SPERRY UNIVAC
COMPUTER SYSTEMS

PUBLICATIONS UPDATE

General

8417 Disk Subsystem

Operator Reference

UP-8917 Rev. 1-A

This Library Memo announces the release and availability of Updating Package A to "SPERRY UNIVAC 8417 Disk Subsystem Operator Reference", UP-8917 Rev. 1.

This update provides a caution to ensure the integrity of disk files when system power is turned off.

Copies of Updating Package A are now available for requisitioning. Either the updating package only or the complete manual with the updating package may be requisitioned by your local Sperry Univac representative. To receive only the updating package, order UP-8917 Rev. 1-A. To receive the complete manual, order UP-8917 Rev. 1.

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Mailing Lists BZ, CZ (less DE, GZ, HA) MZ	Mailing Lists DE, GZ, HA, 28U and 29U (Package A to UP-8917 Rev. 1, 8 pages plus Memo)	Library Memo for UP-8917 Rev. 1-A
		RELEASE DATE: January, 1982

SPERRY UNIVAC
COMPUTER SYSTEMS

PUBLICATIONS REVISION

General

8417 Disk Subsystem

Operator Reference

UP-8917 Rev. 1

This Library Memo announces the release and availability of "SPERRY UNIVAC® 8417 Disk Subsystem Operator Reference", UP-8917 Rev. 1.

This document revises the power turn-on and turn-off procedures to include both system and individual disk drive power control.

Additional copies may be ordered by your local Sperry Univac representative.

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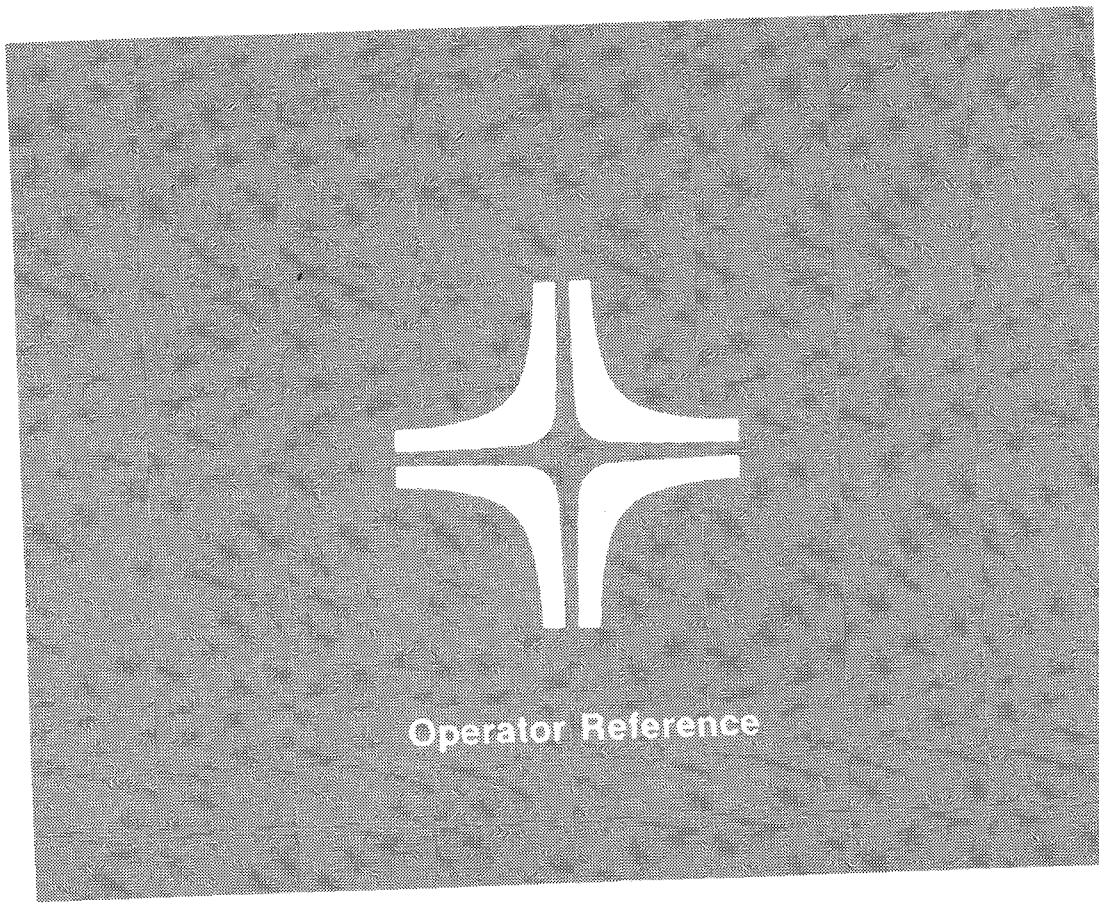
		RELEASE DATE: November, 1981

