

# Control Data® 9408

## Flexible Disk Drive

Designed for Original Equipment Manufacturers (OEM)



The Control Data 9408 Flexible Disk Drive is a low-cost, random-access storage device. Maximum unformatted storage capacity is 218 kilobytes on a 133.4-millimetre (5.25-inch) interchangeable diskette defined by ANSI X3B8 and (ECMA) TC19 standards.

This drive provides interchangeability with comparable industry products. Industry compatibility is maintained in size, mechanical mountings, electrical interface, power requirements and appearance.

The 9408 can operate in single- or double-density formats. When operated in single-density, using Frequency Modulation (FM) encoding, the 9408 provides a capacity of 109 kilobytes of unformatted data. Using Modified Frequency Modulation (MFM), or double-density recording, the 9408 has a maximum capacity of 218 kilobytes.

### Features

- Light weight and compact
- Full industry compatibility includes interface signals and timing, power requirements, size and mountings.
- Requires only +12 and +5 V dc for operation—minimal dc power requirement enables less costly system design
- Single- and double-density capability gives flexibility in system design and allows maximum storage capacity at minimum cost
- No electrical adjustment or maintenance required
- Reliable band stepper positioning mechanism is the same type used in larger flexible disk drives and some rigid disk drives.
- Long-life ceramic read/write heads

- Hard or soft sectored media compability
- Front panel activity light indicates that a drive is in use
- Write protect feature will inhibit writing to a protected diskette

