

HARD DISK DRIVE HANDLING MANUAL

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Revision history

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01	1996-07-19		

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Chapter 1 Introduction

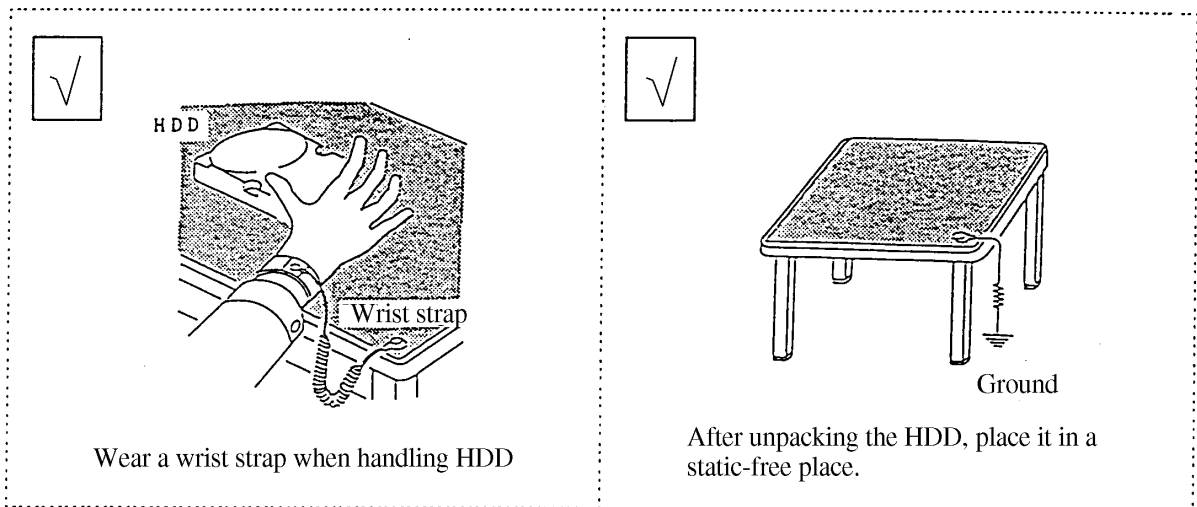
Hard disk drives (HDDs) can be critically damaged by static electricity, shock, and other factors, often resulting in failure or the loss of valuable data. This manual provides instructions regarding the proper handling of HDDs to ensure that they are used in the appropriate environment and that their reliability is maintained.

Chapter 2 Basic Handling Instructions

1. General Instructions

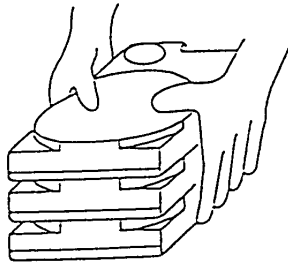
(1) Static

Take appropriate antistatic measures when handling the HDD, especially after it has been taken out of the shield bag. After use, be sure to put the HDD back in the shield bag for storage.

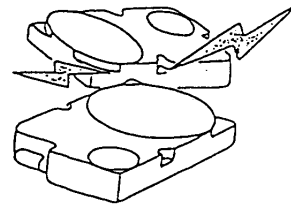


(2) Shock and vibration

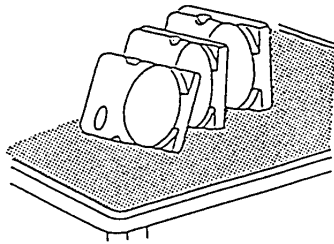
Exposing the HDD to shock or vibration can cause the HDD disk or head to be damaged, leading to a failure of the disk drive. Failures caused by shock and vibration account for one third of all HDD troubles.



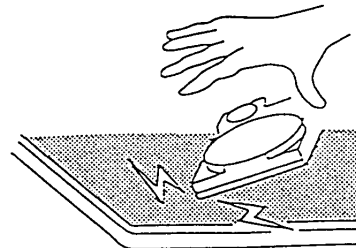
Do not carry two or more HDDs with one stacked on top of another.



Do not let HDDs bump against one another.



Do not leave the HDD in a vertical position without putting it in a container.



Do not drop HDD.

2. Handling of the Package

Check the delivered package for any possible damage incurred during transport.

