

# Wren™ II Half-Height 5¼-inch Disk Drive



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Designed for Original Equipment Manufacturers (OEM)

The Control Data 94205-51 Wren II Half-Height Disk Drive provides 51 megabytes of unformatted storage (40MB formatted) in half the space of a full-height 5¼-inch drive.

A member of the proven, reliable Wren Winchester disk drive family, the half-height Wren provides high performance (28 millisecond average seek) in a compact package, and uses the same ST506-compatible interface as Wren I and Wren II drives.

## Features

- 51 Mbytes unformatted (40 Mbytes formatted)
- Industry-standard interface
- 20,000-hour MTBF
- Low-profile, half-height design
- User-defined sectoring
- Ultra-clean, sealed head, disk and actuator chamber
- Balanced Rotary voice coil actuator
- 28 msec typical average seek
- Dedicated head-landing zone
- Automatic actuator lock
- Microcomputer control
- Closed-loop servo system
- Brushless DC motor
- Surface-mount PWA technology
- Low noise level for office use
- No preventive maintenance nor adjustments
- Maximum power dissipation less than 102 Btu per hour
- Integral shock mounts
- Vertical or horizontal mounting

## Interface

ST506 — an MFM transfer code that provides compatibility with the Seagate ST506/ST412 interface. The transfer rate is 5 megabits per second and track capacity 10,416 bytes.



## Heads and Disks

The drive contains three lubricated oxide disks in an environmentally sealed chamber. No unfiltered outside air is drawn into the unit. Air is recirculated within the disk/actuator chamber and passes through a filter to ensure a contamination-free environment.



## Positioning System

A new positioning system (patent pending) provides precise placement of the read/write heads over the data. The result is high performance combined with unexcelled data integrity.

The heads are mounted on a new straight-line arm that is connected to a balanced rotary voice coil actuator. The straight-line design has substantially less mass than other designs, improving accuracy and speed. A microcomputer controlled, dedicated, closed-loop servo system provides precise positioning control.

In another performance improvement, the servo control moves the actuator with the first seek pulse received, increasing throughput.

An automatic actuator lock and emergency head retract system automatically move the heads to the landing zone when power is removed. The landing zone contains no data, thus there is no data degradation from heads landing.

## Electronics

The use of surface mount technology has reduced the number of printed circuit boards in the Wren II Half-Height to two, one on the bottom and one on the back.

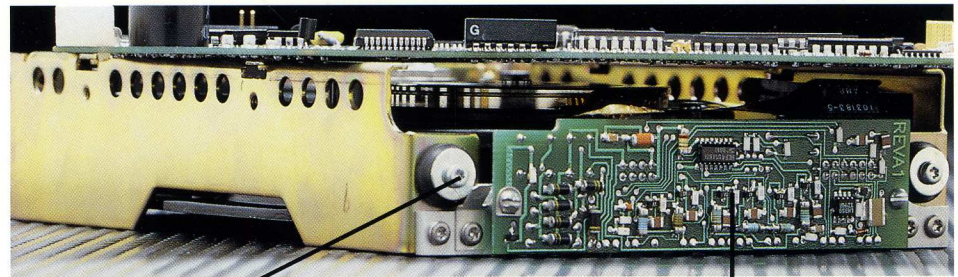
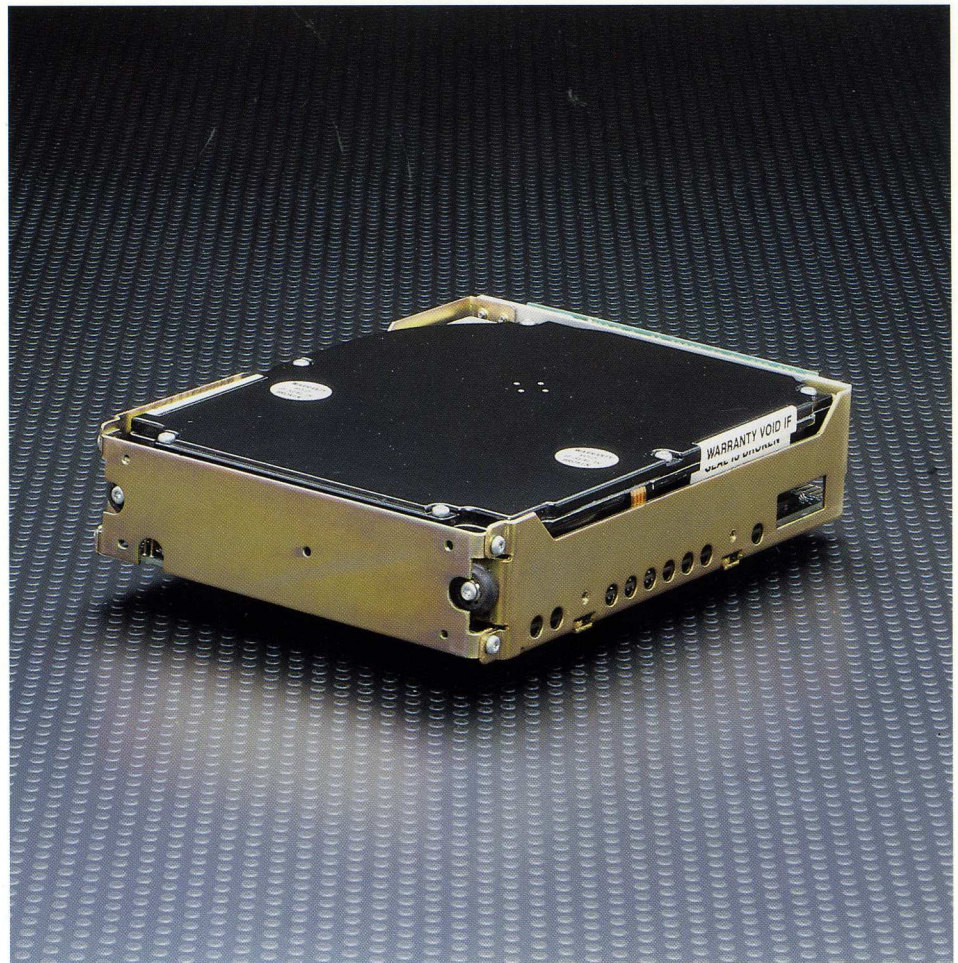
## Reliability