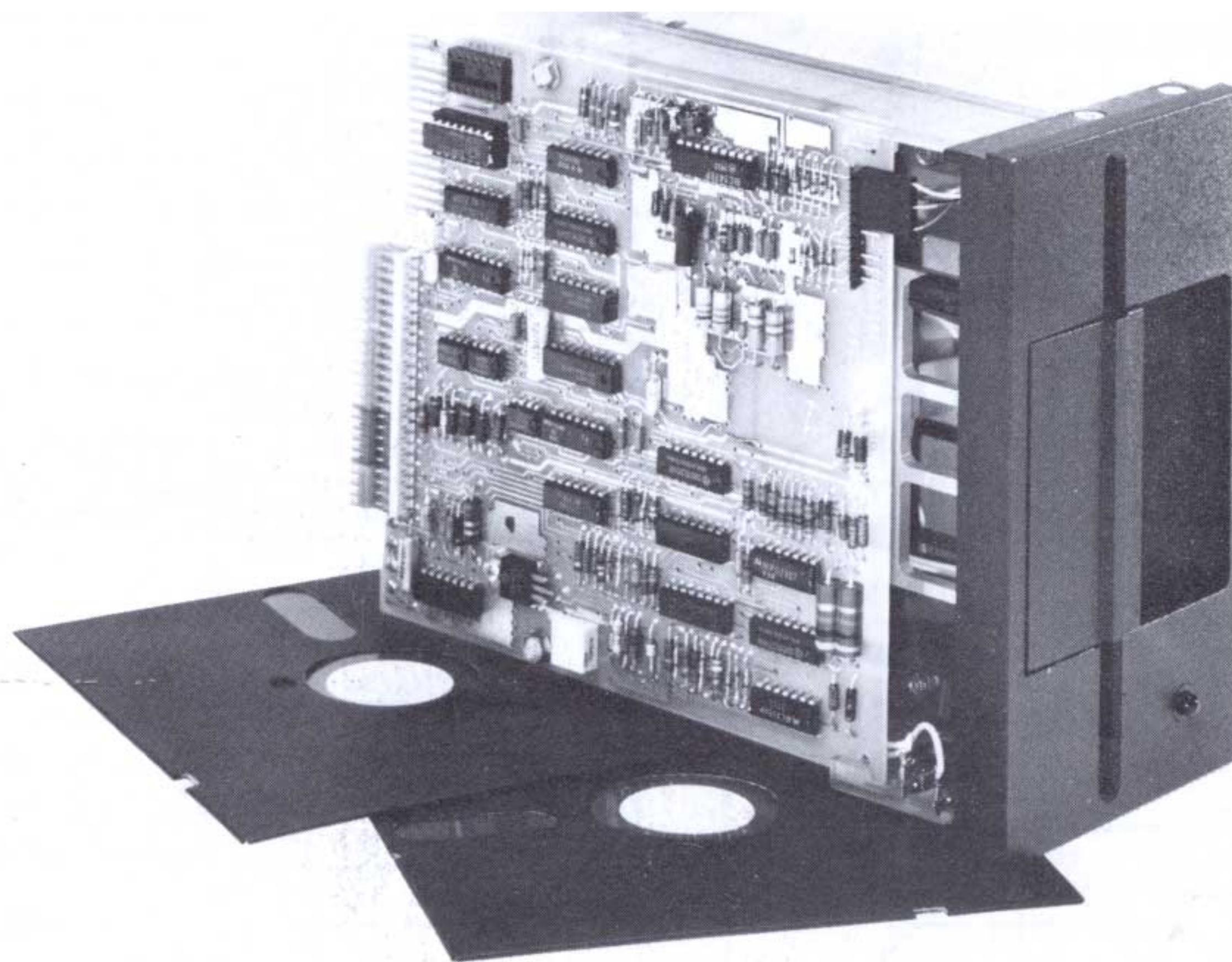
### Description

Operation of the 9408 is simple and straightforward. To load the device, the operator opens the access door and inserts the diskette into the drive until it stops. As the door is closed, an expanding cone automatically centers and clamps the diskette to the drive spindle. The spindle then rotates the diskette within the jacket, which cushions and cleans the medium during rotation.

Mechanical sensing through an onboard switch provides write-protect capability for the 9408. If the slot is present, data can be recorded on the diskette. Covering the slot in the diskette jacket with opaque tape activates the write-protect function. In the read-only mode, no data changes or new information can be recorded.

### Applications

OEM customers will find the 9408 suited to any application requiring low volume data storage. These include: Key entry systems, point-of-sale transactions, data collection and logging, word processing, distributed processing, small business systems, personal or home computers and applications where space considerations are important.