8417 Disk Subsystem



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UP-8917 Rev. 1

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1. Introduction

1.1. GENERAL

This manual contains information and procedures for operating the SPERRY UNIVAC 8417 Disk Subsystem. The subsystem consists of a disk channel/controller (DC/C) and resident disk drive located in the processor cabinet, and from one to seven disk drive units (Figure 1-1) located in external 8417 cabinets.

1.2. OPERATOR RESPONSIBILITIES

The operator is responsible for preparing the disk drive for operation and performing the routines required for efficient operation. To assume these responsibilities, the operator must be aware of the locations and functions of all operator-oriented controls and indicators involved in daily use of the disk drive. The operator must:

- turn power on and off at the disk drive when required;
- observe and respond to fault indications; and
- protect data written on the disk surface when necessary.

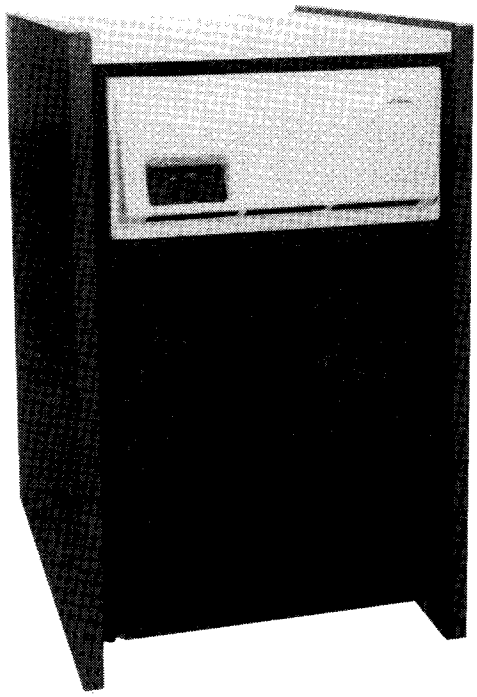

Figure 1—1. SPERRY UNIVAC 8417 Disk Drive in an External Cabinet

2. Subsystem Description

2.1. SUBSYSTEM COMPONENTS

The 8417 disk subsystem comprises a disk channel/controller located inside the mainframe cabinet and up to eight disk drives, which are interfaced to the DC/C.

2.1.1. Disk Channel/Controller

Software control of the disk drive is obtained with the DC/C. Commands from the processor channel activate specific functions to be performed by the disk drive, which, in turn, sends status and sense information concerning disk drive operations to the channel. This communication between the processor channel and disk drive is controlled by the DC/C. Commands such as read, write, or data search are initiated by the DC/C to accommodate functions required by the system operator or by system software. The operator does not have access to the DC/C; therefore, no operator controls are required. Figure 2-1 illustrates control directions of the subsystem.

2.1.2. Disk Drives

The disk drives use fixed media disks; that is, the disk packs are not removable or interchangeable by the operator. Each disk drive uses a head-disk assembly containing four platters. Seven surfaces of these platters are used for reading and writing information. The eighth surface contains the servo tracks and the optional fixed-head tracks. The servo track automatically provides feedback correction signals to physically adjust the position of the movable read/write heads.

Each disk drive cabinet can contain up to three disk drives, each having its own operator control panel and power supply. A cover plate encloses the shelf that does not contain a drive. Figure 2-2 illustrates an 8417 disk drive cabinet with one disk drive and two cover plates.

