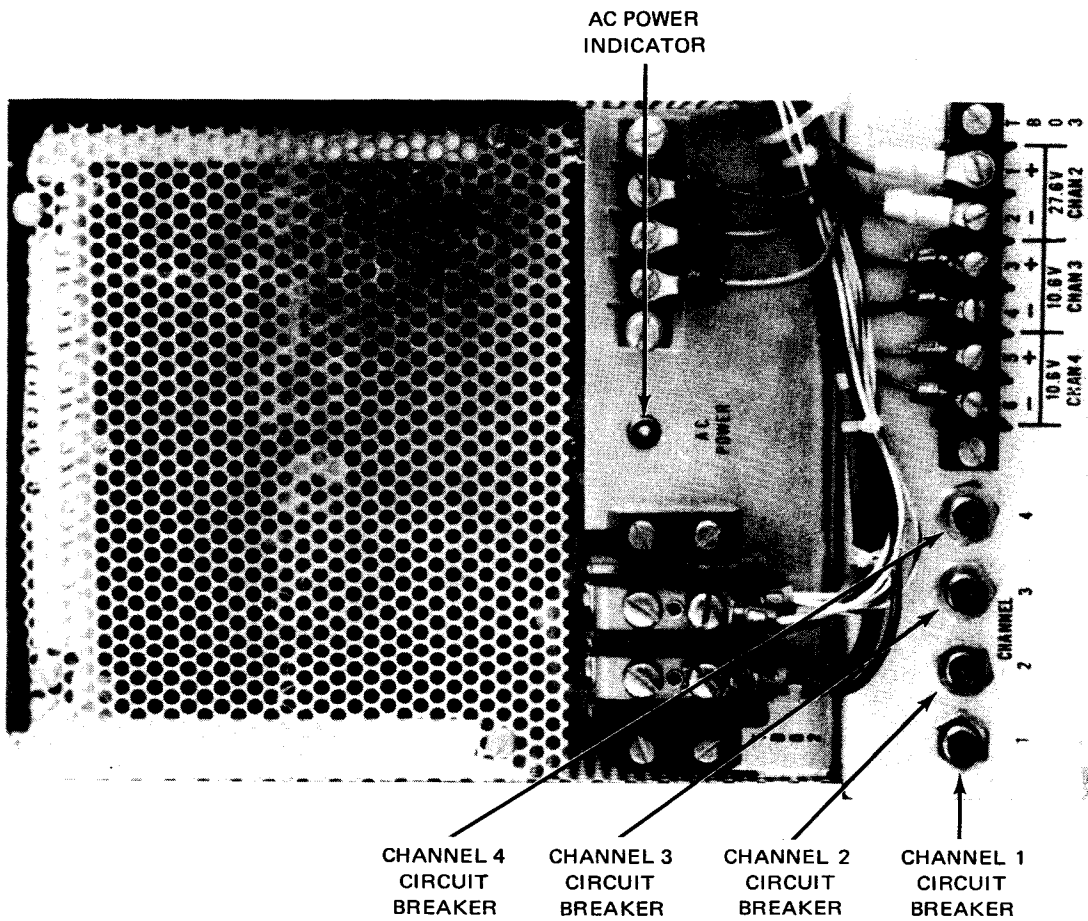


Figure 3-13. Storage Module Bulk Power Supply for Cabinet Type 7024-00/01

Table 3-7. Storage Module Bulk Power Supply (Cabinet Type 7024-00/01) Controls and Indicators

| Control/Indicator | Function |
|---------------------------|--|
| AC POWER indicator | When lit, indicates ac power is applied to bulk power supply. |
| CHANNEL 1 circuit breaker | Pushbutton circuit breaker — controls +10.6-volt, 30-ampere power to associated storage module; automatically removes this power when abnormal amount of current is required. |
| CHANNEL 2 circuit breaker | Pushbutton circuit breaker — controls +27.6-volt, 8.5-ampere power to associated storage module; automatically removes this power when abnormal amount of current is required. |
| CHANNEL 3 circuit breaker | Pushbutton circuit breaker — controls -10.6-volt, 1.5-ampere power to associated storage module; automatically removes this power when abnormal amount of current is required. |
| CHANNEL 4 circuit breaker | Pushbutton circuit breaker — controls +10.6-volt, 3.5-ampere power to associated storage module; automatically removes power when abnormal amount of current is required. |

Table 3-8. +5-Volt Interface Assembly Regulator (Cabinet Type 7024-00/01) Controls and Indicators

| Control/Indicator | Function |
|---------------------|--|
| +5V circuit breaker | A 2-position circuit breaker — controls +5-volt power to interface assembly; automatically removes dc power if abnormal amount of current is required. |
| Indicator | When lit, indicates that +5-volt regulator for interface assembly is energized. |

3.3.2. Storage Expansion Cabinet Type 7024-02/03

The controls and indicators at the front of this cabinet (Figure 3-14) are located on an ac power control panel, a dc power control panel and two +5-volt power regulators. Controls and indicators are also located on storage modules 1 and 2, but these items are used by maintenance personnel only. The controls and indicators which are located at the front of the cabinet and utilized by the operator are illustrated in Figures 3-15 and 3-16 and are described in Tables 3-9 and 3-10. Control and indicator information for the ac power control panel, which is identical to the ac power control in the type 7024-00/01 cabinet, is provided in Figure 3-8 and Table 3-4.

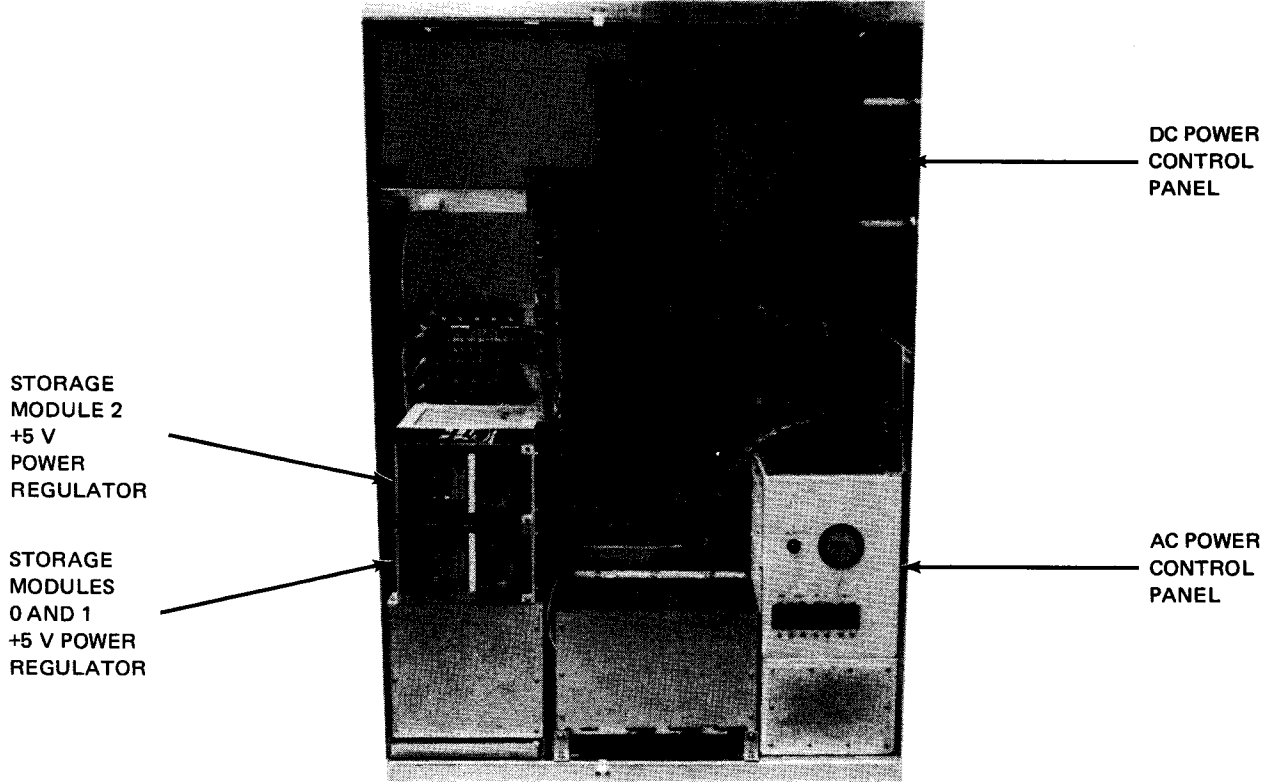


Figure 3-14. Storage Expansion Cabinet Type 7024-02/03, Front View (Doors Open)

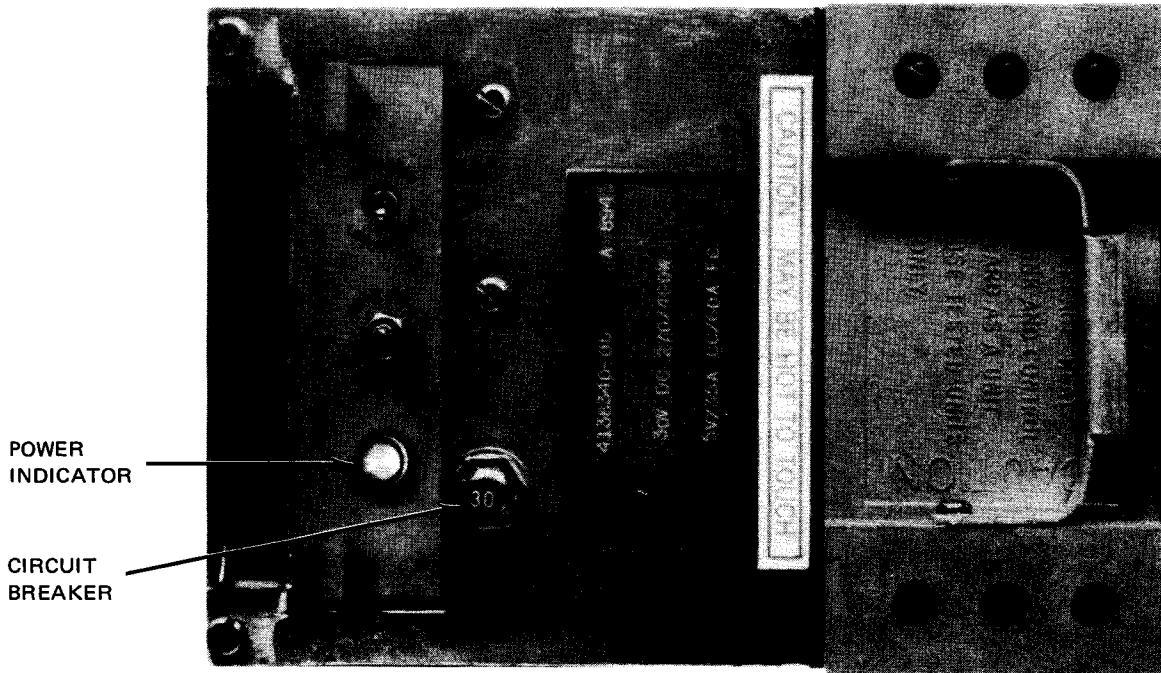


Figure 3-15. Storage Module +5-Volt Power Regulator for Cabinet Type 7024-02/03

Table 3-9. Storage Module +5-Volt Power Regulator (Cabinet Type 7024-02/03) Controls and Indicators

| Control/Indicator | Function |
|-------------------|--|
| Power Indicator | When lit, indicates +5-volt dc power is applied to the associated storage module or modules. |
| Circuit breaker | Controls application of +5-volt dc power to the associated storage module or modules. |