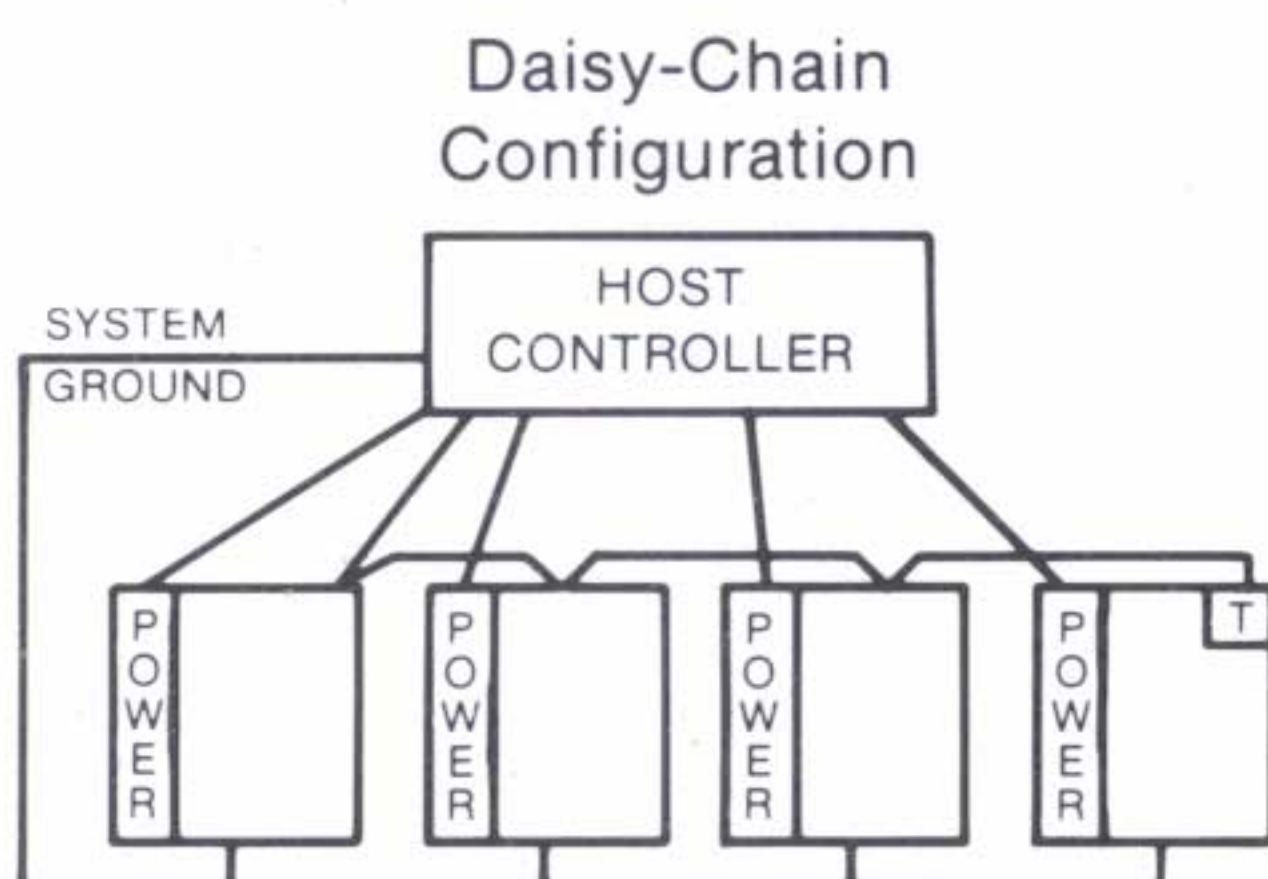
