



High-Capacity Half-Inch Tape Cartridge Care and Handling

June 1999

Includes Imation™ 3590, 9840 and DLT Cartridge Families

This bulletin describes the care and handling recommendations for Imation™ half-inch, high-capacity tape cartridges.

Every organization today faces the common challenge of secure data management. As the amount of data generated and stored during daily operations increases exponentially, successful data management emerges as the key to continued growth. It is for this reason that protecting valuable data is of the highest priority.

Today, the compressed capacity of a single cartridge can approach

100GB, which is over 160 times the compressed capacity of a 3480 cartridge. With today's growing capacity and performance demands, data center managers must emphasize the care and handling of media. Following a few basic recommendations can help prevent the loss of valuable data, time and money.

The basic differences between high-capacity cartridges, including single hub vs. dual hub and ultrasonically welded vs. assembled with screws, are described below.

Handling of Cartridge

All cartridges require the same basic care and handling. High-capacity cartridges are more susceptible to damage due to the linear density, increased track density and subsequent positioning of the data and servo tracks closer to the tape edges. Data can be affected by environmental factors such as debris, high temperature, humidity, drastic temperature or humidity changes, and magnetic field sources, as well as improper handling of the cartridge.

Never touch the tape surface. In order to maintain the high recording density, the tape flies at an average of less than 4 millionths of an inch above the head in the drive. Residue from a human fingerprint, typically 150 times thicker than the flying height, can result in loss of signal due to greater tape-to-head separation.

In normal operation, there should be no need to remove the leader block or open the door by hand. The drive will automatically access the tape when the cartridge is inserted into the drive.

Transportation of Cartridge

Transport cartridges in a container designed to absorb the shock of a drop and protect from extreme environments.

Storage

Cartridges should always be acclimated to the operating environment prior to mounting the cartridge on the drive. Imation recommends a minimum of 24 hours of acclimation time to make sure the cartridge is at the same humidity and temperature as the drive. In order to maintain a well-

Single Hub vs. Dual Hub

	Single Hub (3590, DLT)	Dual Hub (9840)
Tape Path	Tape is removed from cartridge, tape path is primarily in drive	Tape is totally enclosed in cartridge
Access to media	Tape leader, spring-loaded door	Spring-loaded door
Drop Strength Specification	Suitable for use after drop from 1 meter or less (3590)	Suitable for use after drop from 1 meter or less
Recommendation	After drop of greater than 1 meter, copy data to new cartridge and retire dropped cartridge	After drop of greater than 1 meter, copy data to new cartridge and retire dropped cartridge
Major Cartridge Components	Shell, media, tape leader and hub components	Shell, media, door, hub components, 2 tape guides, 2 head-wrap pins, plus additional tape path components

Ultrasonically Welded vs. Assembled With Screws

	Ultrasonically Welded (3590)	Assembled With Screws (DLT, 9840)
Drop Strength Performance	Weld is very strong, but if weld breaks there is a potential for internal debris, and weld will continue to break further. Internal components, including the tape pack, might be affected.	The screws precisely and firmly control shell alignment and the force holding the cartridge together. Internal components, including the tape pack, might be affected.

defined tape pack on each hub, abrupt temperature changes are not recommended.

Bulk Erasure

Imation™ 3590 and 9840 Half-Inch Tape Cartridges utilize factory pre-recorded servo tracks, therefore these cartridges must not be bulk erased. DLT1 – DLTIV cartridges are not servo written and may be bulk erased.

Dropped Cartridges

If a half-inch tape cartridge is dropped, the cartridge should be inspected for damage. Even though there may be no visible physical damage, the cartridge life may be shortened. Tape-edge damage or misalignment of internal components, such as hub(s) and tape pack(s), may occur. As with all high-capacity cartridges, it is recommended that the data on a dropped cartridge be copied to another cartridge and the dropped cartridge retired. With large amounts of compressed data per cartridge, the importance of proper handling of cartridges cannot be overstated.

Life

Typical archive life is 15 to 30 years. The actual life of a cartridge is dependent on the care and handling and number of times files are accessed. Customers are encouraged to monitor the cartridge performance to determine when the cartridge should be retired. Many drives support tape device status monitoring and messaging software to help manage cartridge life issues. See your drive manufacturer service engineer for more information on your specific system.

Environment

To maximize tape life, tape cartridges should be kept in an atmosphere free of contaminating dust particles, high humidity and corrosive gases.

The following temperature and humidity conditions should be maintained:

Operating Environment

Condition
Before Use 24 hours
Temperature 60 to 90°F
(15.6 to 32.2°C)

Relative Humidity
(RH) 20 to 80%
non-condensing

Maximum Wet Bulb
Temperature 78°F (26°C)

Transportation Environment

Temperature -10 to 120°F
(-23 to 49°C)

Relative Humidity
(RH) 5 to 80%
non-condensing

Maximum Wet Bulb
Temperature 78°F (26°C)

Optimal Long-Term Archival Storage Environments (more than four weeks)

Temperature 59 to 77°F
(15 to 25°C)

Relative Humidity
(RH) 30 to 40% RH

Maximum Wet Bulb
Temperature 78°F (26°C)
Maximum Gradient . . . 18°F/hr(10°C/hr)
10% Rh/hr

Recommendations

1. The optimal operational conditions are nominally 68°F (20°C) and 50% RH.
2. In short-term storage (4 weeks or less) the cartridge should be stored within 40 to 90°F (-5 to 32°C), 5 to 80% non-condensing humidity.

Reference Documents

DLT ANSI, 3590 ANSI, 9840 Imation Customer Specification



Imation Enterprises Corp.
1 Imation Place
Oakdale, MN 55128-3414
888 466 3456 phone
800 537 4675 fax
<http://www.imation.com>
info@imation.com

Imation Canada Inc.
P.O. Box/C.P. 5440
London, Ontario N6A 5Z6
Canada
888 IMN 3456 phone/tél
888 864 2260 fax/télé



40% pre-consumer waste paper
10% post-consumer waste paper
Imation and the Imation logo are trademarks of Imation.
Produced in USA with Imation storage media, films, proofing systems and offset plates.
© Imation 1999 52-000-5332-3