<div data-bbox="268 479 339 562" data-label="Image"> </div> <div data-bbox="379 562 715 808" data-label="Image"> </div> <div data-bbox="360 848 710 913" data-label="Text"> <p>Use a packaging box exclusively prepared for the HDDs.</p> </div>	<div data-bbox="842 479 914 562" data-label="Image"> </div> <div data-bbox="963 562 1230 815" data-label="Image"> </div> <div data-bbox="954 853 1321 889" data-label="Text"> <p>Do not step on the packaging box.</p> </div>									
<div data-bbox="268 958 339 1041" data-label="Image"> </div> <div data-bbox="400 1048 692 1283" data-label="Image"> </div> <div data-bbox="387 1332 724 1368" data-label="Text"> <p>Do not drop the packaging box.</p> </div>	<div data-bbox="842 958 914 1041" data-label="Image"> </div> <div data-bbox="954 1016 1230 1319" data-label="Image"> </div> <div data-bbox="858 1319 1410 1413" data-label="Text"> <p>Take care when stacking packages. The number of packages that can be stacked is limited as follows: (except when they are palletized)</p> </div> <div data-bbox="847 1422 1404 1554" data-label="Table"> <table border="1"> <thead> <tr> <th></th> <th>3.5"</th> <th>2.5"</th> </tr> </thead> <tbody> <tr> <td>When individually packaged</td> <td>4 packages</td> <td>4 packages</td> </tr> <tr> <td>When two or more HDDs are packaged together</td> <td>4 packages</td> <td>2 packages</td> </tr> </tbody> </table> </div>		3.5"	2.5"	When individually packaged	4 packages	4 packages	When two or more HDDs are packaged together	4 packages	2 packages
	3.5"	2.5"								
When individually packaged	4 packages	4 packages								
When two or more HDDs are packaged together	4 packages	2 packages								

3. Acceptance Inspection

(1) Storage

If the HDD is unpacked when its temperature is lower than that of the room temperature, dew condensation can build up in the unit, subsequently damaging the disk drive. Wait until the HDD's temperature is as warm as the room temperature, before unpacking or testing the HDD.

External or storage temperature	Warm-up time
0 °C	Leave the package in the operating environment for 4 hours.
-20 °C	Leave the package in the operating environment for 6 hours.

Do not leave the HDD in environments with extremely high or low temperatures and/or those with in an excessive humidity.

As part of the acceptance inspection, leave the package in the operating environment until the HDD becomes sufficiently warm.

(2) Handling after unpacking

When placing the HDD temporarily in a case after unpacking, put an antistatic and shock absorbing mat at the bottom of, and on all four inner sides of the case.

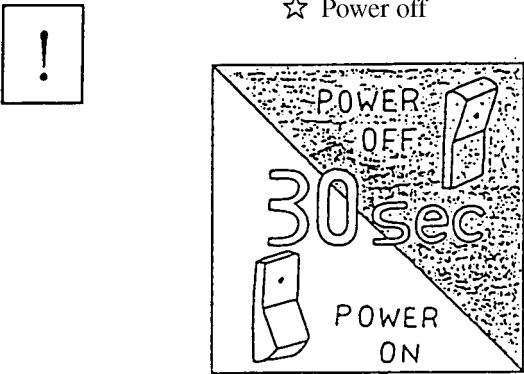
When carrying the HDD contained in a case, make sure that the case is not exposed to any shock or vibration.

Putting the HDD on top of the shield bag will not protect it from the adverse effects of static electricity discharge. On the contrary, this can damage the HDD.

Put a shock absorbing mat and antistatic mat on the desk where the HDD is to be handled (the antistatic mat should be put on top of the shock absorbing mat.)

(3) Powering off

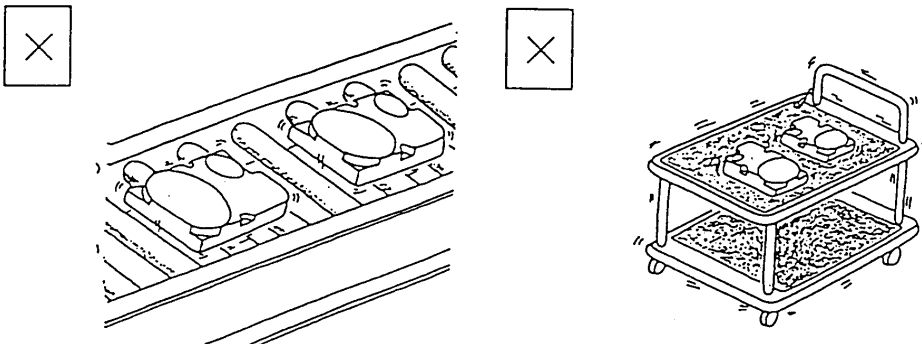
☆ Power off



The disk continues rotating under its own inertia for about 30 seconds after the test is completed and the power is turned off. Wait until the disk comes to a complete stop before disconnecting the cable or moving the HDD.