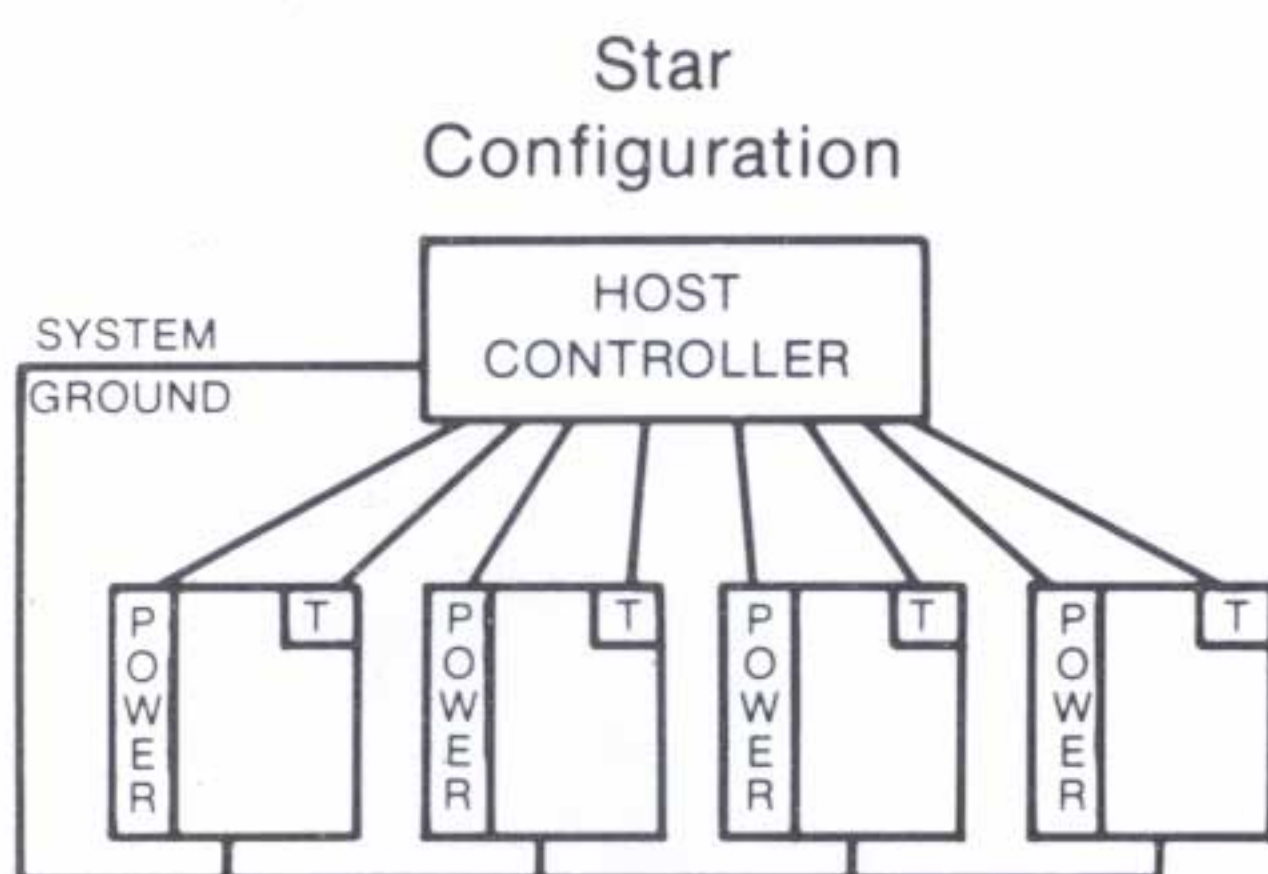