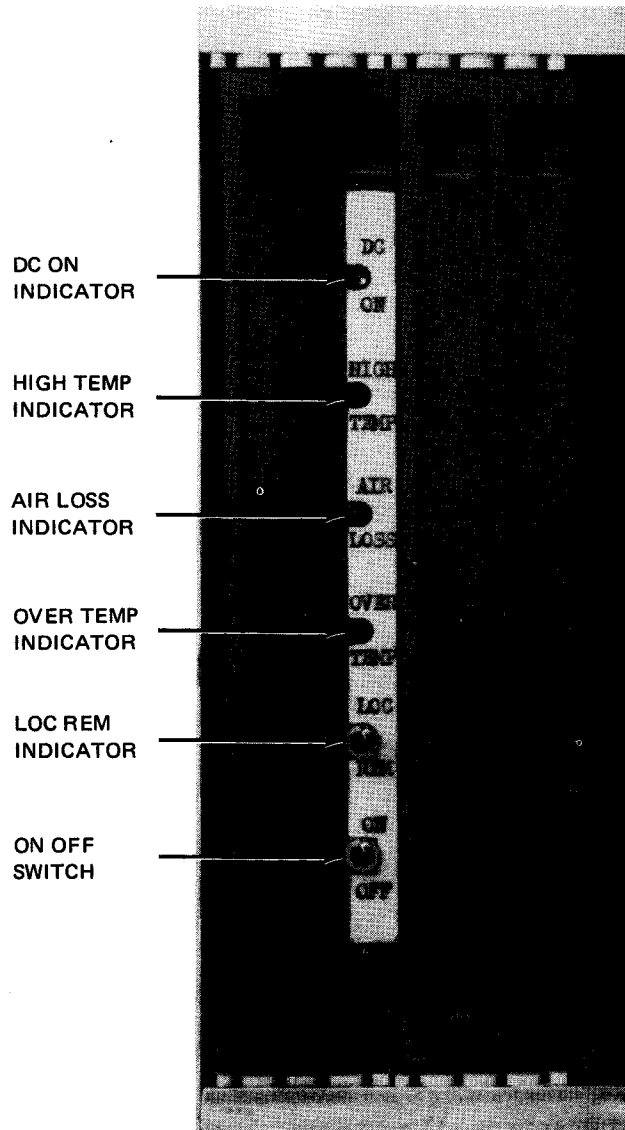


Figure 3-16. DC Power Control Panel for Cabinet Type 7024-02/03

Table 3-10. DC Power Control Panel (Cabinet Type 7024-02/03) Controls and Indicators

| Control/Indicator | Function |
|---------------------|--|
| DC ON indicator | When lit, indicates dc power is applied to each of the storage modules. |
| HIGH TEMP indicator | When lit, indicates a high-temperature condition exists in one or more of the storage modules. |
| AIR LOSS indicator | When lit, indicates loss of air flow within cabinet. |
| OVER TEMP indicator | When lit, indicates an over-temperature condition exists in one or more of the storage modules. |
| LOC REM switch | A 2-position toggle switch — controls application of dc power from either dc power control panel of cabinet or from the operator/maintenance panel of processor cabinet. |
| ON OFF switch | A 2-position toggle switch — controls application of dc power to cabinet locally when LOC REM switch is set to LOC position. |

At the rear of the cabinet, the operator controls (Figure 3-17) are located on one, two, or three identical 18.5/22.8-volt power supplies. (The number of power number supplies is determined by the number of storage modules.) Controls and indicators are also located on the storage modules, but these controls and indicators are used by maintenance personnel only. The controls for a typical 18.5/22.8-volt power supply are illustrated in Figure 3-18 and described in Table 3-11.

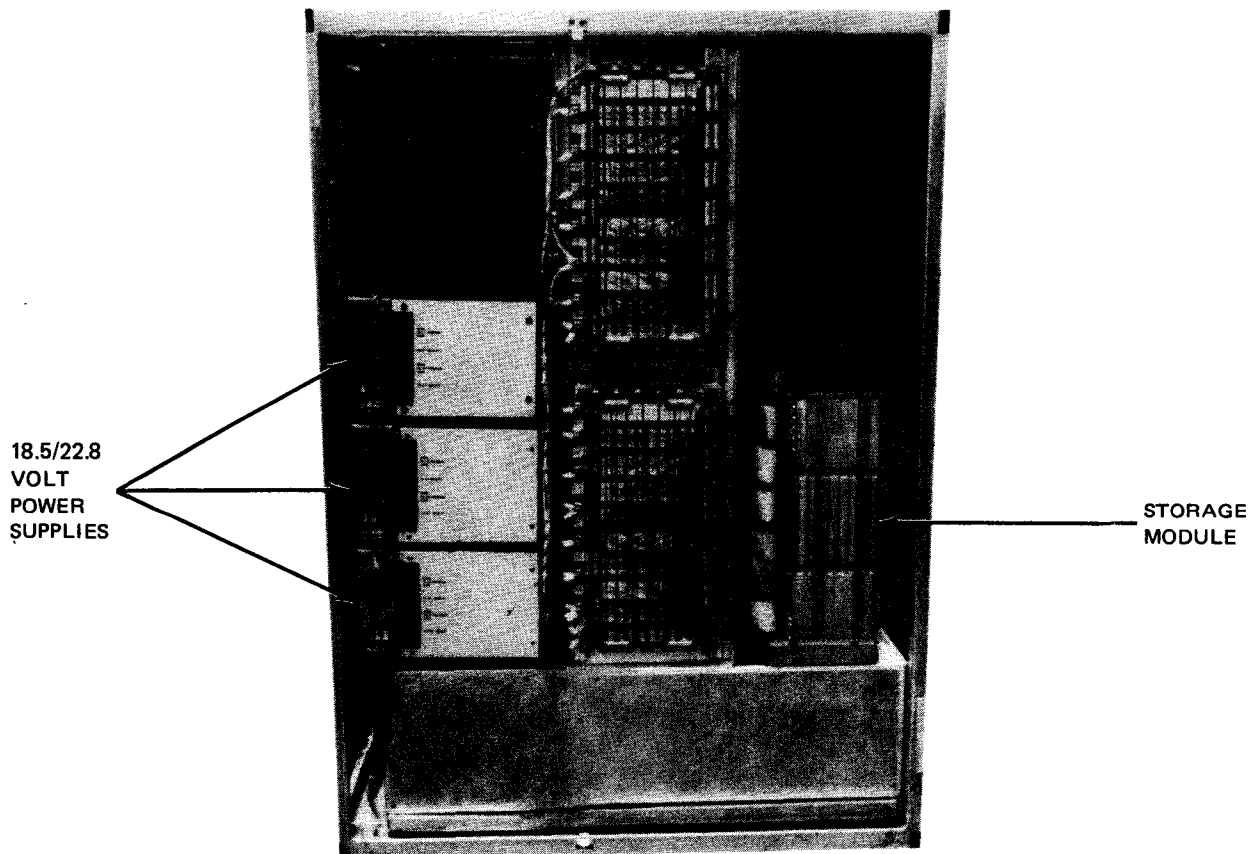


Figure 3-17. Storage Expansion Cabinet Type 7024-02/03, Rear View (Doors Open)

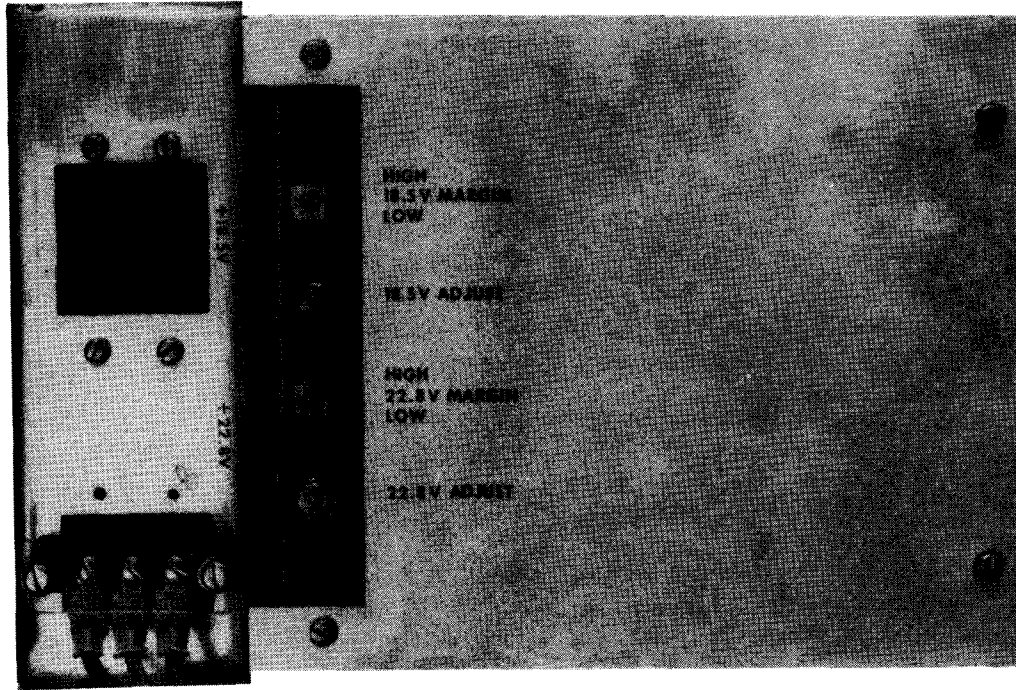


Figure 3—18. 18.5/22.8-Volt Power Supply

Table 3—11. 18.5/22.8-Volt Power Supply (Cabinet Type 7024—02/03) Controls and Indicators

| Control/Indicator | Function |
|------------------------------|---|
| +18.5V circuit breaker | Controls application of +18.5-volt dc power to the associated storage module. |
| 18.5V HIGH MARGIN LOW switch | A 3-position toggle switch — controls marginal testing of 18.5-volt regulator. For normal operation, switch must be set to center position. |
| 22.8V HIGH MARGIN LOW switch | A 3-position toggle switch — controls marginal testing of 22.8-volt regulator. For normal operation, switch is set to center position. |

3.4. I/O EXPANSION CABINET

The indicators and controls of the I/O expansion cabinet are located behind the front hinged doors of the cabinet (Figure 3—19). The controls and indicators are mounted on three panels: power control panel (Figure 3—20), +5-volt power supply panel (Figure 3—21), and +6, —12, +24-volt power supplies panel (Figure 3—22). A description of these controls and indicators is provided in Tables 3—12 through 3—14.

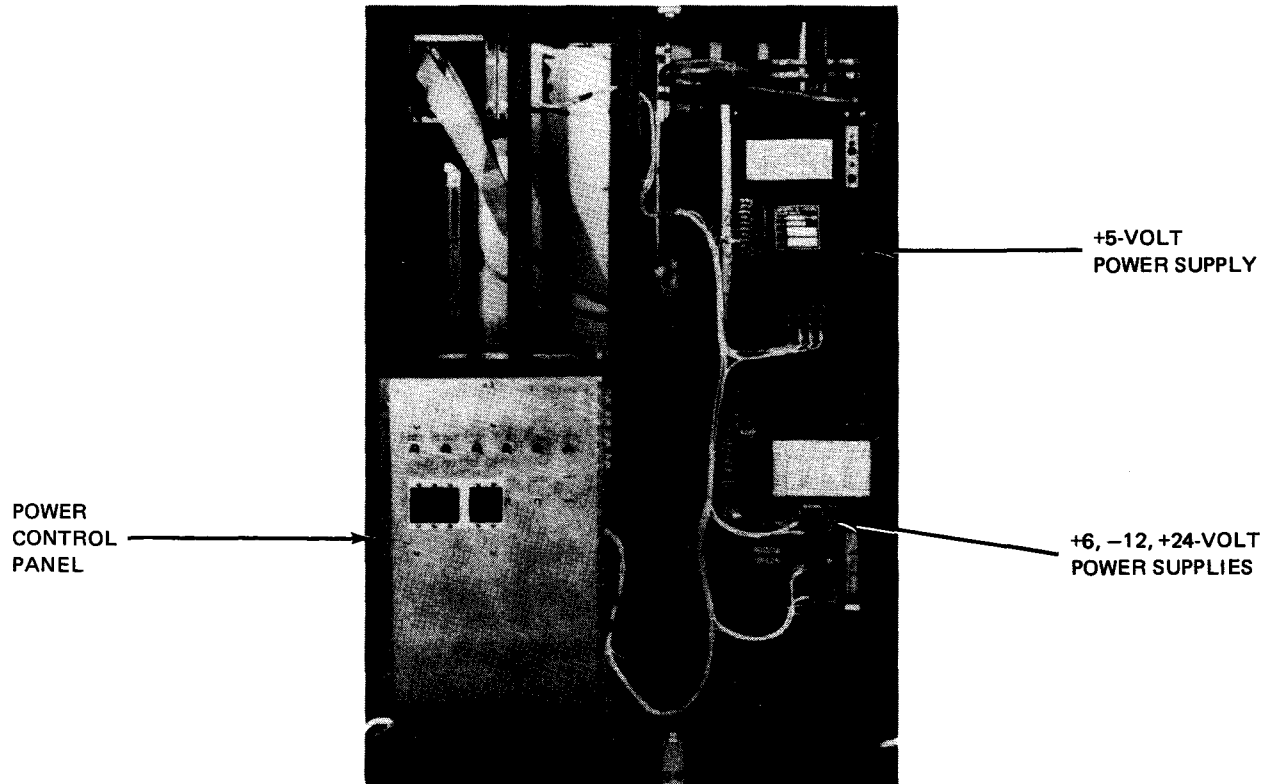


Figure 3-19. I/O Expansion Cabinet, Front View (Doors Open)

