Wren™ IV 5¼-inch Rigid Disk Drive

CONTROL DATA

Designed for Original Equipment Manufacturers (OEM)

The Control Data Wren IV with embedded SCSI controller is a 5¼-inch Winchester disk drive that provides 300 megabytes of formatted capacity (using 1024-byte sectors).

The Wren IV builds on the technologies proven in earlier models of the Wren family. In addition to increased capacity, the Wren IV drives provide improved performance and increased reliability — with Mean Time Between Failure of 30,000 hours.
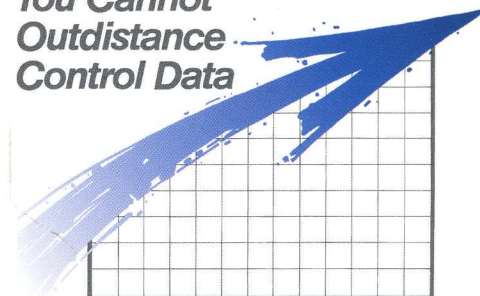
The embedded SCSI controller in the Model 94171 Wren IV conforms with the ANSI Small Computer System Interface Standard and Common Command Set. The Wren IV provides automatic formatting with sector reallocation, as well as automatic Error Correction Code and retries. The SCSI controller has a 32-kilobyte data buffer. It also has full implementation of disconnect, reconnect and arbitration.

Features

- ☐ 16.5-millisecond average seek
- ☐ 30,000-hour MTBF
- ☐ Embedded SCSI controller
- ☐ Asynchronous/synchronous SCSI data bus
- ☐ 48-bit Error Correction Code
- ☐ Automatic reallocation of media defects
- ☐ Sealed, ultra-clean, head/disk/actuator chamber
- ☐ Balanced rotary voice coil actuator
- ☐ Closed-loop, dedicated servo system
- ☐ Dedicated head-landing zone
- ☐ Air filtration internal to the HDA
- ☐ Humidity control
- ☐ Less than 30-watt power consumption
- ☐ Low noise for office use
- ☐ Automatic actuator restraint/shipping lock
- ☐ Shock mounted HDA
- ☐ Vertical or horizontal mounting
- ☐ No adjustments or preventive maintenance