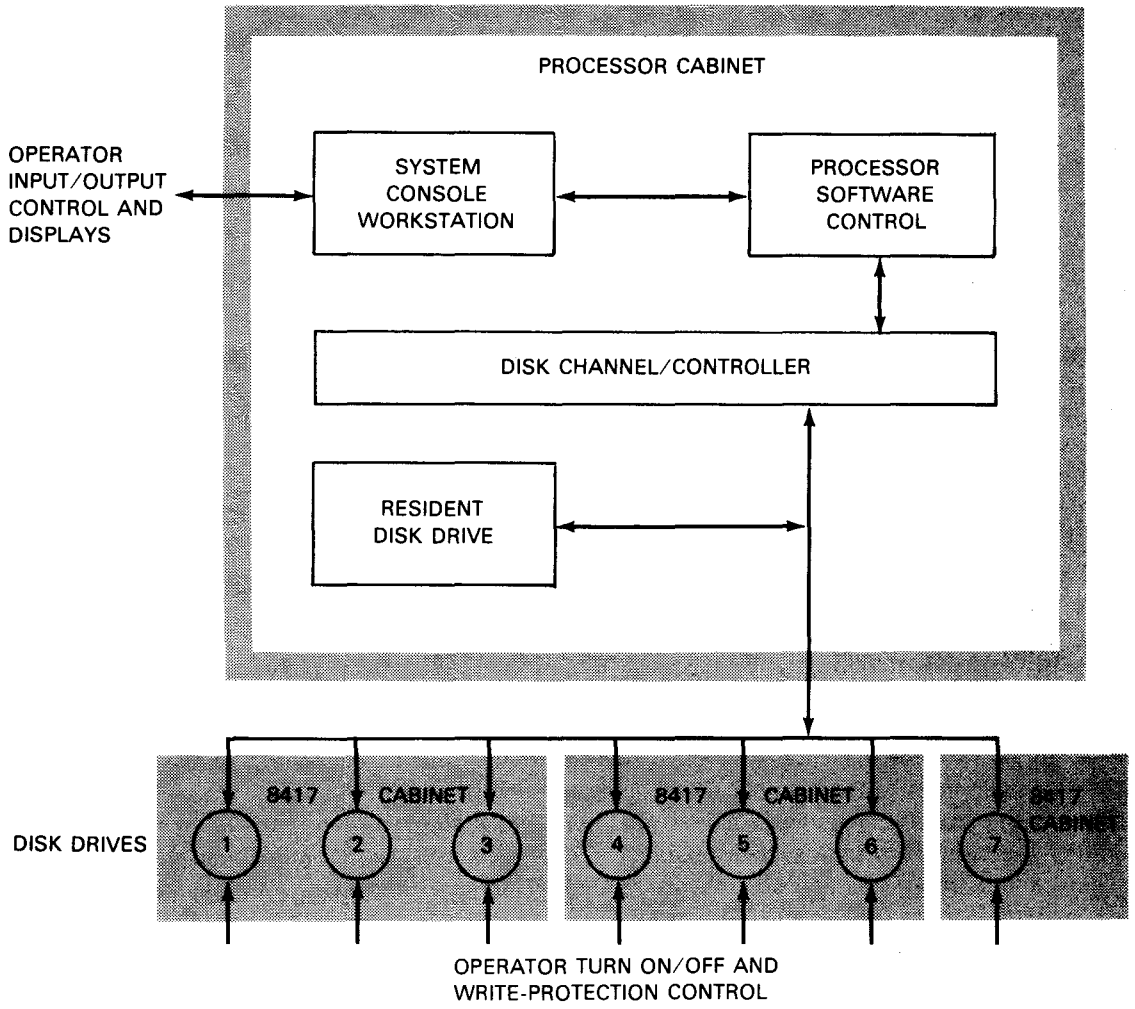

Figure 2—1. 8417 Disk Subsystem Control Directions

The resident disk drive located in the processor cabinet operates in the same manner as those located in an external 8417 disk drive cabinet. However, the operator does not have direct control of the resident disk drive via an operator control panel. All operations, such as initial operation checks and head positioning, for the resident disk drive are performed automatically when power to the system is turned on.

2.1.3. Head Disk Assembly

A single head disk assembly (HDA) in each disk drive is used to house the disk platters and head/arm assembly. Movable head/arm assemblies on the HDA secure the read/write heads. Disk platters are mounted on a rotating spindle. The movable head/arm assembly secures the read/write heads and positions them to the proper cylinder position according to directions from the DC/C.