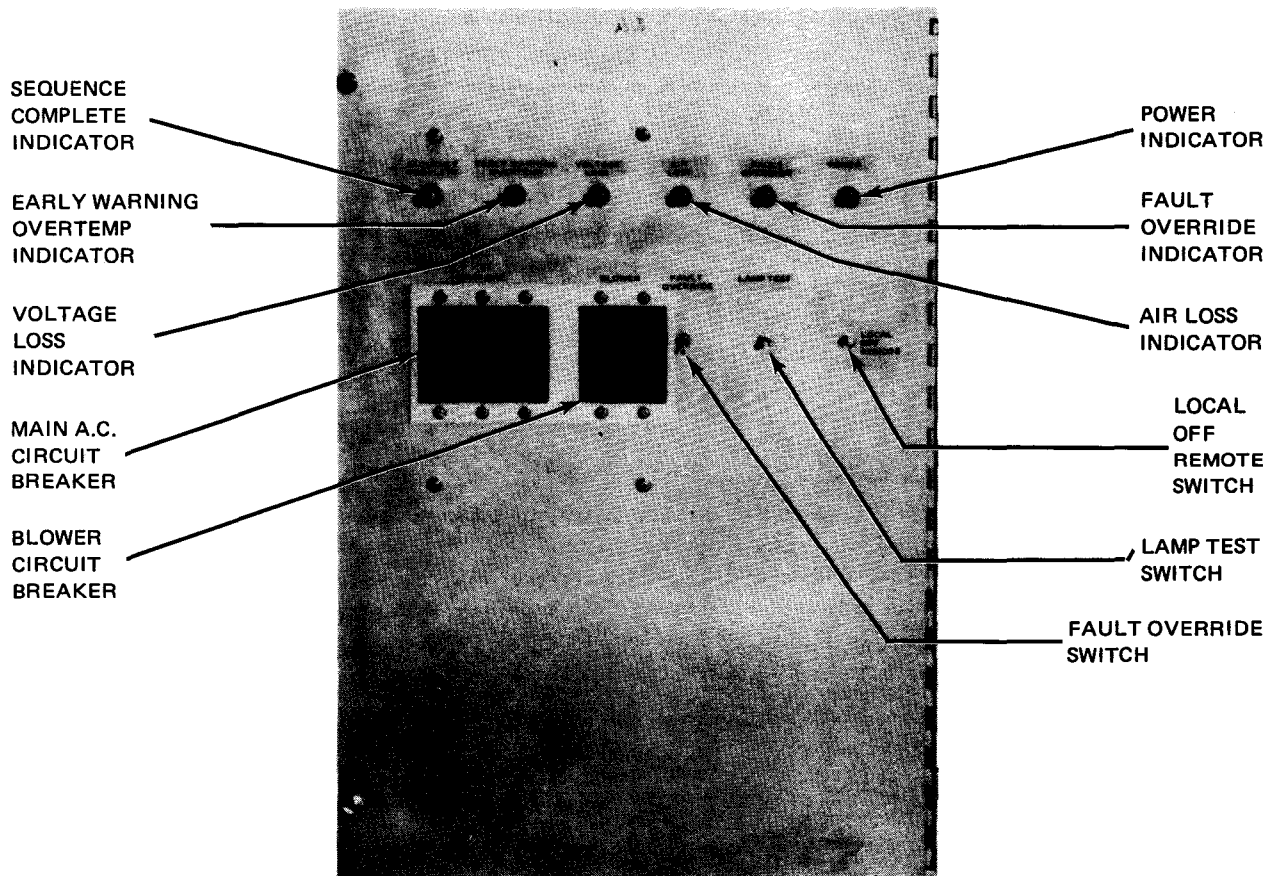


Figure 3-20. I/O Expansion Cabinet Power Control Panel

Table 3-12. I/O Expansion Cabinet Power Control Panel Controls and Indicators

| Control/Indicator | Function |
|----------------------------------|---|
| SEQUENCE COMPLETE indicator | When lit, indicates power sequencing is complete and power is applied to all components and peripheral subsystems. |
| EARLY WARNING OVERTEMP indicator | Indicates two conditions: <ul style="list-style-type: none"> ■ When lit and POWER indicator is also lit, indicates an early temperature warning condition exists in cabinet. ■ When lit and POWER indicator is <i>not</i> lit, indicates an over-temperature condition has occurred within cabinet; dc power is removed from cabinet components and any peripheral subsystems attached. |
| VOLTAGE LOSS indicator | When lit, indicates loss of dc power or marginal operation of dc power within cabinet. |
| AIR LOSS indicator | When lit, indicates loss of air flow across logic pages within cabinet due to an air restriction (dirty filter) or inoperative blower. Condition can be overridden through use of FAULT OVERRIDE switch. |
| FAULT OVERRIDE switch | A 2-position toggle switch — when in up position enables overriding an air loss fault (lack of air flow within cabinet) or dc power fault (marginal operation or loss of dc power within cabinet). |
| BLOWER circuit breaker | A 2-position circuit breaker — controls ac power to blower motor; automatically removes ac power to blower motor when abnormal amount of current is required by blower motor. |
| MAIN A.C. circuit breaker | A 2-position circuit breaker — controls main ac power to dc power supplies in cabinet; automatically removes ac power to power supplies when abnormal amount of current is required by power supplies. |
| FAULT OVERRIDE indicator | When lit, indicates voltage loss or air loss condition is overridden through use of FAULT OVERRIDE switch. |
| POWER indicator | When lit, indicates that dc power is applied to cabinet. |
| LOCAL OFF REMOTE switch | A 3-position toggle switch — controls dc power from either power control panel or processor cabinet operator/maintenance panel; functions of positions follow. LOCAL: Controls power from expansion cabinet OFF: Removes dc power from I/O expansion cabinet. REMOTE: Controls power to I/O expansion cabinet from processor cabinet. |
| LAMP TEST switch | Momentary contact toggle switch — allows testing of indicator lamps of power control panel. |

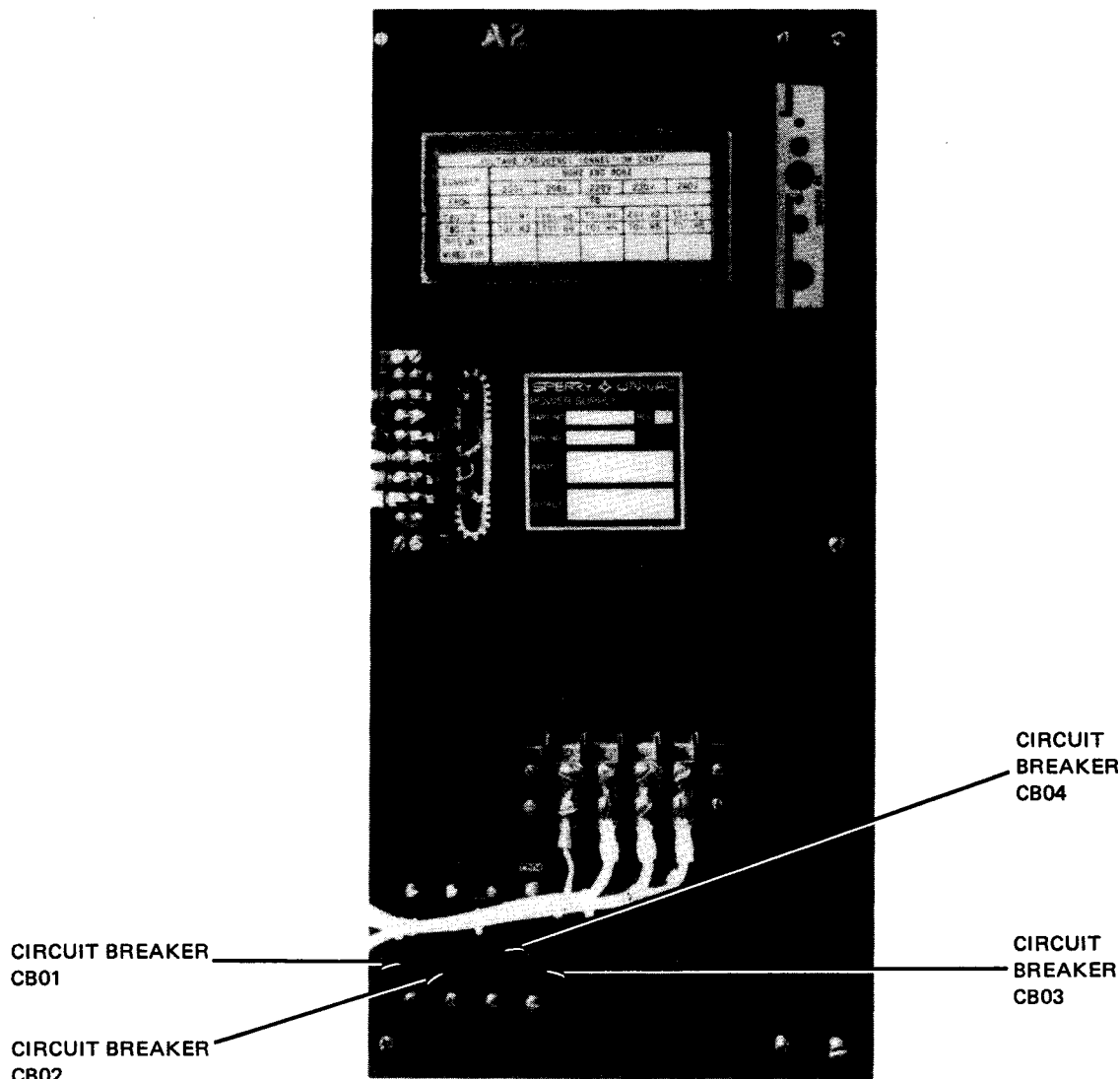


Figure 3-21. I/O Expansion Cabinet +5-Volt Power Supply

Table 3-13. I/O Expansion Cabinet +5-Volt Power Supply Controls and Indicators

| Control/Indicator | Function |
|---|---|
| CB01, CB02, CB03, and CB04 circuit breakers | 2-position circuit breakers — control +5-volt dc power to logic in cabinet. |

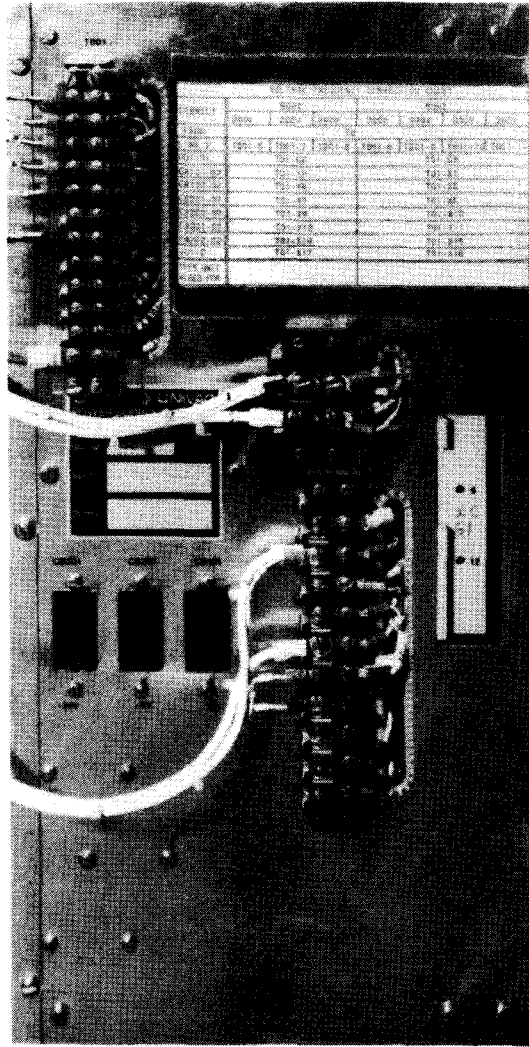


Figure 3-22. I/O Expansion Cabinet +6, -12, +24-Volt Power Supplies

Table 3-14. I/O Expansion Cabinet +6, -12, +24-Volt Power Supplies Controls and Indicators

| Control/Indicator | Function |
|-----------------------|---|
| CB101 circuit breaker | A 2-position circuit breaker — controls -12-volt power to logic of cabinet. |
| CB201 circuit breaker | A 2-position circuit breaker — controls +6-volt power to logic of cabinet. |
| CB301 circuit breaker | A 2-position circuit breaker — controls +24-volt power to logic of cabinet. |



4. Operation

4.1. GENERAL

The operating information presented in this section relates to power application and power removal procedures. Recovery procedures are included also which provide information for correcting faults resulting in power removal from the central hardware of the SPERRY UNIVAC 90/30 System Processor (90/30 system).

4.2. TURN-ON PROCEDURE

The application of power to the central hardware is performed automatically in a sequential fashion once the operator initially sets the POWER switch located on the operator/maintenance panel of the 90/30 system processor type 3029—00/01 (processor cabinet). Before initially applying power, however, the operator should check the positions of circuit breakers and switches within the three cabinets which comprise the central hardware: processor cabinet, expansion cabinet type 7024—00/01 and type 7024—02/03 (storage expansion cabinet), and expansion cabinet type 1921—00/01 (I/O expansion cabinet). Procedures are provided in 4.2.1 through 4.2.3.