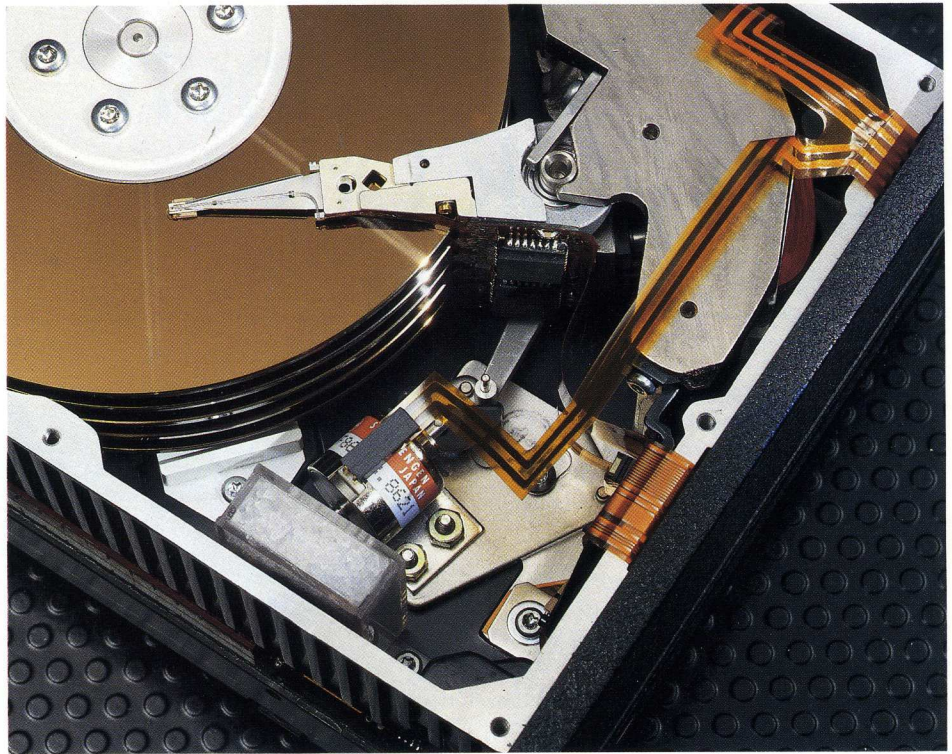*You Cannot Outdistance Control Data*

Heads and Disks

The Wren IV contains five thin-film disks in an environmentally sealed chamber. Air is recirculated within the disk/actuator chamber and passes through a filter to ensure a contamination-free environment. A proprietary humidity control system provides superior environmental reliability.

Positioning System

The high performance 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 patented 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. High energy magnets in the voice coil further improve performance, resulting in 16.5-millisecond typical average seek. A microcomputer controlled, dedicated, closed-loop servo system provides positioning control.

Automatic Actuator Lock

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 potential for data degradation from heads landing.

The Wren Family

The Control Data Wren Winchester disk drive family provides a range of models that store from 48 to 300 megabytes:

☐ Wren II: 48 to 86 Mbytes
☐ Wren II Half-Height: 51 Mbytes
☐ Wren III Half-Height: 101 Mbytes
☐ Wren III: 101 to 182 Mbytes
☐ Wren IV: 300 Mbytes (formatted)

Applications

The Wren IV is designed for applications where capacity and performance are important. These applications frequently are multi-user, multi-tasking systems and local area networks with file server requirements.

☐ Small business systems
☐ Office automation
☐ Word processing
☐ Local area networks
☐ Multi-user microcomputers
☐ Low-end minicomputers
☐ Engineering workstations
☐ CAD/CAM
☐ Artificial intelligence
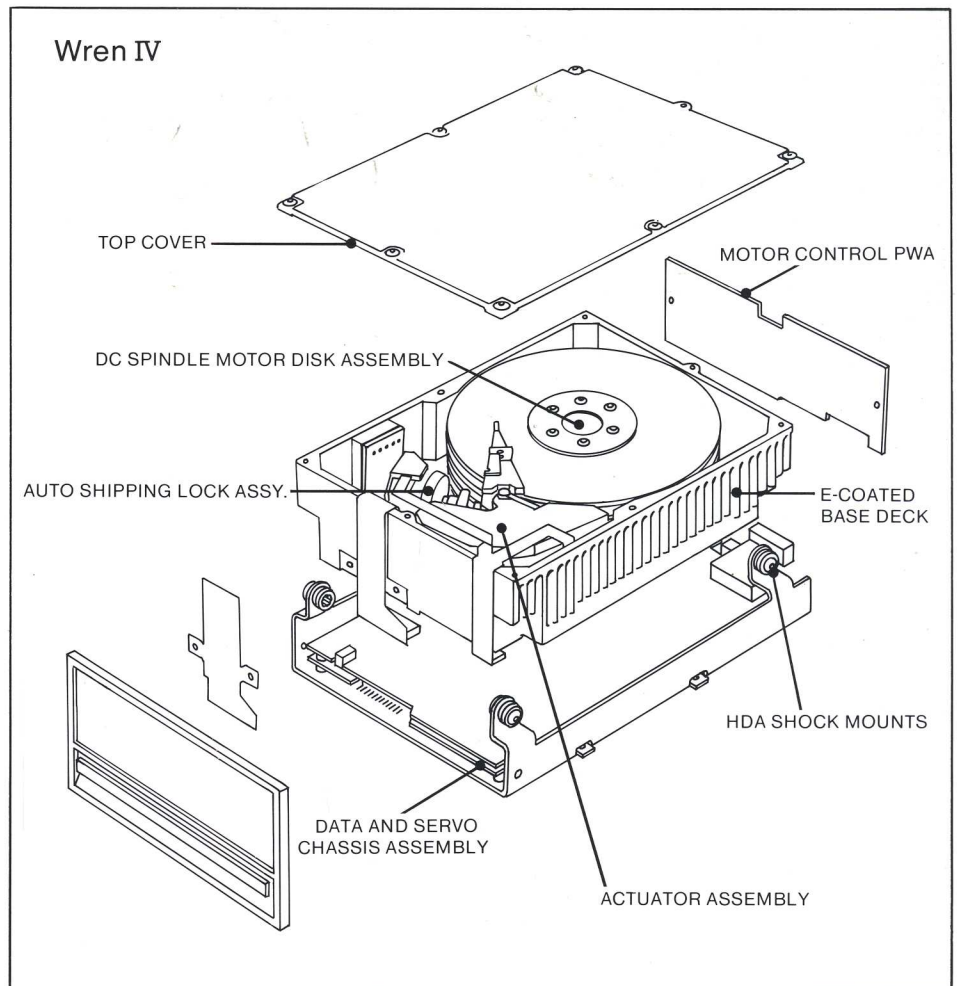
Options/Accessories

