

3 1/2-INCH RUGGED REMOVABLE DISK DRIVES
0661-467R
0663-L12R,E15R

OEM OFFERINGS FROM IBM

The OEM versions of IBM* 3 1/2-inch rugged removable disk drives with the Enhanced Small Computer System Interface (SCSI-2), feature compact size, superior data integrity, and exceptional performance. These hermetically sealed 3 1/2-inch Winchester drives bring a new level of ruggedization, intelligence and storage capacity to a popular interface. They give industrial and rugged system integrators and product manufacturers leverage in leading-edge applications.

The drives are hermetically sealed in a stainless steel enclosure to survive under severe environmental conditions. The rugged disks may be used at temperatures between -55 degrees C and + 71 degrees C, to unlimited altitudes, in environments containing airborne sand and dust, and in salt-fog atmosphere. A high level of circuit integration and skillful enclosure design ensure high reliability.

In addition to meeting MIL-STD-810 functional shock and crash safety, the disks are designed to exceed bench handling requirements for greater safety when removed. They can survive 2500 Gs of shock when non-operational. Adding the optional vibration isolation cradle allows them to operate through random vibration profiles ranging from ground mobile (2 Grms) to booster launch (17 Grms).

TECHNOLOGY LEADERSHIP

Over the last 20 years, IBM has developed, adapted and shipped a number of magnetic storage devices for use in severe environments. Typical of these products are the magnetic drum used on the S-3A/B and E-3A AWACS aircraft, the RD-281 Navy Standard Disk, the 8-inch RASS and SUB/RASS disks and rugged 2 1/2-inch disks.

Now IBM is offering these 3 1/2-inch hermetically sealed drives to the OEM market for use in harsh environments.

HIGHLIGHTS

- 400, 1004 and 1206 MB formatted capacities

- SCSI-2 interface
- Self diagnostics
- Dedicated head landing zone
- Dedicated digital servo
- Mounting in any orientation
- 1:1 Interleave
- Up to 256 KB dual-ported data buffer
- Automatic actuator lock
- Cylinder oriented sectoring
- Extended temperature range operation
- Extended humidity range operation
- Extended altitude range operation
- Exceeds MIL-STD-810 bench handling
- Operation with sand and dust
- Operation in salt fog
- Compact, light removable disk unit

PRODUCT DESCRIPTION

3 1/2" Rugged Removable Disk Drives 0661-467R 0663-L12R 0663-E15R

Configuration

| | | | |
|--------------------------------|-------|-------|-------|
| Formatted Capacities (MB) | 400 | 1004 | 1206 |
| Data Buffer Size (KB) | 128 | 256 | 256 |
| Sectors per Track | 48 | 66 | 66 |
| User Cylinders | 1199 | 2051 | 2463 |
| User Tracks | 16786 | 30765 | 36945 |
| Data Heads | 14 | 15 | 15 |
| Disks | 8 | 8 | 8 |
| Rotational Speed (RPM) | 4316 | 4316 | 4316 |
| Recording Density RLL (BPI) | 38427 | 58874 | 58874 |
| Track Density (TPI) | 1469 | 2238 | 2685 |
| Areal Density (Mb/sq in) | 56.4 | 131.8 | 158.1 |
| Media Transfer Rate (MB/s) | 2 | 3 | 3 |
| Interface Transfer Rate (MB/s) | 5 | 5 | 10 |
| Average Latency (ms) | 6.95 | 6.95 | 6.95 |
| Average Access Time (ms) | 11.5 | 11.0 | 9.8 |
| Trk/Trk Read Access (ms) | 1.0 | 0.6 | 0.6 |
| Maximum Access (ms) | 20 | 18.5 | 18.5 |

Reliability

| | | | |
|------------------------|-----------------------|-----------------------|-----------------------|
| MTBF per MIL-HDBK-217E | > 50000 Hours | > 75000 Hours | > 75000 Hours |
| Hard Read Error Rate | < 1x10 to the 12th | < 1x10 to the 13th | < 1x10 to the 14th |
| Seek Error Rate | < 1x10 to the 6th | < 1x10 to the 6th | < 1x10 to the 7th |

Power

| | | | |
|-----------------------------|--------------|--------------|--------------|
| Voltages (plus or minus 5%) | +5 and +12 V | +5 and +12 V | +5 and +12 V |
| Heat Dissipation (W) | 12.8 | 12.5 | 12.1 |

All Models

Environment

| | |
|-----------------------------------|---|
| Operating Ambient Temperature | -20 to +71 degrees C |
| (with heater) | -55 to +71 degrees C |
| Non-Operating Ambient Temperature | -55 to +85 degrees C |
| Seal Leak Rate | < 1 x 10 to the 6th cc/sec |
| Humidity | 0% to 100% |
| Altitude (with cooling) | Unlimited |
| Operating Shock | 20 G, 11 ms |
| Non-Operating Shock | 2500 G |
| Operating Random Vibration | Ground Mobile, 2 Grms |
| (when isolated) | Fighter aircraft, 14 Grms Helicopter, 5 Grms Booster Launch, 17 Grms (response curves available) |
| Static Inclination | No Restriction |
| Salt Fog | 5% concentration for 48 hours |
| Sand and Dust | Exposure to Sand/Dust Particles |

Physical Size

| | |
|--------|---------|
| Length | 2.3 in |
| Height | 4.8 in |
| Width | 7.7 in |
| Weight | 3.95 lb |

Diskfile specifications subject to change without notice.

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