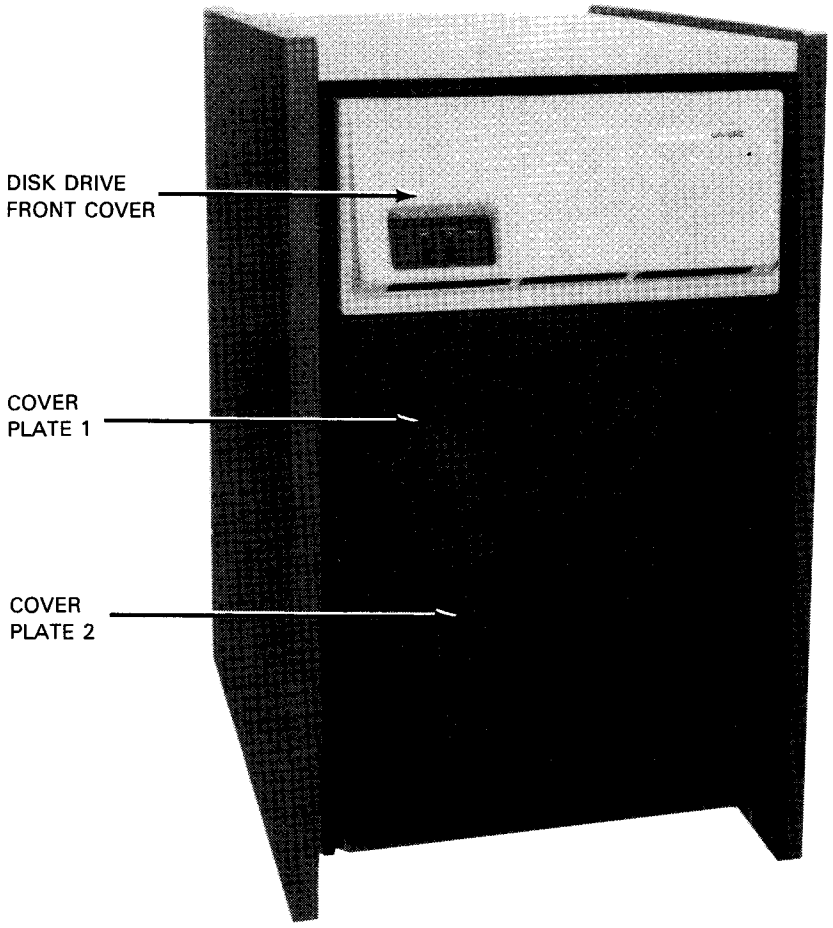

Figure 2—2. Disk Drive Cabinet with Single Drive

A servo head/arm assembly, mounted inside the HDA with a carriage, controls accessor arms for data access to the disk platters. The carriage is moved to any selected cylinder by an electronically controlled closed loop servo positioning system.

Heads are moved by the access mechanism from one cylinder directly to any other without returning to home position. The uppermost data head/arm assembly (Figure 2-3) has two read/write recording heads to service the upper surface of the top disk platter. Its counterpart head/arm assembly contains two up and two down read/write recording heads to service two disk surfaces.