☐ Front panel
☐ Single-unit shipping pack
☐ OEM users manual

Maintenance and Spares

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

SCSI Commands Supported

☐ Format Unit
☐ Inquiry
☐ Mode Select
☐ Mode Sense
☐ Read
☐ Read Capacity
☐ Read Data Buffer
☐ Read Defect Data
☐ Read Extended
  Receive Diagnostic Results
☐ Release Unit
☐ Request Sense
☐ Reserve Unit
  Rezero Unit
  Seek
  Seek Extended
☐ Send Diagnostic
  Start Unit
☐ Test Unit Ready
  Verify
☐ Write
☐ Write Data Buffer
☐ Write Extend

☐ Common Command Set

Wren IV

TOP COVER

MOTOR CONTROL PWA

DC SPINDLE MOTOR DISK ASSEMBLY

AUTO SHIPPING LOCK ASSY.

E-COATED BASE DECK

HDA SHOCK MOUNTS

DATA AND SERVO CHASSIS ASSEMBLY

ACTUATOR ASSEMBLY

SPECIFICATIONS

Capacity	300 Mbytes formatted (1024-byte sectors)

Configuration

Number of disks	5
Data surfaces	9
Servo surfaces	1
Tracks per surface	1365
Track density	1280 TPI
Recording density	19,058 BPI
Recording method	2.7 RLL

Performance

Rotation speed	3600 r/min
Average latency	8.3 ms
Seek time	*Typical*
Single track	4 ms
Average*	16.5 ms
Maximum	43 ms

* One millisecond for SCSI controller overhead.
Typical seek times are derived from observed values under normal operating conditions.

Interface

Type	SCSI
Transfer rate	Supports at one to one interleave
	1.50 Mbytes/sec Asynchronous; 3.0 Mbytes/sec Synchronous

Reliability and Maintainability

Error rate	Unrecoverable error rate less than 1 error in 10^{14} bits transferred using automatic retry, early and late data strobe and track offset.
MTBF	30,000 hours
MTTR	0.5 hours
Preventive maintenance	None
Service life	5 years or 30,000 hours

Power Requirements

	Typical	Max. Operating	Max. Start-Up
DC +12V (+5%) amps	1.5	2.4	4.5
DC +5V (+5%) amps	1.1	1.3	1.4
Power Dissipation	Less than 30 watts		

Environmental

Temperature	
Operating	10 to 50°C (50 to 122°F)
Non-operating*	−40 to 65°C (−40 to 149°F)
Relative Humidity	
Operating	8 to 90%
Non-operating*	8 to 90%
Altitude	
Operating	−305 to 3,048m (−1,000 to 10,000 ft)
Non-operating	−305 to 12,210m (−1,000 to 40,000 ft)

* (Includes storage and transit)

Physical

Height	82.55mm (3.25 in)
Width	147mm (5.75 in)
Depth	203mm (8.0 in)
Weight	3.3 kg (7.2 lb)

Distributed by:

Specifications subject to change without notice.

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

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