To apply power to central hardware, perform the following steps:

1. Set main wall circuit breaker to ON; applies main ac power to central hardware.
2. On processor cabinet, set all internal circuit breakers and switches to proper positions (4.2.1).
3. If storage expansion cabinet is utilized as part of central hardware, set all internal circuit breaker and switches to proper positions (4.2.2).
4. If I/O expansion cabinet is utilized as part of central hardware, set all internal circuit breakers and switches to proper positions (4.2.3).
5. Check circuit breakers of peripherals used with the central hardware and reset any tripped circuit breakers.

NOTE:

Do not attempt to turn power off while power is being sequenced. Wait until power sequencing is complete before attempting to remove power.

6. On operator/maintenance panel of processor cabinet, initiate power sequencing by setting POWER switch to ON (up) position.
7. Observe that while power is sequencing, all indicators on operator/maintenance panel of processor cabinet are lit with the exception of POWER ON indicator. At the completion of sequencing, the POWER ON indicator lights and POWER CYCLING indicator goes out.

CAUTION

Extended use of the terminal with the intensity set too high (very bright image) can damage the screen. Use the lowest intensity setting that provides a clear, readable display.

8. If UNISCOPE 100 Communications Output Printer is utilized as part of central hardware, check position of circuit breaker at rear of printer and reset if tripped.

4.2.1. Processor Cabinet Initial Setup Procedure

Prior to applying power to the processor cabinet, the internal circuit breakers and switches of the cabinet must initially be set to proper positions. To set up these items, perform the following steps:

1. At right-hand side of processor cabinet, open hinged door to gain access to panels on which switches and circuit breakers are located (Figure 3—3).
2. On each power supply and regulator, reset any tripped circuit breakers.

NOTE:

On power control panel, make certain FAULT OVERRIDE toggle switch is in down position (nonfault override function).

3. On power control panel, set the following six circuit breakers to up position: SYSTEM MAIN AC1, SYSTEM MAIN AC2, PROCESSOR POWER SUPPLY AC, DISC MAIN AC, U100/BLOWER AC, and PERIPHERAL D.C. POWER circuit breakers.
4. On power control panel, check 24 VDC CTL and 24 VAC circuit breakers for tripped condition. Reset any tripped circuit breaker by pressing and releasing circuit breaker.
5. Close processor cabinet door.
6. If communications adapter is used, remove the rear door beneath the system console and set the 24V DC circuit breaker to on position.
7. Reinstall rear door beneath the system console if removed.

4.2.2. Storage Expansion Cabinet Initial Setup Procedure

Before applying power to either type of storage expansion cabinet, the internal circuit breakers and switches within a cabinet must initially be set to proper positions. To set up these items, perform the following steps:

1. For type 7024—00/01 storage expansion cabinet, perform the following steps:
 - a. At front of cabinet (Figure 3—7), open hinged doors to gain access to internally located circuit breakers and switches.
 - b. On dc power control panel (Figure 3—10) of each storage module, perform the following operation:
 - (1) Set +5V, —5V, +19V, and +23.3V circuit breakers to ON position.

- (2) Set LOCAL/REMOTE switch to REMOTE.
 - (3) Set the HIGH MARGIN/LO MARGIN switches for +5V, -5V, +19V, and +23.3V REGULATORS to center positions.
- c. On dc power control panel (Figure 3-9), set LOCAL REMOTE switch to REMOTE and set OFF ON switch to ON.
 - d. On ac power control panel (Figure 3-8), set all three circuit breakers to ON position.
 - e. At rear of cabinet (Figure 3-11), open hinged doors to gain access to internally located circuit breakers and switches.
 - f. On +5-volt interface assembly regulator (Figure 3-12), set +5V circuit breaker to up position.
 - g. On each bulk power supply, reset any of four circuit breakers by pressing and releasing tripped breaker or breakers (Figure 3-13).
 - h. If cabinet contains storage module 2 and storage module 3, set the circuit breaker and switches of each storage module by repeating the settings listed in step b of this procedure.
 - i. Close hinged doors at front and back of cabinet.
2. For type 7024-02/03 storage expansion cabinet, perform the following steps:
- a. At front of cabinet (Figure 3-14), open hinged doors to gain access to internally located circuit breakers and switches.
 - b. On each +5-volt power supply (Figure 3-15), reset tripped circuit breaker.
 - c. On dc power control panel (Figure 3-16), set LOC REM switch to REM position and set ON OFF switch to ON position.
 - d. On ac power control panel (Figure 3-8), set all three circuit breakers to ON position.
 - e. At rear of cabinet (Figure 3-17), open hinged doors to gain access to internally located circuit breakers.
 - f. On each power supply (Figure 3-18), set circuit breaker to ON position and set each HIGH/LOW MARGIN switch for 18.5-volt and 22.8-volt power to the center position.
 - g. Close hinged doors at front and back of cabinet.

4.2.3. I/O Expansion Cabinet Initial Setup Procedure

The switches and circuit breakers on the power control panel and the two power supply panels within the I/O expansion cabinet must initially be configured to certain positions prior to applying power. To configure these items to proper positions, perform the following steps:

1. Open front cabinet hinged doors to gain access to panels on which switches and circuit breakers are located (Figure 3—19).
2. On +5-volt power supply panel (Figure 3—21), set circuit breakers CB01, CB02, CB03 and CB04 to ON position.
3. On +6, —12, +24-volt power supplies panel (Figure 3—22), set circuit breakers CB101, CB201, and CB301 to on position (up).
4. On power control panel (Figure 3—20), set up following switches:

NOTE:

Make certain FAULT OVERRIDE toggle switch is in down position (nonfault override function).

- a. Set MAIN A.C. circuit breaker and BLOWER circuit breaker to up position.
- b. Set LOCAL OFF REMOTE switch to REMOTE position.

4.3. TURN-OFF PROCEDURE

To remove power from the central hardware, perform the following steps:

1. On operator/maintenance panel (Figure 3—2) of processor cabinet, set POWER switch to OFF position.
2. Set main wall circuit breaker to OFF position.

4.4. RECOVERY PROCEDURES

The recovery procedures for the central hardware are utilized by the operator to reapply power to the equipment after correcting a malfunction which initially caused the removal of power. A listing of conditions which result in removal of power, along with the indications of the 90/30 system and the individual equipment of the central hardware, is provided in Table 4—1. In order to correct a malfunction, the operator must isolate the malfunction to a specific cabinet first. In cases where the malfunction resulted in removal of dc power from the system, the isolation of the malfunction is manual. For example, if an over-temperature malfunction occurs, the operator must check each cabinet to determine which unit is at fault.

Recovery procedures for the processor cabinet, the storage expansion cabinet, and the I/O expansion cabinet are provided in Tables 4—2, 4—3, and 4—4, respectively.

Table 4-1. Power Fault Summary

| Condition | Equipment | | | | | |
|------------------|--|--|--|---|--|--|
| | Processor Cabinet | Storage Expansion Cabinet | I/O Expansion Cabinet | Card Reader | Printer | Card Punch |
| Power stall | Indications: Power cannot be applied to system. Both POWER CYCLING and POWER ON indicators are lit. To Recover: Refer to Table 4-2. | — | Indications: Within cabinet, SEQUENCE COMPLETE indicator is out. To Recover: Refer to Table 4-4. | — | — | — |
| Early warning | Indications: Alarm sounds, early warning message is displayed, and TEMP CHECK indicator is lit. To Recover: Refer to Table 4-2. | Indications: Audible alarm sounds, message is displayed, and HI TEMP indicator within expansion cabinet is lit. To Recover: Refer to Table 4-3. | Indications: Alarm sounds, early warning message is displayed, and within expansion cabinet EARLY WARNING OVER TEMP and POWER indicators are lit. To Recover: Refer to Table 4-4. | Indications: Alarm sounds, early warning message is displayed, and READER DEVICE indicator is lit. To Recover: Refer to Table 4-2. | Indications: Alarm sounds, early warning message is displayed, and PRINTER DEVICE CHECK is lit. To Recover: Refer to Table 4-2. | Indications: Alarm sounds, early warning message is displayed, and PUNCH DEVICE CHECK indicator is lit. To Recover: Refer to Table 4-2. |
| Over temperature | Indications: System powers down, and OVER TEMP and DC FAULT indicators within cabinet are lit. To Recover: Refer to Table 4-2. | Indications: Cabinet powers down, and within cabinet OVER TEMP indicator is lit and DC ON indicator is out. To Recover: Refer to Table 4-3. | Indications: Cabinet powers down, and within cabinet EARLY WARNING OVERTEMP indicator is lit and POWER indicator is out. To Recover: Refer to Table 4-4. | Indications: System powers down. To Recover: Notify Sperry Univac customer engineer. | Indications: System powers down. To Recover: Notify Sperry Univac customer engineer. | Indications: System powers down. To Recover: Notify Sperry Univac customer engineer. |
| DC power loss | Indications: System powers down, and DC FAULT indicator within cabinet lights. To Recover: Refer to Table 4-2. | Indications: Cabinet loses power, and within cabinet DC ON indicator is out. To Recover: Refer to Table 4-3. | Indications: Cabinet loses power, and within cabinet VOLTAGE LOSS indicator is lit and POWER indicator is out. To Recover: Refer to Table 4-4. | | | |
| Air blower loss | Indications: System powers down, and AIR LOSS and DC FAULT indicators within cabinet are lit. To Recover: Refer to Table 4-2. | Indications: Cabinet loses power, and within cabinet AIR LOSS indicator is lit and DC ON indicator is out. To Recover: Refer to Table 4-3. | Indications: Cabinet loses power, and within cabinet AIR LOSS indicator is lit and POWER indicator is out. To Recover: Refer to Table 4-4. | | | |

Table 4--2. Processor Cabinet Recovery Procedures (Part 1 of 3)

| Indication | Probable Cause | Recovery Procedure |
|--|--|--|
| <p>POWER CYCLING and POWER ON indicators on operator/maintenance panel of processor cabinet are lit.</p> | <p><i>Power Stall Condition:</i> Power sequencing is not complete. Power cannot be applied to the system.</p> | <ol style="list-style-type: none"> 1. Check positions of circuit breakers and switches within processor cabinet (and also within storage expansion cabinet and I/O expansion cabinet if these cabinets are utilized). 2. Reset any tripped breakers. 3. On operator/maintenance panel, set POWER switch to OFF position and 10 seconds after lights are out, set power switch to ON position. |
| <p>Audible alarm sounds continuously.</p> <p>Early temperature warning message is displayed on screen of system console.</p> <p>TEMP CHECK indicator on operator/maintenance panel of processor cabinet is lit.</p> | <p>NOTE:</p> <p>To verify that the early temperature warning condition exists in the processor cabinet and not in the storage expansion cabinet of the central hardware, the storage expansion cabinet should be checked first.</p> <p><i>Processor Cabinet Early Temperature Warning Condition:</i> Temperature within processor cabinet is exceeding normal operating temperature.</p> | <ol style="list-style-type: none"> 1. Prepare for orderly termination of jobs in the system to prevent possible loss of data which occurs if temperature increase causes power to be removed from system. 2. Check cleanliness of air filters within processor cabinet (Figure 5--1) and clean if necessary. |
| <p>READER DEVICE CHECK status indicator on operator/maintenance panel of processor cabinet lights.</p> <p>Audible alarm sounds.</p> <p>Early temperature warning message is displayed on screen of system console.</p> | <p><i>Card Reader Early Temperature Warning Condition:</i> Temperature within card reader is exceeding normal operating temperature.</p> | <ol style="list-style-type: none"> 1. Press STOP switch on card reader. 2. Allow temperature within card reader to return to normal. (The READER DEVICE CHECK indicator goes out when normal operating temperature is reached.) 3. Press RUN switch/indicator on card reader. |
| <p>PRINTER DEVICE CHECK status indicator on operator/maintenance panel of processor cabinet lights.</p> <p>Audible alarm sounds.</p> | <p><i>Printer Early Warning Temperature Condition:</i> Temperature within printer is exceeding normal operating temperature.</p> | <p>Allow the temperature within the printer to return to normal (The PRINTER DEVICE CHECK indicator goes out when normal operating temperature is reached.)</p> |