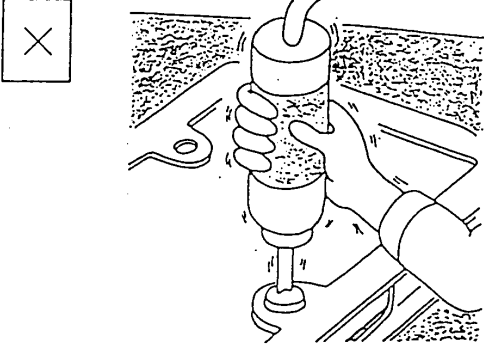
4. Assembly and Testing

(1) Moving the HDD



When carrying HDDs on a cart or belt conveyor, take appropriate measures to protect them from shock and vibration.

(2) Mounting and tools



- ☆ Use a low-impact screwdriver.
- ☆ Follow tightening torque requirements.

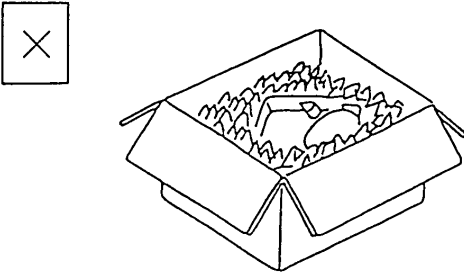
○ 2.5" HDD	M3 screw ...	Max 3Kg-cm
○ 3.5" HDD	6-32UNC ...	Max 6Kg-cm

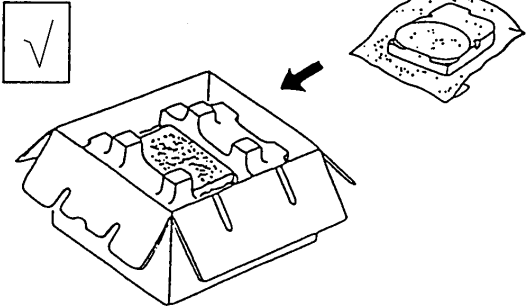
- ☆ Recommended plane level for mounting: 0.2 mm or less
- ☆ Spacing between system cabinets: 1.2 mm or more

5. Packaging for Returning the HDD

When returning a faulty HDD, package it in the same manner as it was delivered to protect the HDD unit from being damaged by shock, static electricity or humidity during transport. When no appropriate packaging box is available on the site, contact your supplier.

Note that damaging the HDD during transport may render it impossible to repair.





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Reference

1. Impact-Related Data (Example of 3.5" M1614TAU)

Standard	Nonoperating: 75G
----------	-------------------

Dropping height	0.5 cm	1.0 cm	1.5 cm	2.0 cm
Impact test result (*1)	74 G	123 G	155 G	162 G

*1 The HDD unit was dropped on a steel desk with the interface connector facing upward and the printed board downward. This was repeated five times, and an average impact value was calculated.