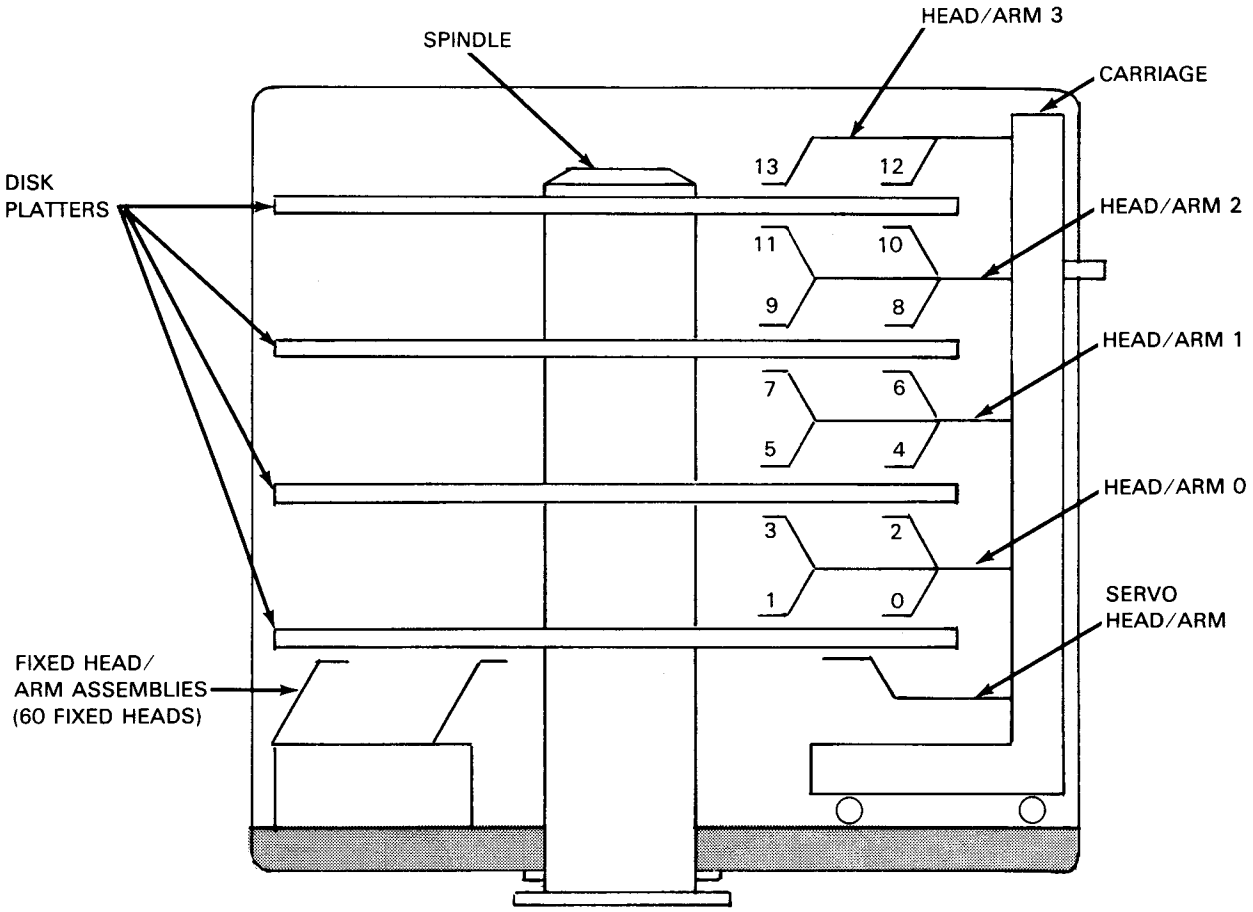

Figure 2—3. Disk Drive Head Disk Assembly

The seven usable disk platter surfaces each contain 550 primary (usable) and nine alternate data cylinders plus one defect cylinder and one maintenance cylinder. Recorded data is divided into two bands on a disk surface, each band having a read/write head for every 550 usable tracks.

An optional feature using fixed heads may be included in the disk drive; this feature requires no arm positioning time to access the fixed heads.

3. Controls and Indicators

3.1. GENERAL

Operating controls and indicators for the 8417 disk subsystem are located on the front panel of each disk drive unit. The DC/C and resident disk drive are located inside the processor cabinet and have no operating controls or indicators.

3.2. MAIN POWER CIRCUIT BREAKER

A single MAIN POWER circuit breaker is located at the bottom rear of the disk drive cabinet. The circuit breaker applies power for all disk drives in the cabinet and protects them from current overload. When the circuit breaker is set to the ON position, the power distribution circuit in the disk drive cabinet feeds power to the individual power supply of each disk drive located in the cabinet. In normal operation, the circuit breaker remains in the ON (up) position, and power to each disk drive is controlled from its operator control panel.

3.3. OPERATOR CONTROL PANEL

All disk drives in a cabinet have identical operator control panels (Figure 3-1). The operator selects the required disk drive for operation according to a logical number that is assigned to each disk drive for any given system. Table 3-1 lists the operator control panel controls and indicators with a description for each.