Table 4-2. Processor Cabinet Recovery Procedures (Part 2 of 3)

| Indication | Probable Cause | Recovery Procedure |
|---|---|---|
| <p>Early temperature warning message is displayed on screen of system console.</p> | | |
| <p>PUNCH DEVICE CHECK status indicator on operator/maintenance panel of processor cabinet lights.</p> <p>Audible alarm sounds.</p> <p>Early temperature warning message is displayed on screen of system console.</p> | <p><i>Punch Early Temperature Warning Condition:</i> Temperature within punch is exceeding normal operating temperature.</p> | <ol style="list-style-type: none"> 1. Allow card run to continue to completion if only a small quantity of cards remains in input hopper. 2. Press STOP switch/indicator on card punch. 3. Raise card punch top cover. 4. Remove and check cleanliness of air filter; clean if necessary. See UNIVAC 0605 Card Punch Subsystem operator reference, UP-8088 (current version). 5. Allow the temperature within the card punch to return to normal (PUNCH DEVICE CHECK indicator goes out when normal operating temperature is reached.) 6. Close top cover. 7. Press RUN switch on card punch. |
| <p>System powers down.</p> <p>OVER TEMP indicator and DC FAULT indicator on power control panel within processor cabinet are lit.</p> | <p><i>Over-temperature Condition:</i> Temperature within processor cabinet is too high for operation.</p> <p>NOTE:</p> <p>If system power does not sequence up or error condition persists, notify Sperry Univac customer engineer.</p> | <ol style="list-style-type: none"> 1. Check cleanliness of air filters within processor cabinet (Figure 5-1) and clean (5.2) if necessary. 2. Reapply power to the system by setting POWER switch on operator/maintenance panel to OFF position and then to ON position. |
| <p>System powers down.</p> <p>DC FAULT indicator on power control panel within processor cabinet lights.</p> | <p><i>DC Power Loss Condition:</i> Loss or marginal operation of one or more dc power supplies within processor cabinet.</p> | <ol style="list-style-type: none"> 1. Check following circuit breakers within processor cabinet and reset any tripped breakers: <ol style="list-style-type: none"> a. PROCESSOR POWER SUPPLY AC circuit breaker (on power control panel). b. 24 VDC CTL pushbutton type circuit breaker. c. Circuit breakers on all power supplies. 2. Reapply power to the system by setting the POWER switch on operator/maintenance panel to OFF position and then to ON position. <p>NOTE:</p> <p>If system power does not sequence up or error condition persists, notify Sperry Univac customer engineer.</p> |

Table 4-2. Processor Cabinet Recovery Procedures (Part 3 of 3)

| Indication | Probable Cause | Recovery Procedure |
|--|--|--|
| <p>System powers down.</p> <p>POWER CONTROL FAULT indicator on power control panel within processor cabinet lights.</p> | <p><i>Loss of Power Sequencing Power:</i> Loss of low-voltage power which controls power sequencing.</p> | <ol style="list-style-type: none"> 1. Check setting of 24 VDC CTL pushbutton type circuit breaker on power control within processor cabinet. Reset circuit breaker. 2. Reapply power to the system by setting the POWER switch on the operator/maintenance panel to the OFF position and then to the ON position. <p>NOTE: If system power does not sequence up or the error condition persists, notify Sperry Univac customer engineer.</p> |
| <p>System powers down.</p> <p>AIR LOSS indicator and DC FAULT indicator on power control panel within processor cabinet light.</p> | <p><i>Air Loss Condition:</i> Loss of air flow across logic pages due to dirty air filter or inoperative blower motor.</p> | <ol style="list-style-type: none"> 1. Check cleanliness of air filter at rear of cabinet (Figure 5-3) and clean (5.2) if necessary. 2. Check setting of U100/BLOWER A.C. circuit breaker. If circuit breaker is in OFF position, set circuit breaker to ON position. 3. Reapply power to the system by setting the POWER switch on the operator/maintenance panel to the OFF position and then to the ON position. <p>NOTE: If system power does not sequence up or the error condition persists, notify Sperry Univac customer engineer.</p> |

Table 4-3. Storage Expansion Cabinet Recovery Procedures (Part 1 of 2)

| Indication | Probable Cause | Recovery Procedure |
|---|--|---|
| <p>Audible alarm sounds continuously.</p> <p>Early temperature warning message is displayed on screen of system console.</p> <p>HI TEMP indicator on dc control panel within storage expansion cabinet is lit.</p> | <p><i>Early Temperature Warning Condition:</i> Temperature within storage expansion cabinet is exceeding normal operating temperature.</p> | <ol style="list-style-type: none"> 1. Prepare for orderly termination of jobs in the system to prevent loss of data which occurs if system powers down due to a further increase in temperature (over-temperature condition). 2. Check cleanliness of air filters within storage expansion cabinet (Figure 5-1) and clean (5.2) if necessary. |
| <p>Operating power is automatically removed from storage expansion cabinet.</p> <p>OVER TEMP indicator on dc power control panel within storage expansion cabinet is out.</p> <p>DC ON indicator on dc power control panel within storage expansion cabinet is out.</p> | <p><i>Over-temperature Condition:</i> Temperature within one or more of storage modules is too high for operation.</p> | <ol style="list-style-type: none"> 1. Check cleanliness of air filters within storage expansion cabinet (Figure 5-1) and clean (5.2) if necessary. 2. Reapply cabinet power by: <ul style="list-style-type: none"> ■ Setting local/remote switch on dc power control panel to local position. ■ Setting ON OFF switch on dc power control panel to OFF position and then to ON position. ■ Setting local/remote switch on dc power control panel to remote position. <p>NOTE:</p> <p>If cabinet power does not come up or error condition persists, notify Sperry Univac customer engineer.</p> |
| <p>Operating power is automatically removed from storage expansion cabinet.</p> <p>DC ON indicator on dc power control panel within storage expansion cabinet is out.</p> | <p><i>DC Power Loss Condition:</i> Loss or marginal operation of one or more of dc power supplies.</p> | <ol style="list-style-type: none"> 1. Check settings of circuit breakers within expansion cabinet. Reset any tripped circuit breakers. 2. Reapply cabinet power by: <ul style="list-style-type: none"> ■ Setting local/remote switch on dc power control panel to local position. ■ Setting ON OFF switch on dc power control panel to OFF position and then on ON position. ■ Setting local/remote switch on dc power control panel to remote position. <p>NOTE:</p> <p>If cabinet power does not come up or error condition persists, notify Sperry Univac customer engineer.</p> |

Table 4-3. Storage Expansion Cabinet Recovery Procedures (Part 2 of 2)

| Indication | Probable Cause | Recovery Procedure |
|--|---|---|
| <p>Operating power is automatically removed from expansion cabinet.</p> <p>AIR LOSS indicator on dc power control panel within storage expansion cabinet is lit.</p> <p>DC ON indicator on dc power control panel within storage expansion cabinet is out.</p> | <p><i>Air Loss Condition:</i> Loss of air flow within storage expansion cabinet due to dirty air filter or inoperative blower motors.</p> | <ol style="list-style-type: none"> 1. Check cleanliness of air filters within storage expansion cabinet (Figure 5-1) and clean (5.2) if necessary. 2. Check setting of BLOWERS circuit breaker on ac power control panel within storage expansion cabinet. If circuit breaker is tripped, reset it. 3. Reapply cabinet power by: <ul style="list-style-type: none"> ■ Setting local/remote switch on dc power control panel to local position. ■ Setting ON OFF switch on dc power control panel to OFF position and then to ON position. ■ Setting local/remote switch on dc power control panel to remote position. <p>NOTE:</p> <p>If cabinet power does not come up or error condition persists, notify Sperry Univac customer engineer.</p> |

Table 4-4. I/O Expansion Cabinet Recovery Procedures (Part 1 of 2)

| Indication | Probable Cause | Recovery Procedure |
|--|--|---|
| <p>Audible alarm sounds continuously.</p> <p>Early temperature warning message is displayed on screen of system console.</p> <p>EARLY WARNING OVER TEMP and POWER indicators on power control panel within I/O expansion cabinet are lit.</p> | <p><i>Early Temperature Warning:</i> Temperature within the I/O expansion cabinet is exceeding normal operating temperature.</p> | <ol style="list-style-type: none"> 1. Check cleanliness of air filter within I/O expansion cabinet (Figure 5-1) and clean (5.2) if necessary. 2. Allow temperature within cabinet to return to normal. |
| <p>Operating power is automatically removed from I/O expansion cabinet.</p> <p>EARLY WARNING OVER TEMP on power control panel within I/O expansion cabinet is lit.</p> <p>POWER indicator on power control panel within I/O expansion cabinet is off.</p> | <p><i>Over-temperature Condition:</i> Temperature within I/O expansion cabinet is too high for operation.</p> | <ol style="list-style-type: none"> 1. Check cleanliness of air filter within I/O expansion cabinet (Figure 5-1) and clean (5.2) if necessary. 2. Allow temperature within I/O expansion cabinet to return to normal. 3. Reapply power to the cabinet by cycling LOCAL OFF REMOTE switch on power control panel (Figure 3-20) from REMOTE position to OFF position and then back to REMOTE position. <p>NOTE:</p> <p>If cabinet power does not come up after cycling the LOCAL OFF REMOTE switch or error condition persists, notify Sperry Univac customer engineer.</p> |
| <p>Operating power is automatically removed from I/O expansion cabinet.</p> <p>VOLTAGE LOSS indicator on power control panel within I/O expansion cabinet is lit.</p> <p>POWER indicator on power control panel within I/O expansion cabinet is not lit.</p> | <p><i>DC Power Loss Condition:</i> Loss or marginal operation of one of dc power supplies within the I/O expansion cabinet.</p> | <ol style="list-style-type: none"> 1. Check setting of MAIN D.C. circuit breaker on power control panel within I/O expansion cabinet. If circuit breaker is tripped, reset circuit breaker. 2. Check circuit breakers on all power supplies within I/O expansion cabinet. Reset any circuit breakers which are tripped. <p>NOTE:</p> <p>If any circuit breaker continues to trip, notify Sperry Univac customer engineer.</p> <ol style="list-style-type: none"> 3. Reapply power to the cabinet by cycling LOCAL OFF REMOTE switch on power control panel (Figure 3-20) from REMOTE position to OFF position and then back to REMOTE position. <p>NOTE:</p> <p>If cabinet power does not come up after cycling the LOCAL OFF REMOTE switch or error condition persists, notify Sperry Univac customer engineer.</p> |

Table 4-4. I/O Expansion Cabinet Recovery Procedures (Part 2 of 2)

| Indication | Probable Cause | Recovery Procedure |
|--|--|--|
| <p>Operating power is automatically removed from I/O expansion cabinet.</p> <p>AIR LOSS indicator on power control panel within I/O expansion cabinet is lit.</p> <p>POWER indicator on power control panel within I/O expansion cabinet is not lit.</p> | <p><i>Air Loss Condition:</i> Loss of air flow within I/O expansion cabinet due to dirty air filter or inoperative blower motor.</p> | <ol style="list-style-type: none"> 1. Check cleanliness of air filter within I/O expansion cabinet (Figure 5-1) and clean (5.2) if necessary. <p>NOTE:</p> <p style="padding-left: 40px;">If BLOWER circuit breaker continues to trip after being reset, contact Sperry Univac customer engineer.</p> <ol style="list-style-type: none"> 2. Check setting of BLOWER circuit breaker on power control panel within I/O expansion cabinet. If circuit breaker is in off position, set circuit breaker to on position. 3. Reapply power to the cabinet by cycling LOCAL OFF REMOTE switch on power control panel (Figure 3-20) from REMOTE position to OFF position and then back to REMOTE position. <p>NOTE:</p> <p style="padding-left: 40px;">If cabinet power does not come up after cycling the LOCAL OFF REMOTE switch or error condition persists, notify Sperry Univac customer engineer.</p> |
| <p>SEQUENCE COMPLETE indicator on power control panel within I/O expansion cabinet is not lit.</p> | <p><i>Incomplete Power Sequencing Condition:</i> Power is not applied to all the components within I/O expansion cabinet and to all peripheral subsystems which are attached to the multiplexer channel or selector channels of I/O expansion cabinet.</p> | <p>Check peripheral subsystems which are attached to the multiplexer channel or selector channels of I/O expansion cabinet. Each peripheral subsystem which is online must be configured so that the application of power is remotely controlled by the I/O expansion cabinet; those which are offline must be configured for local application of power.</p> |

5. Operator-Performed Maintenance

5.1. GENERAL

This section contains operator maintenance procedures for the central hardware of the SPERRY UNIVAC 90/30 System Processor (90/30 system).

Operator-performed maintenance is limited to:

- cleaning air filters in cabinets; and
- replacing defective indicator lamps in operator/maintenance panel of 90/30 system processor type 3029—00/01 (processor cabinet).

5.2. CLEANING OF AIR FILTERS

Each of the cabinets contains one or more filters (Figure 5—1) which must be cleaned monthly (or more frequently, depending on the operating environment). All filters are removed by pulling them straight out of retaining slots and are reinstalled by inserting them fully back into the retaining slots.