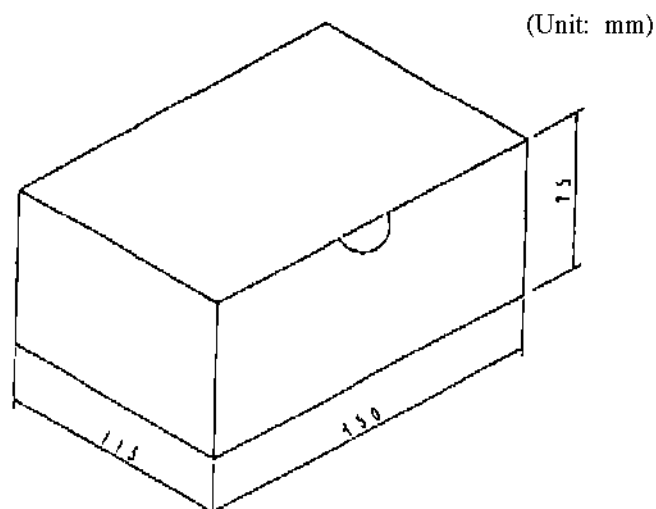
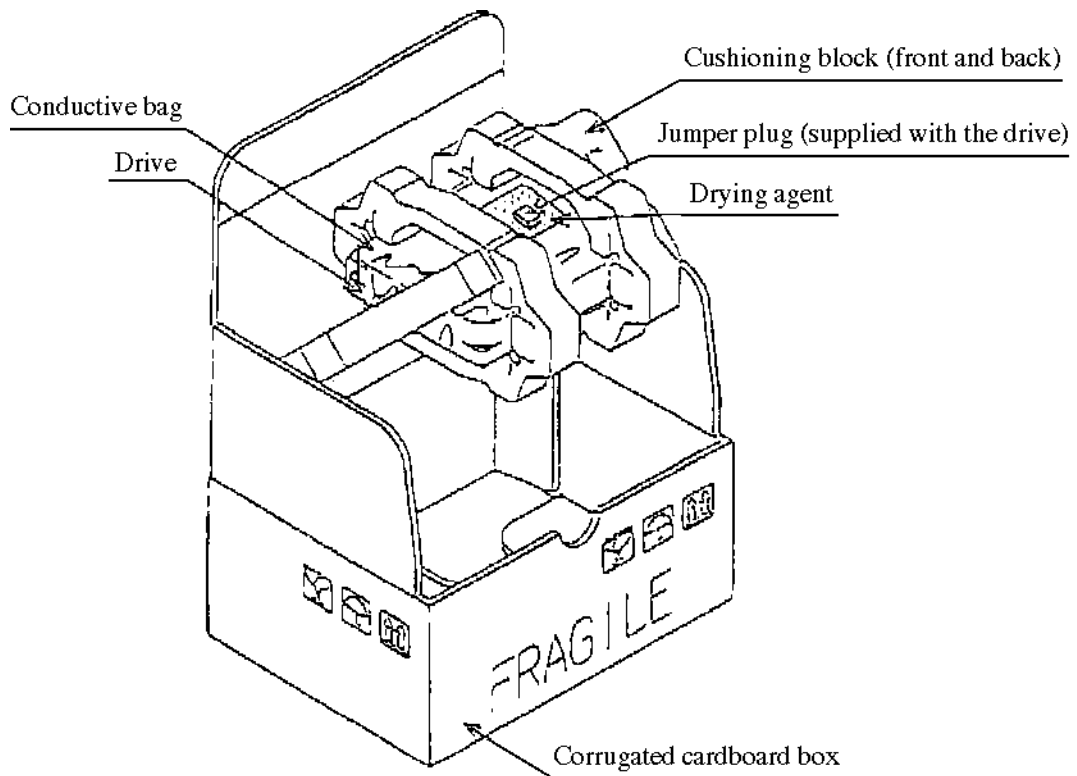
2. Tool Recommendations

Item		Model	
Antistatic measure	Wrist strap	JX-1200-3056-8	Sumitomo 3 M, Ltd
	Antistatic shoes	Elepass Cool	Midori Anzen, Ltd.
	Antistatic mat	SY-150 (Achilles Antistatic Mat)	Achilles Corporation
Impact protection	Low-impact screwdriver	FED-10K-NS	Nippon Technart

NOTE: These specific parts may not be available in your area. If this is the case, please contact your local Fujitsu office for their recommendation.