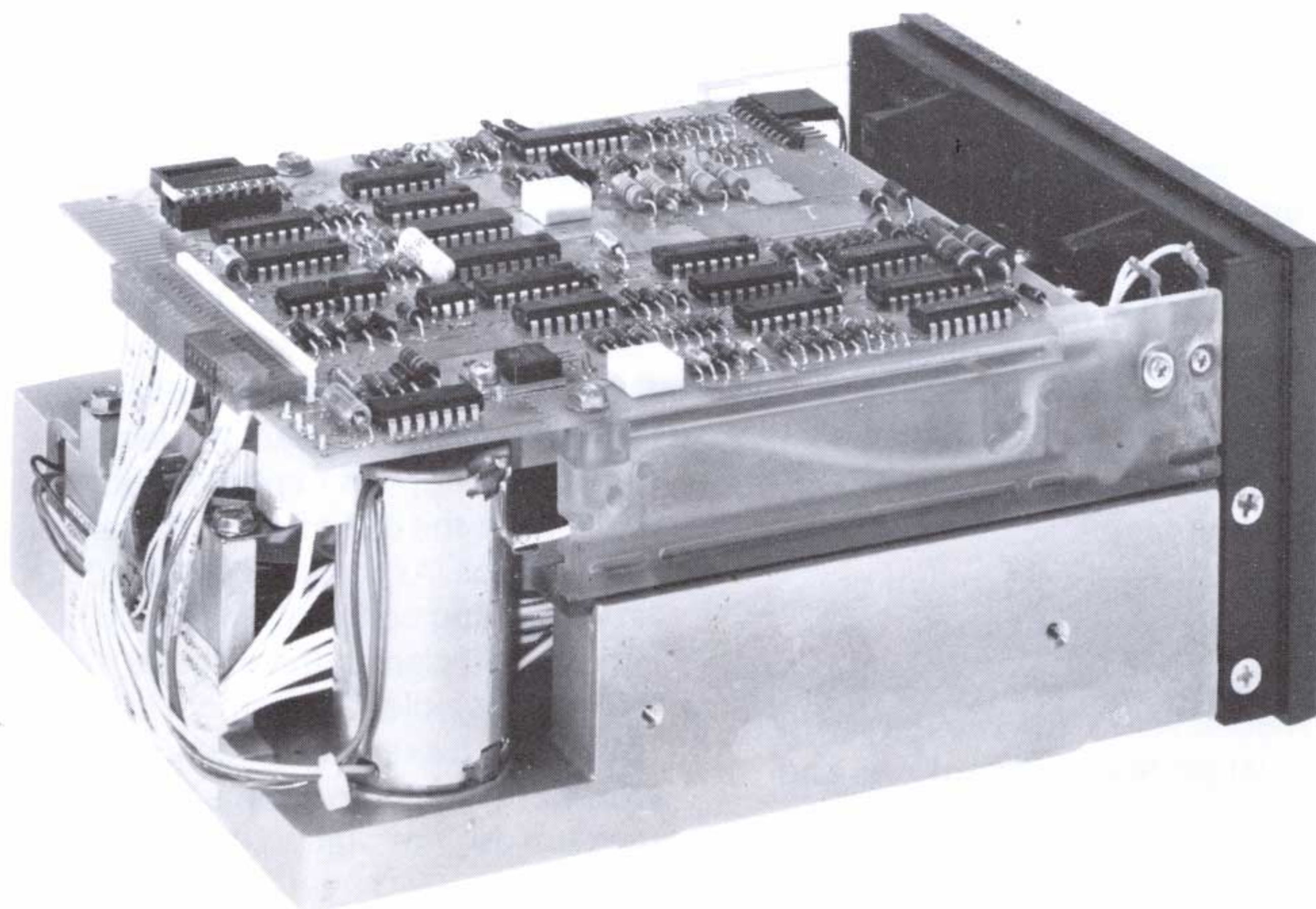
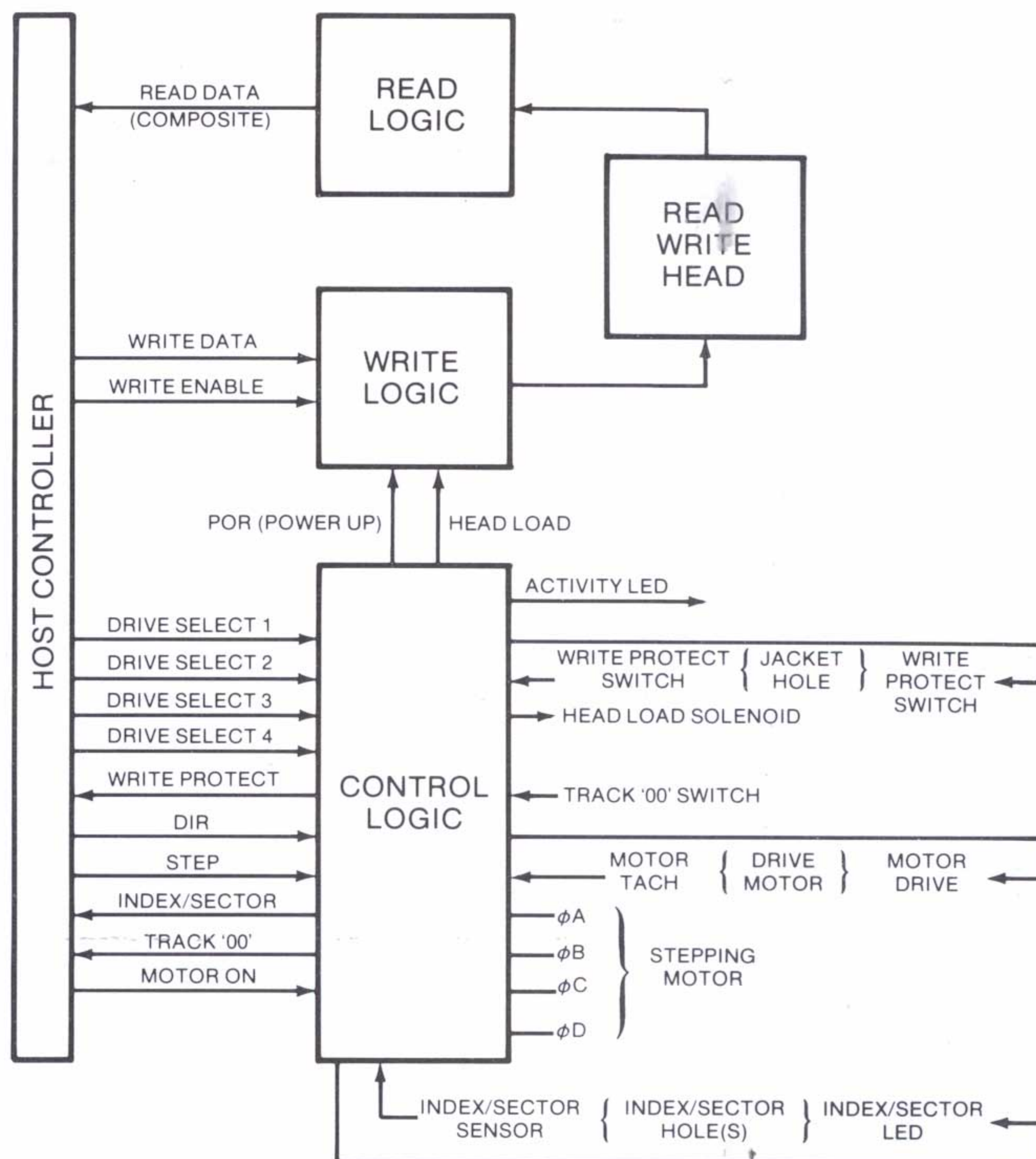
The 9408 Flexible Disk Drive has been designed by Control Data to be interchangeable with other 133.4-millimeter (5.25-inch) disk drives that meet industry standard specifications. This compatibility gives the OEM customer a choice of system design.