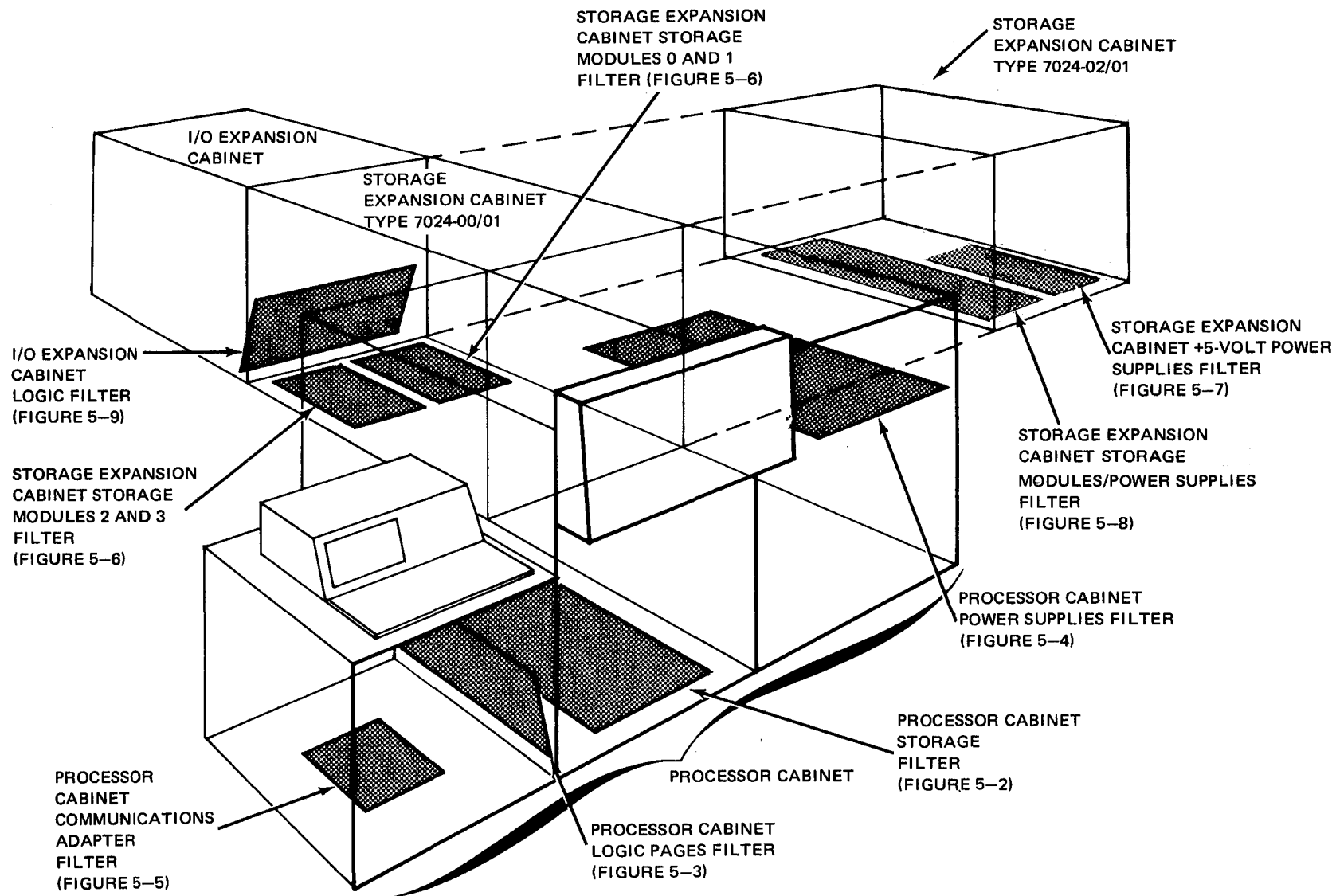


Figure 5-1. Location of Air Filters

The basic processor cabinet contains three air filters. If the communications adapter feature is utilized in the cabinet, a fourth filter is located in the cabinet. One filter is located at the front of the cabinet under the storage components (Figure 5—2); another filter is located in the rear of the cabinet below logic pages (Figure 5—3); a third filter is located under the power supplies at the right side of the cabinet (Figure 5—4), and the fourth filter, when used, is located at the bottom of the UNISCOPE 100 Display Terminal (system console) stand (Figure 5—5).

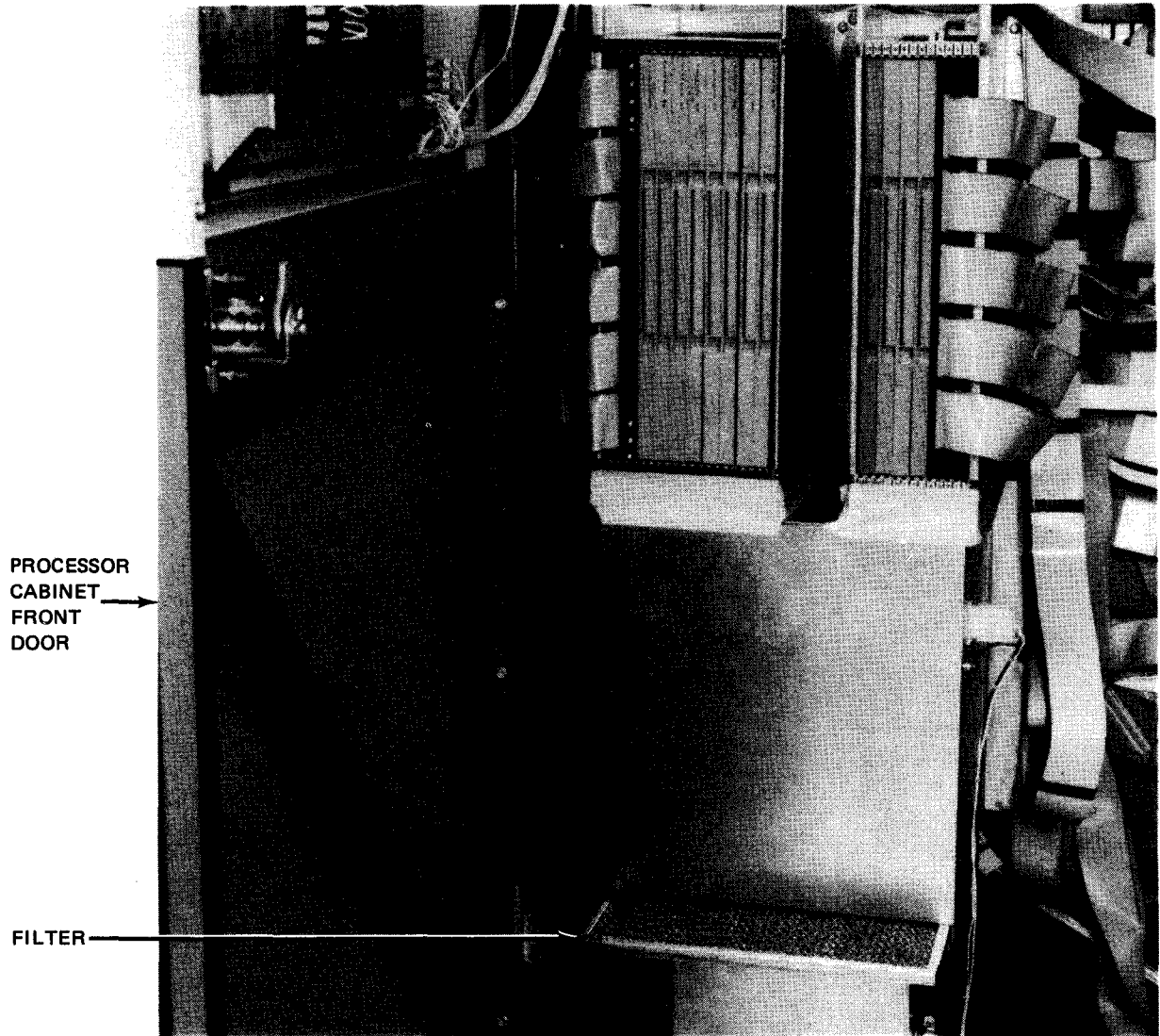


Figure 5—2. Processor Cabinet Storage Air Filter (Front View of Cabinet)

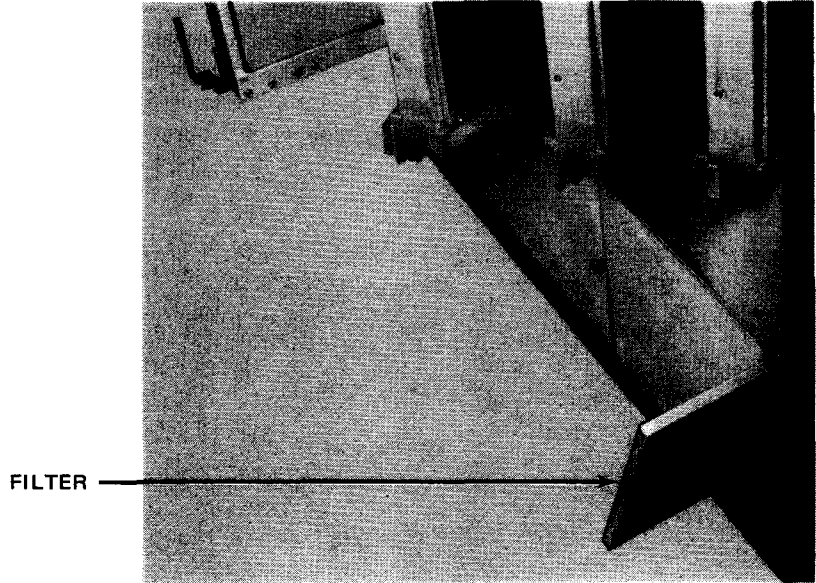


Figure 5-3. Processor Cabinet Logic Pages Air Filter (Rear View of Cabinet)

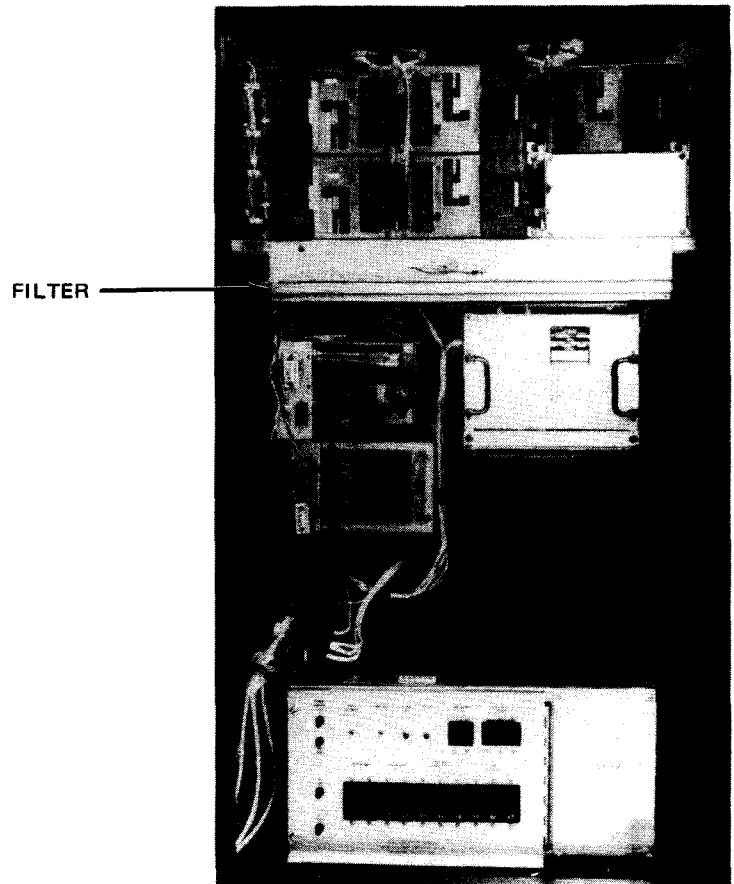


Figure 5-4. Processor Cabinet Power Supplies Air Filter (Right Side View of Cabinet)

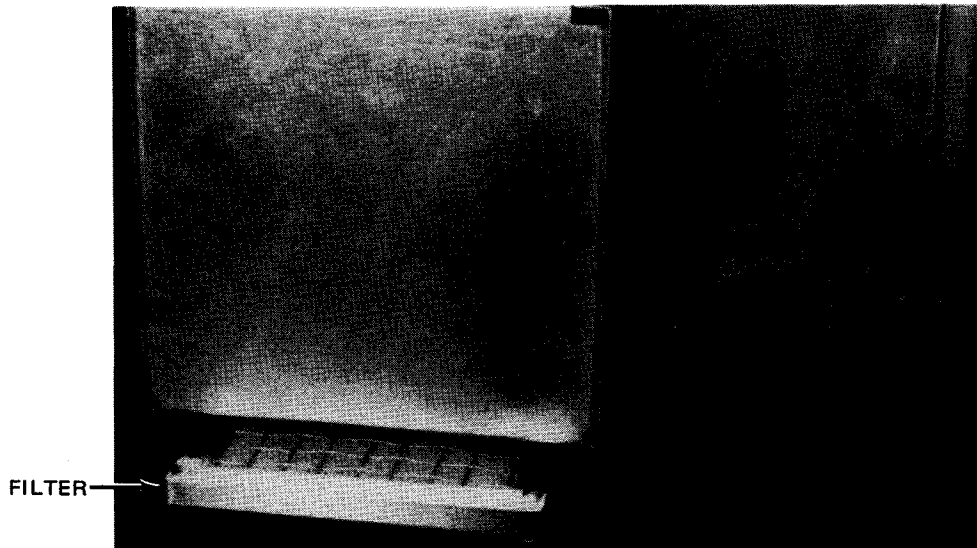


Figure 5-5. Processor Cabinet Communications Adapter Air Filter (Front View of System Console)

The number of filters in the expansion cabinet type 7024-00/01 or type 7024-02/03 (storage expansion cabinet) is determined by the type of cabinet which is utilized and the size of the storage expansion selected for the particular type of cabinet. The type 7024-00/01 storage expansion cabinet may contain one or two air filters, depending upon the number of storage modules housed in the cabinet. These filters are located at the bottom of the cabinet, one on each side (Figure 5-6). In the type 7024-02/03 storage expansion cabinet, two filters are located at the bottom of the cabinet. One of these filters is accessible at the front of the cabinet (Figure 5-7), and the other filter is accessible at the rear of the cabinet (Figure 5-8).