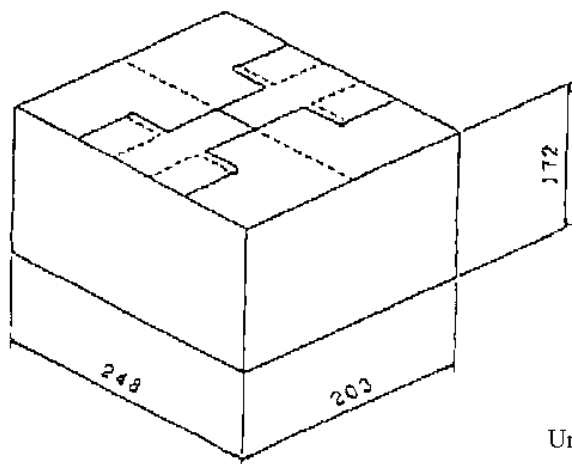
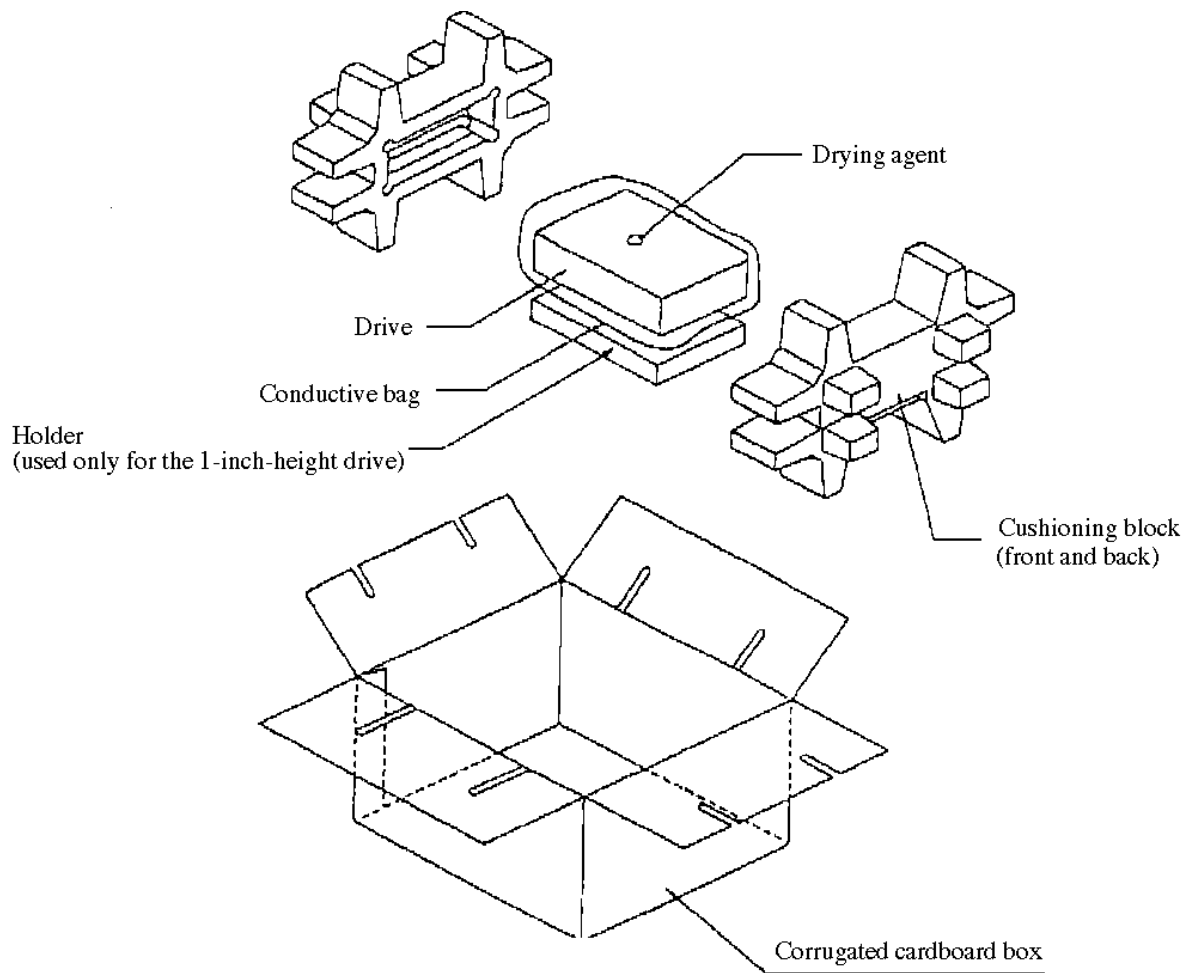
Packing Box for a Single 2.5-Inch Hard Disk Drive

Note: Expanded polyethylene blocks are used as cushioning material in the packing box.