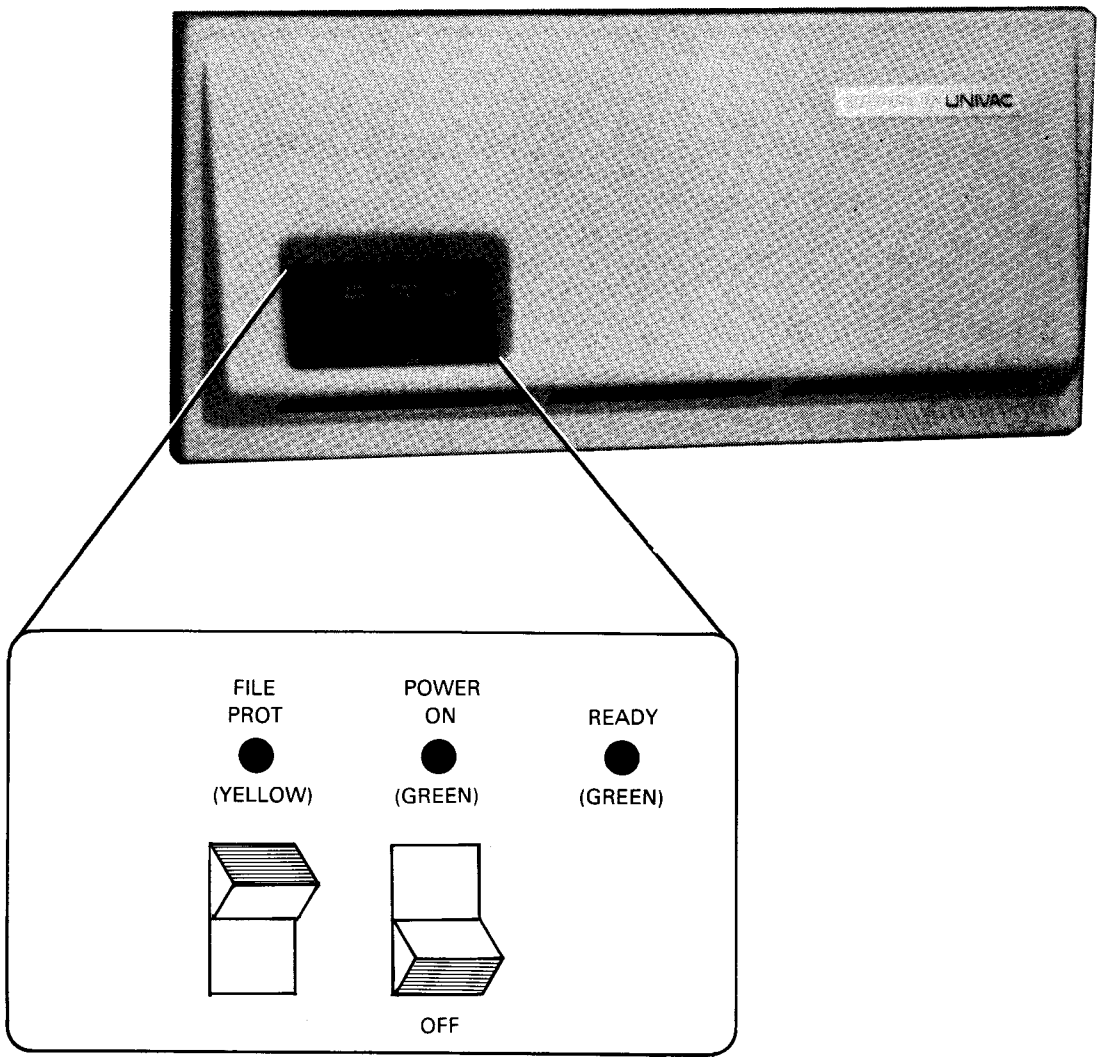

Figure 3—1. Operator Control Panel

Table 3—1. Controls and Indicators

Control/Indicator	Function
FILE PROT switch and indicator	ON position: ■ Write-protect status is generated and write circuits in the drive are disabled. If a write command is received, an UNSAFE condition is generated along with the write-protect status. ■ Yellow indicator lights. OFF position: ■ Write protect status is disabled and write circuits may be activated with a write command. ■ Indicator extinguishes.
POWER ON/OFF switch and indicator	ON position: ■ AC power is applied to the power supply and DC voltages are turned on. When all DC voltages are present and within required limits, a DC-Power-OK status is generated to release the disk motor brake and turn on the motor. ■ A power-on reset is generated and all counters and control flip-flops are initialized. ■ When disk speed reaches 80 percent of required operating speed, the read/write heads are positioned to cylinder 0, and online status occurs. ■ READY indicator lamp lights. OFF position: ■ Read/write heads are returned to the disk landing zone. ■ The motor brake is applied to stop disk rotation. ■ POWER ON indicator extinguishes. ■ READY indicator extinguishes.
READY indicator	When lit, indicates that disk drive has reached online status (refer to POWER ON/OFF switch function), and the disk drive is ready for operation.

