

AN IMPROVEMENT FOR HARDDISK  
MOUNTING/DISMOUNTING

BACKGROUND OF THE INVENTION

5       The present invention relates to an improvement  
for harddisk mounting/dismounting structure, which is  
characterized by that. the handle shaft end of harddisk  
box has a couple of setting ports. and the end of  
harddisk box rack has relative check angles and folds  
10 whereby the mounting/dismounting of harddisk in/from  
the rack may have balance action and correct degree of  
angle to avoid unusual wearing between the harddisk and  
the connector on the rack.

15       The birth of computer may be said as the greatest  
work in this century and the circulation of PC  
(personal computer) has fully exerted the function of  
computer: today in industrial, commercial and service  
sectors, the use of computer for handling various kinds  
20 of affairs has become a matured way of operation, and  
even home computer users in general have been engaged  
in communication or shopping through computer networks.  
It has been a global trend.

25       In a computer, both harddisk and floppy disk have  
provided necessary data for computer operation. and  
especially the harddisk has the capacity of storage and  
ability of computation that floppy disk can not compete  
with it, and therefore it is just like a heart for a  
30 computer. At present, PC harddisk drive in the computer

may include fixed harddisk mounted in the host unit and extractable harddisk that can be extracted from the host unit at random. The latter one gives the convenience of carrying and the security for the  
5 harddisk stored with confidential data or huge database to be needed for on-line anytime.

An extractable harddisk in general includes two devices: harddisk box 10 and rack 11. wherein the rack  
10 11 is fixed on the structure of host unit 12 and both are joined together by means the connector 13 at the end of harddisk box and the rack connector 14 (FIG. 1): as extractable harddisk is available for random  
15 extraction and mounting so the chance of harddisk box access to the rack is greatly increased. and such actions may cause wearing to the connectors on the harddisk box and the rack: in fact. however the rate of natural wearing for the connectors due to extraction or  
20 mounting is very low, on the contrary, inbalance wearing or accelerating wearing rate is often caused by man-made improper operation, and moreover it might cause deformation to the terminal of connector.

Unusual wearing of connector caused by man-made  
25 error is mostly attributed to improper force applied during extraction and mounting: generally speaking. the amount of force applied and degree of extraction angle for extracting or mounting harddisk from/in the rack is varied subject to the different users: however. the  
30 connector can not be adjusted with the degree of

connection angle or the amount of connection force to fit the different users. that's why unusual wearing of connector appears. The unusual wearing may become more serious when a computer is jointly used by different  
5 users. The connector of excessive or unusual wearing will cause the harddisk at unreliable state of use, and therefore incorrect data transmission and processing of harddisk may result in a great risk of data loss.

10       The cause for unusual wearing of the connector of extractable harddisk lies in inbalance connection or disconnection due to man-made uneven force applied during extraction and mounting. Therefore, the resolution lies in providing an appropriate extraction  
15 device which may exclude the factor of man-made improper operation while establish a uniformed action of extraction/mounting in order to exclude man-made factor to result in unusual wearing of connector and further to prolong life span of the product and  
20 maintain stable effect; to meet the above-said purpose. the device is made with a couple of setting ports at the end of handle shaft of harddisk box and relative check angles and folds at the end of the entrance of the rack; according to such structure, when the  
25 harddisk box is mounted in the rack. the handle of harddisk box must be turned to horizontal manner to allow the harddisk box to be pushed into the rack smoothly. and the handle will be turned downward to vertical manner so that the harddisk will be  
30 automatically loaded in the rack in balance: when the

handle is turned to horizontal manner, the connectors of harddisk box and the rack can be automatically disconnected in balance and the harddisk box can be extracted in safety manner; therefore, the harddisk box  
5 may be mounted and extracted smoothly to avoid damage to the harddisk due to improper mounting and extraction of the harddisk box.

These and other objects and advantages of the  
10 present invention will become apparent to those skilled in art after considering the following detailed specification together with the accompanying drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

15 FIG. 1 is an elevational view of the structure of the conventional extractable harddisk.

FIG. 2 is an elevational view of the structure of present invention.

20 FIGs. 3 thru 6 are match-up action diagrams of the handle end. check angles and folds according to the present invention.

FIGs. 7 thru 9 are action relationship diagrams of the handle and connector according to the present  
25 invention.

#### DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

Referring to FIG. 2. the handle 2 in the front end of the harddisk box 10 is wider than the main body of  
30 the harddisk box 10, and its shaft exposed to the harddisk box 10 forms an arc end 20. and said arc end

is cut with an arc port 21 and linear port 22 longitudinally along the handle 24, and the portion between the two ports 21, 22 forms a retaining portion 23: the opening end of harddisk box rack 11 forms an L-shape fold 110 being little shorter than the longitudinal length of linear port 22: the fold 110 is screwed with a T-shape block 3 to form a retaining port 4 between the T-shape block 3 and the fold 110: the outermost top end of T-shape block 3 forms an inverted L-shape check angle 30 toward the internal plate of rack.

Referring to FIGs. 3 thru 9. when the harddisk box 10 with the handle of the present invention is mounted in the rack 11, the handle 2 has to be turned to horizontal manner so as to enter the rack 11 from the check angle 30 of T-shape block 3: providing the handle 2 is vertical or at elevational angle, the linear port 22 will be stopped by the check angle 30 of T-shape block so that the harddisk box can not enter, and such action is to prevent uneven force applied by the user who has not treated the handle as the means of mounting the harddisk box: when the harddisk box 101 has smoothly entered the rack 11, the arc end 20 of the handle will be stopped by the fold 110. and the connector 100 of the harddisk box has not joined with the connector 111 of the rack. and the design of the fold 110 to stop the arc end 20 of the handle for holding the harddisk box 10 from entry aims to reduce the force of pushing the harddisk box to enter and

therefore to prevent excessive force from causing damage or serious wearing to the connectors: when the harddisk box is stopped from pushing in, the handle 2 is turned downward to vertical manner and the arc end 20 of the handle will gradually break away from the stop of the fold 110 to make the harddisk box 10 pushed forward and the two connectors 100, 111 will gradually contact each other. and finally the retaining portion 23 of the handle will move upward setting in the retaining port 4 to let the two connectors 100, 111 automatically join together in balance so that the harddisk box 10 and the rack 11 can fully join together: automatic connection of the harddisk box and the rack by means of turning the handle downward aims to exclude non-uniformed man-made force for the connection of two connectors to avoid possible damage and improper wearing to the connectors.

Referring to FIGs. 3 thru 9, to turn the handle to horizontal or vertical manner for mounting the harddisk box into the rack at safe and smooth manner, and the retaining portion 23 of handle setting in the port 4, the fold 110 setting with the linear port 22 will make the harddisk box 10 be locked in the rack 11; correct way of extracting the harddisk box 10 is to turn the handle 2 upward into horizontal manner so that the arc end 20 will be turned downward to thrust the fold 110, and the thrust force against the fold will produce a counteractive force to push the harddisk box 10 moving out of the rack 11 at small distance  $d$  in balance, and

the distance d may allow the connectors 100, 111 of the  
harddisk box and the rack to contact each other while  
the harddisk box 10 and the rack 11 are not  
communicated each other so that the harddisk box can be  
5 extracted easily; the design of turning the handle to  
make the harddisk box retreating at small distance  
automatically may avoid improper wearing to the  
connectors as a result of uneven force applied during  
the extraction of the harddisk box.

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To conclude the above statement, the present  
invention makes use of the arc end and linear port of  
the handle shaft, and the fold and T-shape block on the  
opening end of the rack for smooth mounting or  
15 extraction of the harddisk box in/from the rack by  
means of turning the handle to horizontal or vertical  
manner, and for connection of the connectors of the  
harddisk box and the rack at normal angle to avoid  
inbalance wearing to the connectors to result in  
20 unsteady condition of the harddisk. While the invention  
has been described with reference to details of the  
illustrated embodiments, such details are not intended  
to limit the invention as defined in the appended  
claims.

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CLAIMS:

1. An improvement for harddisk mounting/  
dismounting structure. including an arc end made on the  
handle shaft. said arc end having an arc port and  
5 linear port longitudinally along the handle; said two  
ports horizontally located at each side of the handle  
to form relative manner and a retaining port formed  
between the two ports; the opening end of harddisk rack  
forming a fold. and said fold externally screwed with a  
10 T-shape block and consequently a retaining port formed  
between said fold and T-shape block; the outermost end  
of said T-shape block having an inverted L-shape check  
angle toward the internal side of the rack.
- 15 2. The improvement for harddisk mounting/  
dismounting structure as claimed in claim 1, wherein  
the length of said fold little shorter than the  
longitudinal length of linear port.

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