Packing Box for a Single Half-Height or 1-Inch-Height 3.5-Inch Hard Disk Drive

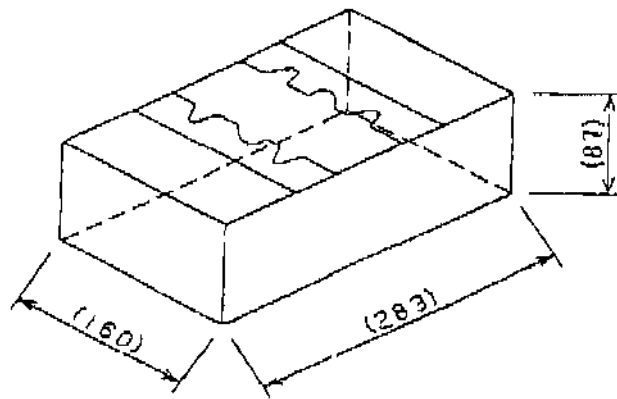
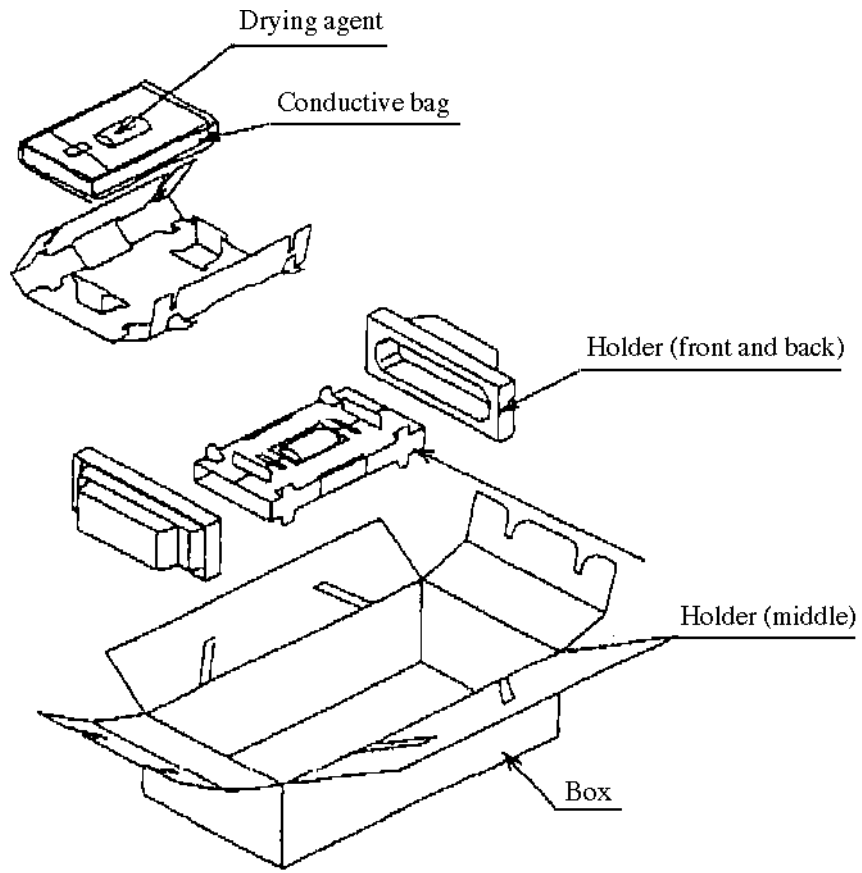
Note: High-modulus expanded polystyrene blocks (industrial waste) are used as cushioning material in the packing box.