4. Operation

4.1. GENERAL

Operation of the disk drive includes turning main power on, turning operating power on, controlling write protection functions, and observing and responding to any subsystem fault indications that may occur during daily operation.

4.2. POWER TURN ON/OFF

Power for the resident disk drive is normally turned on or off from a main power switch at the system processor. Primary power is always present at each disk drive unless the MAIN POWER circuit breaker at the lower rear of the disk drive cabinet is tripped or set to the OFF (down) position.

CAUTION

Prior to turning off system power, make certain that the 8417 disk drive subsystem is either in file protect mode (FILE PROT switch set to on position, yellow indicator lit) or power has been turned off (POWER ON switch set to off, green indicator off). This procedure prevents the possible loss of data due to partial erasure or noise transient that may be a result of a system power turn off.

However, the MAIN POWER circuit breakers should always be set to the ON position except in case of an emergency. The POWER ON/OFF switch on the operator control panel should also be set to and left in the ON position. With these switches set to their ON positions, system power then controls the power sequencing of the disk drives and no further operator intervention is required.

4.2.1. Subsystem Power Turn On

To turn on power for each disk drive independent of the system, proceed as follows:

1. Check that the system main power is turned on.

2. Set the MAIN POWER circuit breaker at the lower rear of the disk drive cabinet to the ON (up) position.

NOTE:

The MAIN POWER circuit breaker applies primary power to all disk drives in the cabinet.

3. Set the POWER ON/OFF switch on the operator control panel (Figure 3-1) to the ON (up) position. Note that the POWER ON indicator above the switch lights. After a short delay, note that the READY indicator also lights to indicate that the disk drive is in online status with the processor.

CAUTION

Be sure that the READY indicator is lit on the first disk drive turned on before turning power on for the next disk drive. Failure to turn power on for each disk drive in this sequence may result in input power failure or equipment damage.

NOTE:

Step 3 should be repeated for each disk drive in the cabinet where the MAIN POWER circuit breaker was turned on. If another disk drive cabinet is included in the subsystem, repeat steps 2 and 3.

4.2.2. Subsystem Power Turn Off

Power to the disk drives is normally controlled by system power control, which means that power is turned off by the system. However, to turn power off for each disk drive independent of the system, proceed as follows:

1. Set the POWER ON/OFF switch on the operator control panel (Figure 3-1) to the OFF (down) position. Note that all indicators on the operator control panel are extinguished.

2. Repeat step 1 for each operator control panel on the disk drive cabinet.

CAUTION

Contact the Sperry Univac customer engineer before removing power from the cabinet or equipment damage may result.

3. Set the MAIN POWER circuit breaker at the lower rear of the disk drive cabinet to the OFF (down) position.

NOTE:

In an emergency, the operator should set the MAIN POWER circuit breaker at the lower rear of the cabinet to OFF, then contact the Sperry Univac customer engineer.

4.3. DISK DRIVE OPERATION

Design of the disk drive has greatly simplified operation, since the head disk assembly inside the disk drive cabinet remains mounted.

CAUTION

Do not attempt to open the disk drive cabinet and slide out the drawer or a head crash will result due to improper preconditions. The drawer should be opened only by a Sperry Univac customer engineer.

Operation is limited to setting the FILE PROT switch on the operator control panel (Figure 3-1) to the on (up) position to prevent erasure of prerecorded data. The FILE PROT indicator should remain lit.

If programming requires new data to be recorded, the FILE PROT switch must be set to the off (down) position to turn off the write-inhibit circuits. In this setting, the FILE PROT indicator is extinguished. Return the FILE PROT switch to the on (up) position upon completion of the new recording.

CAUTION

Do not allow the FILE PROT switch to remain in the off (down) position when a disk is to be protected or portions of recorded data could be written under direction of the programs currently in use in the processor.

4.4. OPERATOR MAINTENANCE

Operator maintenance of the 8417 disk subsystem is limited to keeping the disk drive cabinet clean and removing any obstacles obstructing the flow of cooling air through the cabinet. Air filters within the cabinet are maintained, along with any other maintenance required, by the Sperry Univac customer engineer.

CAUTION

Do not move the disk drive cabinet without first contacting the Sperry Univac customer engineer to install a spindle-locking mechanism.

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