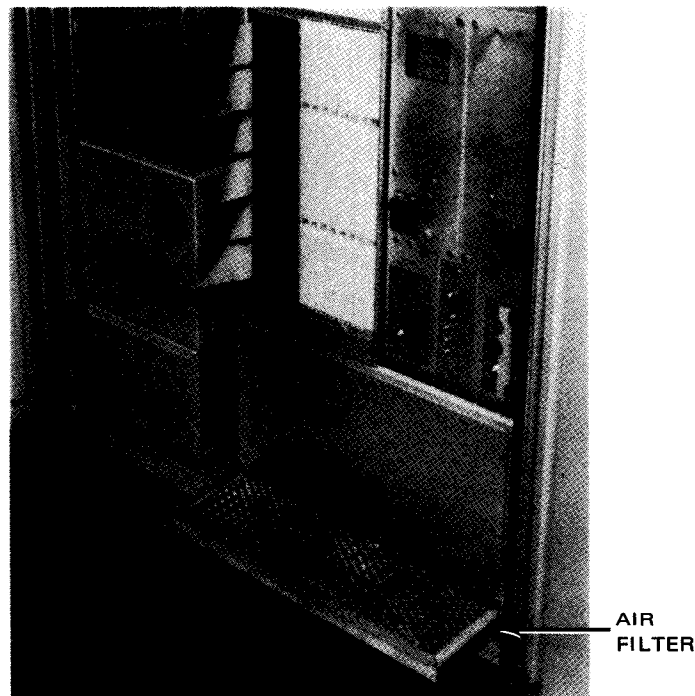


Figure 5-6. Type 7024-00/01 Storage Expansion Cabinet Air Filter (Typical View of Both Sides of Cabinet)

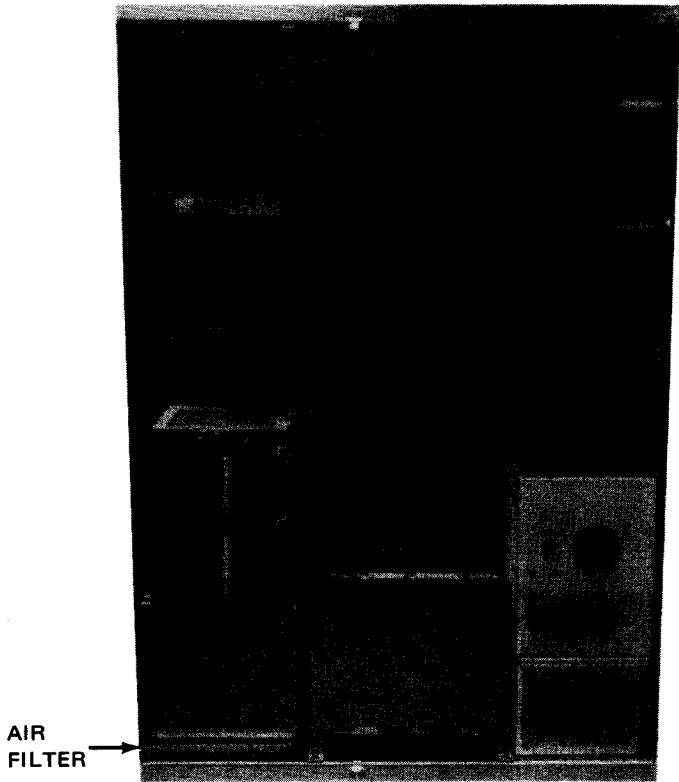


Figure 5-7. Type 7024-02/03 Cabinet Power Supply Air Filter (Front View of Cabinet)

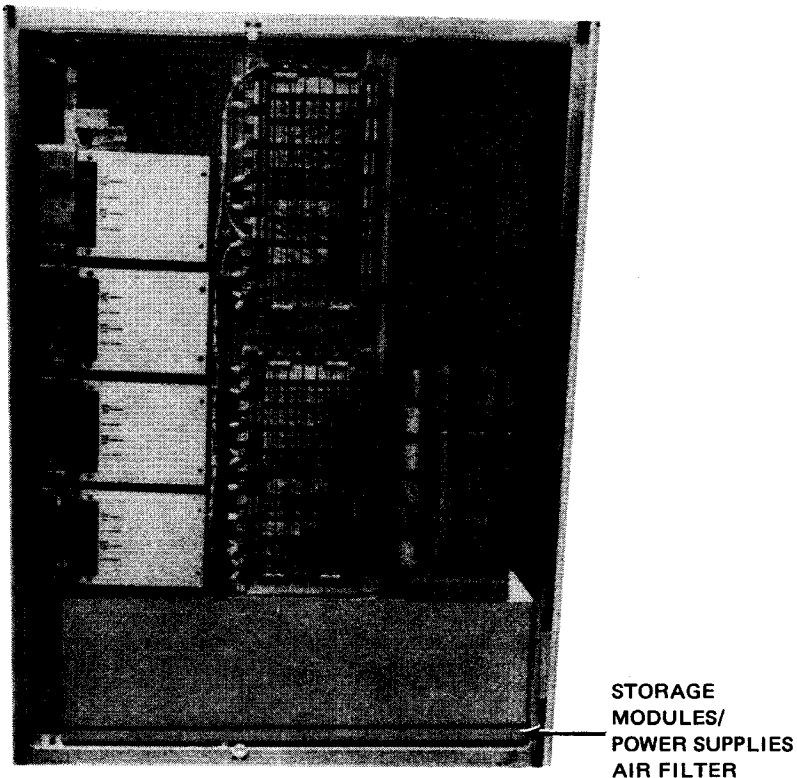


Figure 5-8. Type 7024-02/03 Cabinet Storage Modules/Power Supplies Air Filter (Back View of Cabinet)

The expansion cabinet type 1921—00/01 (I/O expansion cabinet) utilizes one filter, which is accessible at the rear of the cabinet (Figure 5—9).

To clean a filter, perform the following steps:

1. Rinse the filter under open faucet with cold or warm water.
2. Shake out excess water. Do not strike filter on solid object to remove water.

NOTE:

Perform step 3 only if filter is to be coated as indicated in Table 5—1.

3. Using aerosol can of filter coating adhesive (UNIVAC part number 4956915-00), coat filter with adhesive by spraying adhesive on air-intake side of filter.
4. Reinstall air filter in proper location.

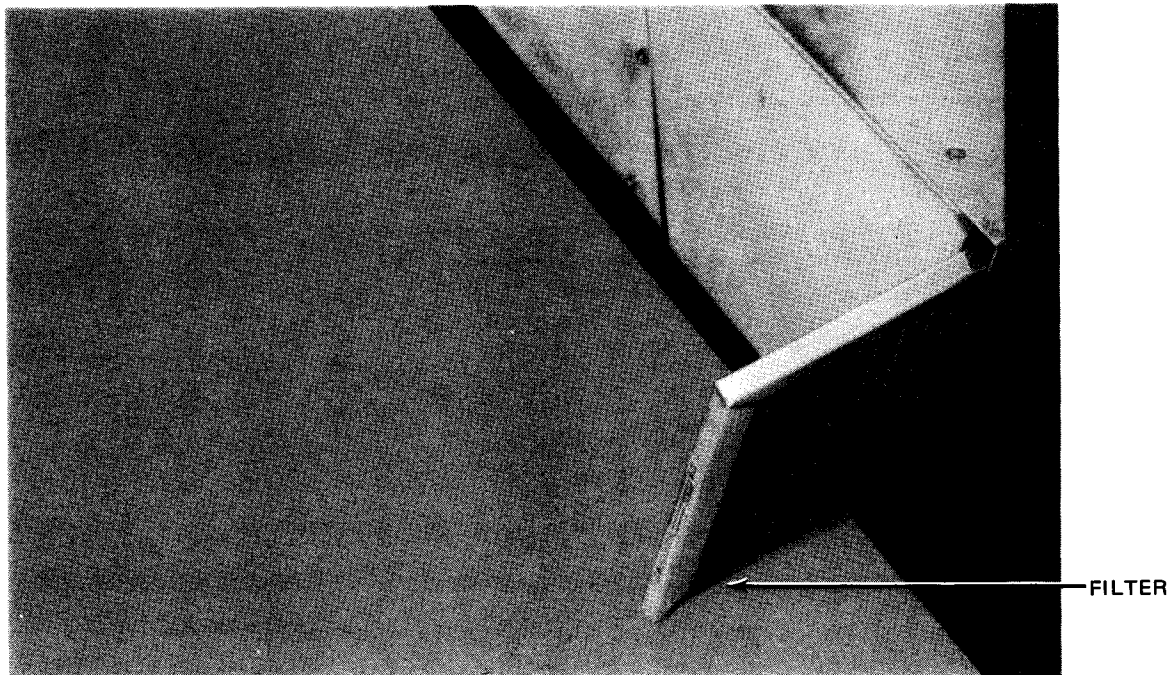


Figure 5—9. I/O Expansion Cabinet Air Filter (Rear View of Cabinet)

Table 5-1. Cabinet Filters

| Filter | Wash | Recoat |
|--|------|--------|
| Processor cabinet Storage filter (part no. 3012966-00) | Yes | Yes |
| Logic pages filter (part no. 3011363-55) | Yes | No |
| Power supply filter (part no. 3012966-01) | Yes | Yes |
| Communications adapter filter (part no. 3011363-60) | Yes | No |
| Storage Expansion Cabinet Type 7024-00/01 | | |
| Storage Modules 0 and 1 filter (part no. 4915291-38) | Yes | Yes |
| Storage modules 2 and 3 filter (part no. 491521-38) | Yes | Yes |
| Storage Expansion Cabinet type 7024-02/03 | | |
| +5-volt power supplies filter (part no. 4915291-40) | Yes | Yes |
| Storage modules/power supplies filter (part no. 4915291-41) | Yes | Yes |
| I/O expansion cabinet filter (part no. 3011363-55) | Yes | No |

5.3. INDICATOR LAMP REPLACEMENT

Indicator lamps that may be replaced by the operator are located on the operator/maintenance panel of the processor cabinet. Only those indicator lamps relating to the status of the processor and the integrated peripherals are replaced by the operator (Figure 5—10). The LED (light emitting diode) indicators associated with the displays are replaced by the Sperry Univac customer engineer. All indicators on the operator/maintenance panel are tested by pressing the SYSTEM RESET momentary contact switch.