Unit: mm

Packing Box for a Single 1-Inch-Height 3.5-Inch Hard Disk Drive

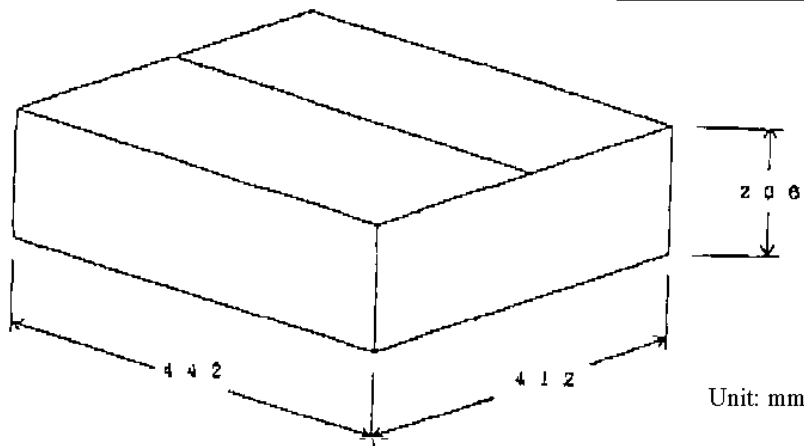
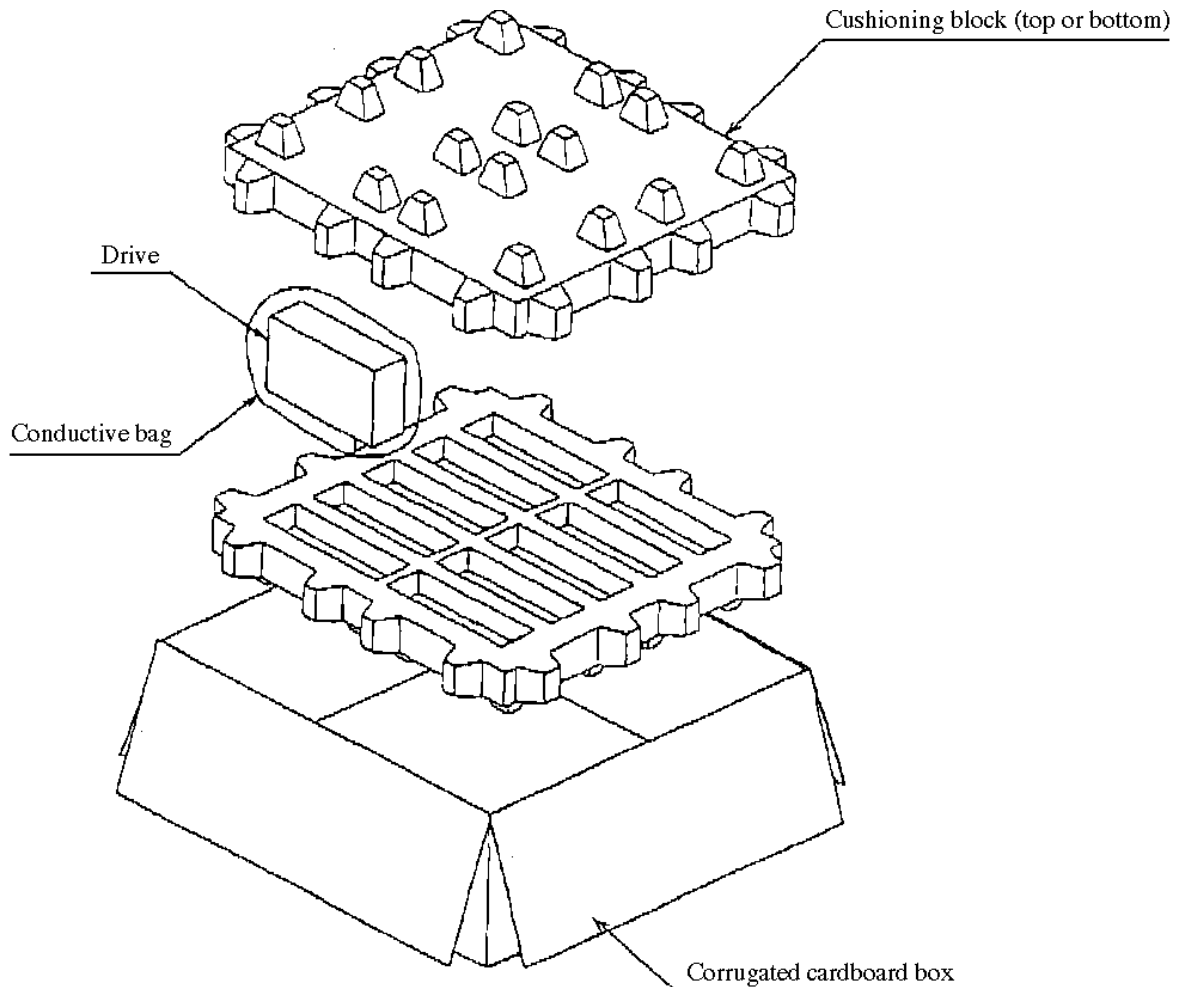
Note: Pulp moldings are used as cushioning material in the packing box.



Unit: mm

Packing Box for Multiple Half-Height 3.5-Inch Hard Disk Drives

Note: High modulus expanded polystyrene blocks (industrial waste) are used as cushioning material in the packing box.



Packing Box for Multiple 1-Inch-Height 3.5-Inch Hard Disk Drives

Note: Corrugated cardboard is used as the material for the cushioning blocks in the packing box.