Additional storage and system flexibility is added for the OEM customer in a multidrive application. The 9408 can be configured with up to four drives in a star or daisy-chain configuration as long as the last device is no more than 3.05 metres (10 feet) from the controller.

### Configuration Options

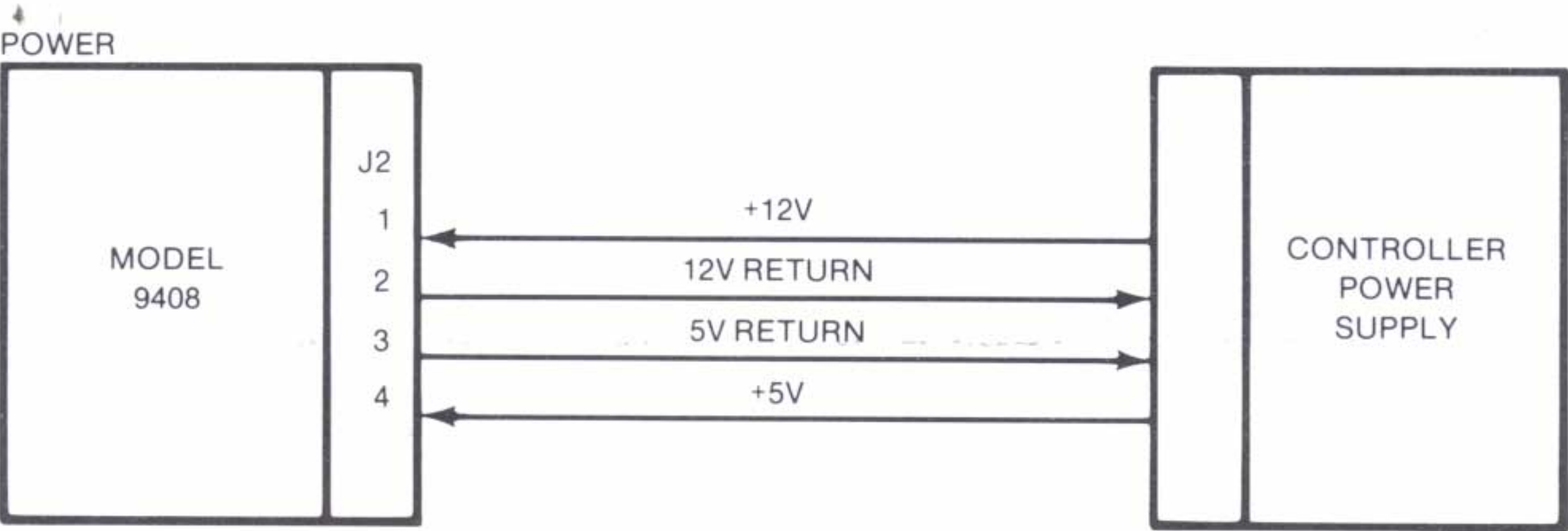
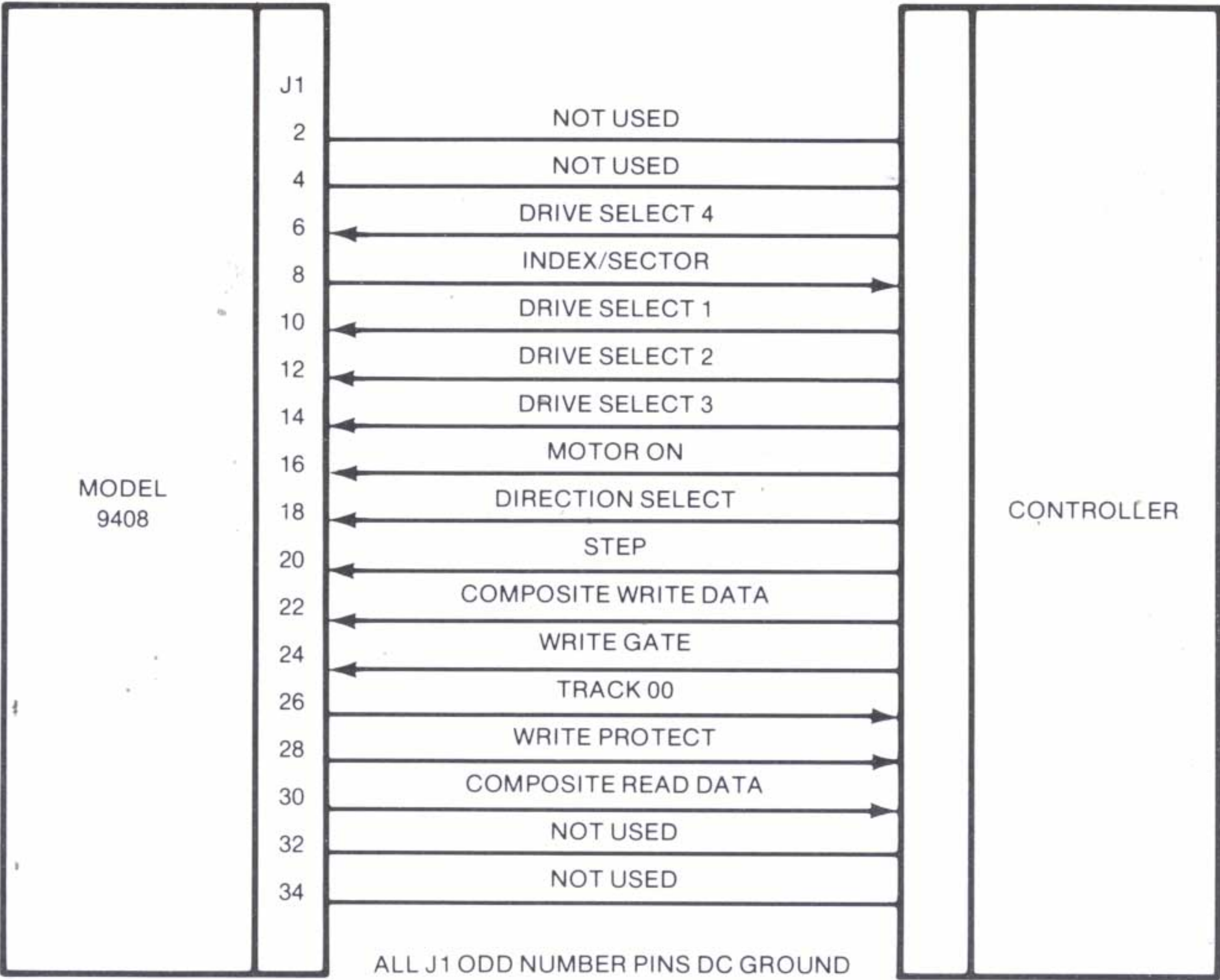