The use of long-life media that includes lubrication reservoirs substantially improves the reliability of the half-height Wren II. The extensive use of VLSI digital and analog circuitry reduces power consumption and heat, contributing to a 20,000-hour Mean Time Between Failure.

## The Wren Family

The Control Data Wren Winchester disk drive family provides a range of high performance models that store from 21 to 182 megabytes:

- Wren I: 21 to 36 Mbytes
- Wren II: 48 to 86 Mbytes
- Wren II: Half-Height 51 Mbytes
- Wren III: 101 to 182 Mbytes



*Shock mounts integral to the drive isolate the HDA from vibration*

*Surface-mount technology reduces electronics to two printed circuit boards*

## Applications

- High-performance workstations
- CAD/CAM workstations
- Personal computers
- Portable computers
- Small business systems
- Word processing workstations
- Distributed processing networks
- Automated test equipment
- Numerical control

## Options/Accessories

- Power supply with cables
- Front panel with indicator
- Maintenance manual

## Maintenance and Spares

All Control Data products are backed by comprehensive maintenance and spare parts support programs.

## SPECIFICATIONS

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Capacity 51.5 Mbytes

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### Configuration

Number of disks	3
Data surfaces	5
Servo surfaces	1
Tracks per surface	989
Track density	960 TPI
Recording density	9400 BPI
Recording method	MFM

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### Performance

Rotation speed	3600 r/min	
Average latency	8.33 ms	
Seek time	<i>Typical</i>	<i>Worst case</i>
Single track	5 ms	8 ms
Average	28 ms	32 ms
Maximum	65 ms	70 ms

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Worst case averages are derived by dividing the sum of the times for all possible seeks by the total number of seeks for all temperature and voltage tolerances.

Typical access times are derived from observed values under normal operating conditions.

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### Interface

Type	ST506 (ST506/ST412) compatible
Transfer rate	5 Mbits/s
Data code	MFM

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### Reliability and Maintainability

Error rate	
Recoverable	1 in 10 <sup>10</sup> bits read, max
Unrecoverable	1 in 10 <sup>12</sup> bits read, max
Seek	1 in 10 <sup>6</sup> seeks, max
MTBF	20,000 hours
MTTR	1/2 hour
Preventive maintenance	None
Service life	7 years or 30,000 hours

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### Power Requirements

AC	Not required
DC	+12 V (±5%), +5 V (±5%)
Power dissipation	22 W (75.2 Btu) typical

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### Environmental

Temperature	
Operating	10 to 50°C (50 to 122°F)
Storage	-10 to 54°C (14 to 130°F)
Transit	-40 to 70°C (40 to 158°F)
Relative humidity	
Operating	8 to 80%
Storage	8 to 90%
Transit	5 to 95%
Altitude	
Operating	-305 to 3,048m (-1,000 to 10,000 ft)
Transit	-305 to 12,210m (-1,000 to 40,000 ft)

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### Physical

Height	41.28mm (1.625 in)
Width	147mm (5.75 in)
Depth	203mm (8 in)
Weight	1.7 kg (3.8 lb)

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Specifications subject to change  
without notice.

Control Data sales offices are located in  
principal cities throughout the world.

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