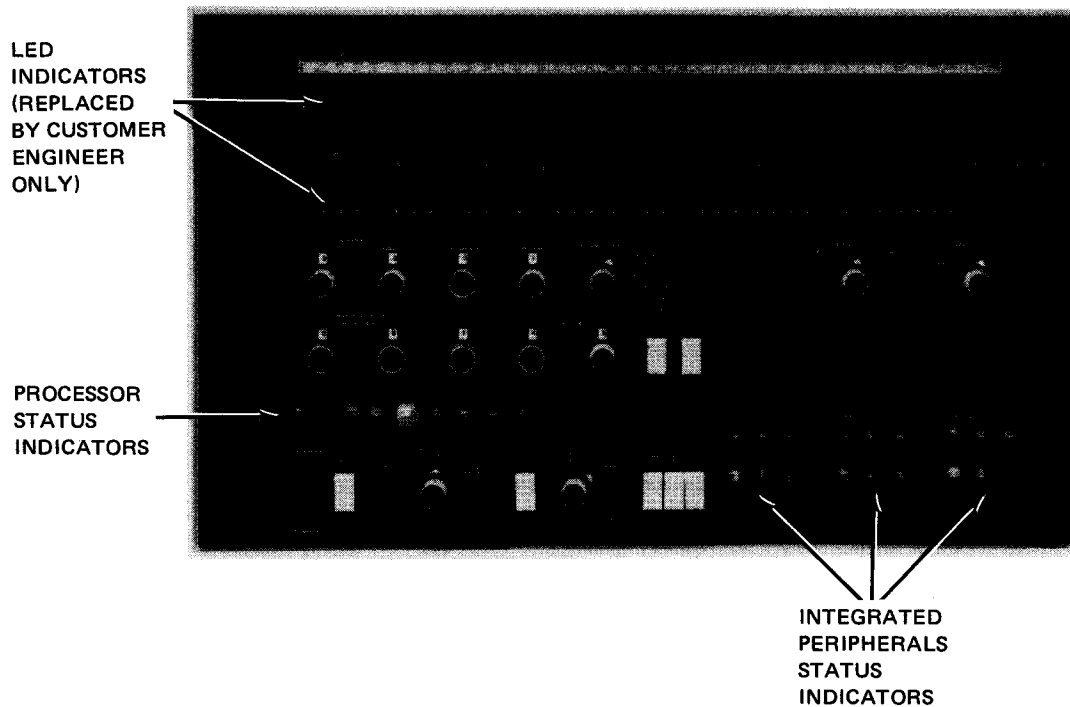
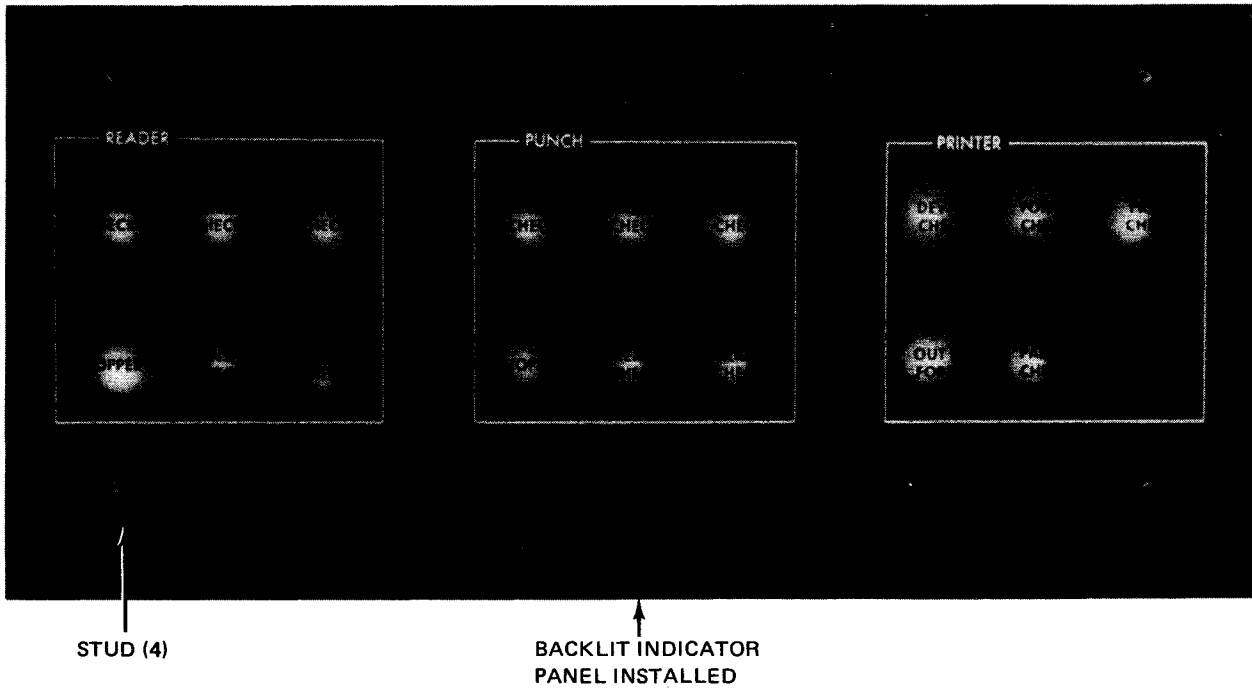


Figure 5—10. Processor Cabinet Operator/Maintenance Panel Indicators

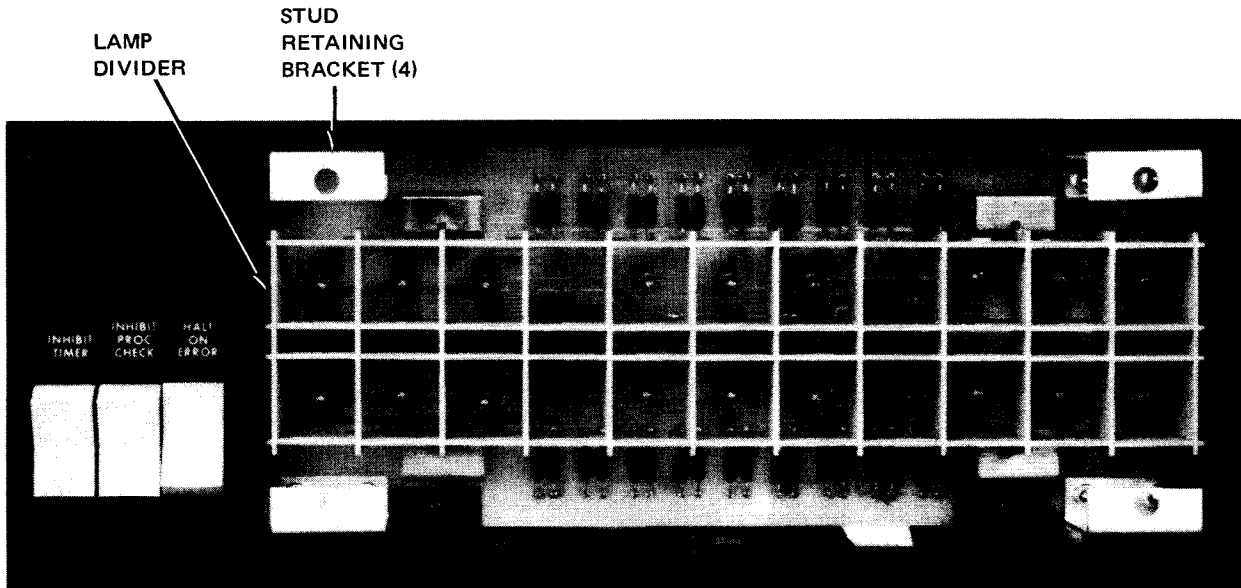
The operator replaceable lamps on the operator/maintenance panel are located behind two backlite indicator panels (one panel for processor status lamps and one for integrated peripheral status). To gain access to the lamps, the backlite indicator panel must be removed by pulling the studs loose which secure the panel (Figure 5—11 a). After a panel is removed, a lamp divider (Figure 5—11 b) which masks the lamps is then removed.

The procedure for replacing a defective lamp is:

1. Remove backlite indicator panel by pulling each stud which secures backlite indicator panel.
2. Remove lamp divider (Figure 5—11 b) from around lamps by gently pulling the divider from four retaining clips (Figure 5—11 c) which secure the lamp divider.
3. Remove defective lamp by grasping lamp with fingers and pulling lamp straight out of socket (Figure 5—11 d).
4. Install new lamp (UNIVAC part no. 4914877-00) by using fingers to insert two metal prongs of lamp into socket.
5. Reinstall lamp divider around lamps and secure divider by pressing each corner of divider so that divider snaps into each retaining clip.
6. Reinstall backlite indicator panel by aligning each of the studs with holes in mounting brackets and gently pushing in each of the studs.



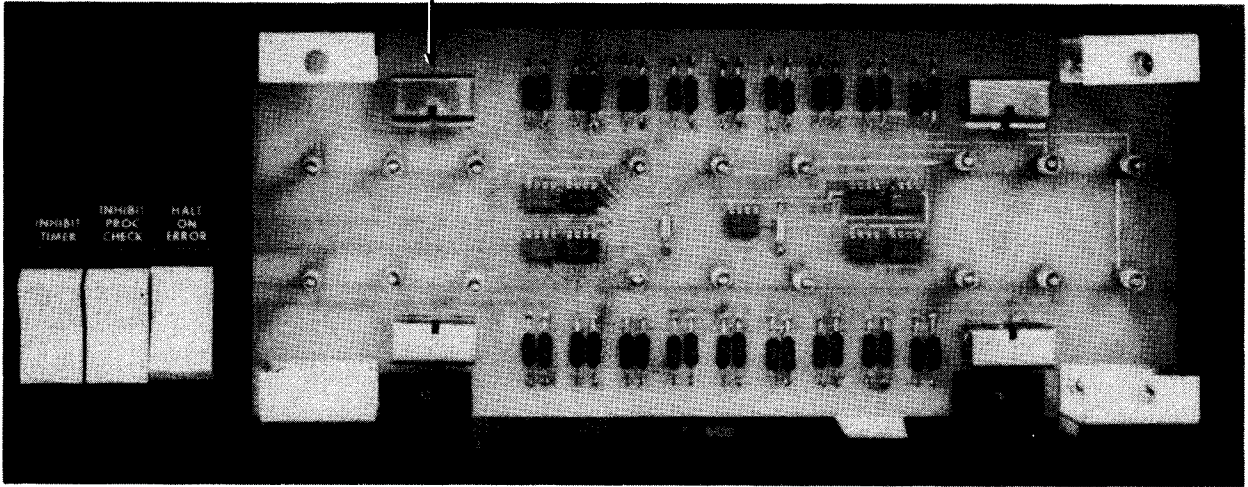
a. Backlite indicator panel installed



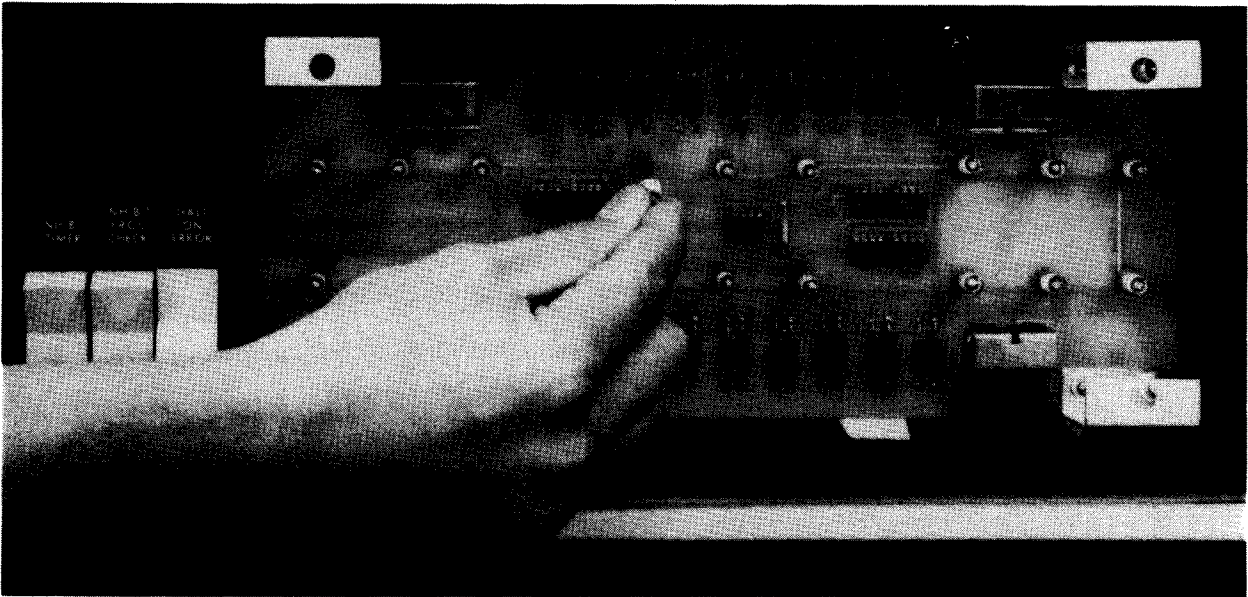
b. Backlite indicator panel removed

Figure 5-11. Lamp Replacement (Part 1 of 2)

LAMP DIVIDER
RETAINING CLIP (4)



c. Lamp ready for replacement



d. Removing/installing lamp

Figure 5-11. Lamp Replacement (Part 2 of 2)



Comments concerning this manual may be made in the space provided below. Please fill in the requested information.

System: _____

Manual Title: _____

UP No: _____ Revision No: _____ Update: _____

Name of User: _____

Address of User: _____

Comments:

CUT

FOLD

FIRST CLASS
PERMIT NO. 21
BLUE BELL, PA.

BUSINESS REPLY MAIL NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

POSTAGE WILL BE PAID BY

SPERRY  **UNIVAC**

P.O. BOX 500
BLUE BELL, PA.
19422

ATTN: SYSTEMS PUBLICATIONS DEPT.

CUT

FOLD