### 9408 Block Diagram

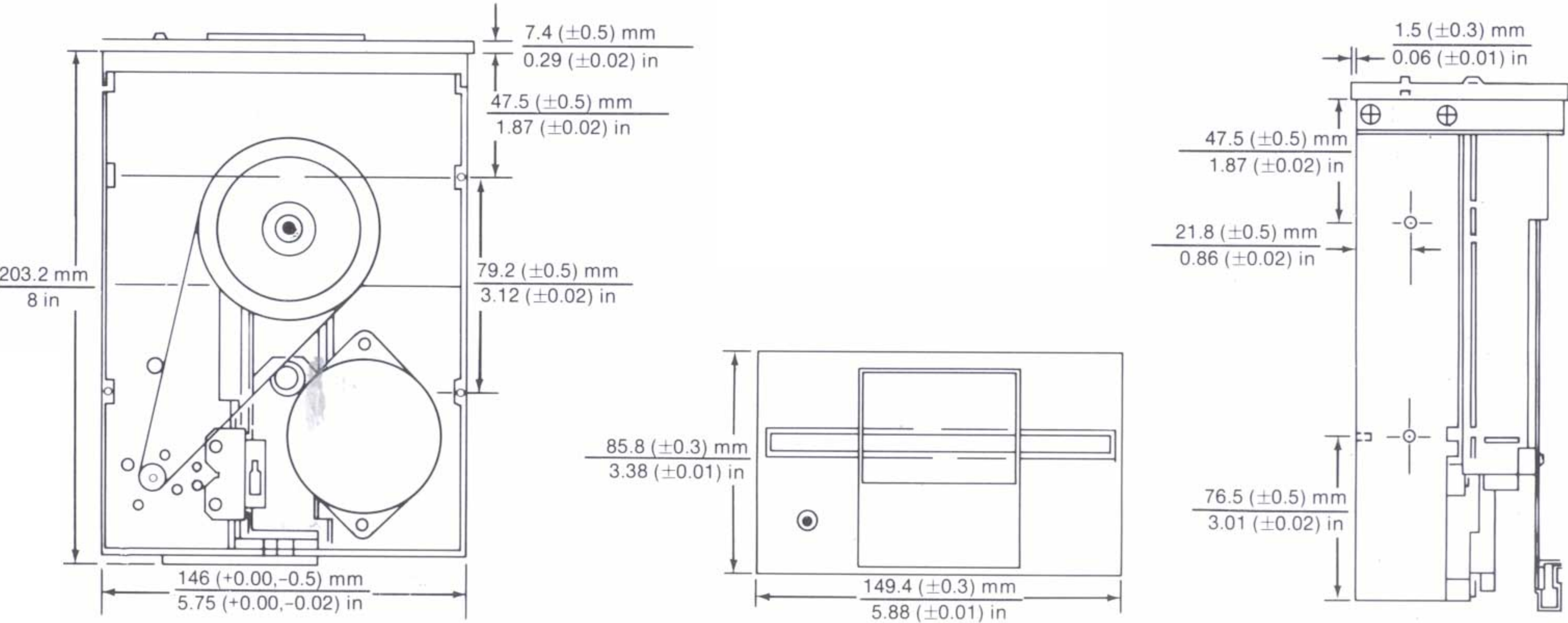




9408 Interface Connections



Physical Characteristics





## Specifications

### Performance

	Single Density	Double Density
Transfer Rate	125K bits/s	250K bits/s
Spindle Speed	300 r/min	300 r/min
Average Latency	100 ms	100 ms

### Access Time

Track-to-Track	20 ms	20 ms
Settle Time	15 ms	15 ms
Average	238 ms	238 ms
Head Load Time	50 ms	50 ms

### Functional

Capacity, Unformatted		
Per Diskette	109K bytes	218K bytes
Per Track	3125 bytes	6250 bytes
Capacity, Formatted (16 sectors)		
Per Diskette	71.68K bytes	143.3K bytes
Per Track	2048 bytes	4096 bytes

### Recording Density

Track Density	48 tracks/in	48 tracks/in
Tracks/Diskette	35	35
Recording Method	FM	MFM

Positioning Method	Band stepper	Band stepper
Media	Hard or soft sector	Hard or soft sector

### Reliability

MTBF	8000 POH (Assumes duty cycle of spindle drive motor is 25% of POH.)
MTTR (typical)	30 min
Service Life	5 years
Preventive Maintenance	None required
Adjustments	None required

### Data Reliability

Soft (recoverable errors)	Not more than 1 bit per $10^8$ bits read
Hard (unrecoverable errors)	Not more than 1 bit per $10^{11}$ bits read
Seek Errors	1 per $10^6$ seeks

### Environmental

Operating Temperature	4° C to 46° C (40° F to 115° F)
Nonoperating Temperature	-40° C to 62° C (-40° F to 144° F)
Relative Humidity	20% to 80%

### Power Requirements (per drive)

Alternating Current	None
Direct Current	+12V ( $\pm 5\%$ ) 0.9A, typical +5V ( $\pm 5\%$ ) 0.5A, typical

### Physical Characteristics

Height	85.8 mm (3.38 in)
Width	149.4 mm (5.88 in)
Depth	203.2 mm (8 in)—Excluding Front Panel
Weight	1.45 kg (3.2 lb)

Specifications subject to change without notice