

### Your #1 Source For Out Of Production, Obsolete, And Hard To Find Hard Drives CLICK ON THE LOGO ABOVE TO CHECK PRICE AND AVAIABILITY OF THIS DRIVE.

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Cylinder Heads	TuneUp Utilities 2009	Registry Cleaners Exposed
3 Year/ unlimited mile warranty No up front core	Repair errors on your hard disk & file system with	Don't Download Any Registry Cleaner U
charge	TuneUp Utilities	This Shocking Review!
www.Cylinder-Heads.com	www.tune-up.com	RegistryCleanerHelp.org
V		

### Native Translation 3.5"/HHCylinders856845Capacity form/unform43/53 MBHeads33Seek time/ track25.0/7.0 msSector/track3635ControllerIDE / ATPrecompensationCache/Buffer20 WD ====22 WD ====22 WD ==== \_\_\_\_+ Seek time/ trackZert, intermediateControllerIDE / ATPrecompensationCache/Buffer32 KB FIFO BUFFERLanding ZoneData transfer rate1.250 MB/S intBytes/Sector5124.000 MB/S extIntermediateIntermediate 4.000 M RLL 2/7 Recording method operating non-operating -----Supply voltage 5/12 V Temperature \*C 5 50 | -10 50 Power: sleep W Humidity % 8 80 | 8 80 standby 10.0 W Altitude km -0.300 3.000 -0.300 3.000 idle W Shock g 5 | 40 seek W Rotation RPM 3600 read/write W Acoustic dBA 48 spin-up W ECC Bit WITH 11BIT BURST COR MTBF h 30000 Warranty Month Lift/Lock/Park YES Certificates CSA, IEC380, UL478, VDE LAYOUT TOSHIBA MK234FC/MK232FC PRODUCT SPECIFICATION 71Y101658 +--------++-1 | PJ10 +++ PJ12-+ +----+ XX I +-+ +----+ XX N XX T XX E PJ11 XX R XX F XX A XX C XX E XX

|X1

	XX	Power
	XX	
+	F	

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Jumper Setting

There are 2 set of jumpers on the PCB, PJ10(12-pin) and PJ12(4-pin).

PJ10 is used for customer options and manufacture test. PJ12 is TBD. Pin 1 to 8 of PJ10 is used for customer option and pin 9 to pin 12 is used for manufacture test. User should not set jumpers in 9-10 and 11-12.

# PJ10 Definition

-	+		÷	
1	0	0	2	LED
3	0	0	4	SLV_PRS
5	0	0	6	MST/SLV
7	0	0	8	DRV_PRS
9	0	0	10	TEST1
11	0	0	12	TEST2
-	+		÷	

#### PJ10 1-2 LED

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A jumper should be set across pins 1 and 2 to connect the active Signal to the -HOST Slave/Active signal (PJ11-39) on the drive's interface connector. This allows the use of an external LED. An external current limiting resistor is required. See also PJ10-3/4 below. On a 2-drive system it is possible for each drive to be connected to an LED.

# PJ10 3-4 Slave Present

A jumper should be set across pins 3 and 4 when using a system which expects a slave drive to provide a SLAVE PRESENT signal. The jumper connects the -HOST Slave/Active signal (PJ11-39) on the drive's interface connector to system ground.

Note: This jumper pair (3-4) and jumpers 1-2 are mutally exclusive. Both pairs should not be shorted simultaneously.

## PJ10 5-6 Master/Slave

If a jumper is set across pins 5 and 6, the drive is configured as a Master drive, otherwise is configured as a Slave drive.

#### PJ10 7-8 Slave Drive Present

Setting a jumper across pins 7 and 8 indicates that a Slave drive is present. In a 2-drive system, this must be set on the Master drive.

http://www.4drives.com/DRIVESPECS/TOSHIBA/4666.txt

PJ10 9-12 Test -----These pins are factory set and should not be changed.

Jumper settings
Jumper 1 drive 2 drive
LED O (a) (a)
SLV PRS X X (b)
MST/SLV O O X
DRV_PRS X O X
(a) In a two drive system, it is possible two drive LED with both drives
(b) If the disk drive is connected to some drive that requires that the signal, -SLAVE DRIVE PRESENT be supplied from the slave drive via th interface signal -HOST SLV/ACT, then this jumper must be installed. If this jumper is installed, the LED jumper must not be installed because the two jumpers are mutually exclusive.
Adapter Board Option
An adapter board is prepared for connecting TASK FILE INTERFACE driv (40 pin) to AT card slot.
PART NUMBER HDF3001ZZ01 CIRCUIT DIAGRAM 34M901215
Adapter Board Jumper Option
3 jumpers labeled PJ1 through PJ3 are provided on the adapter board. The functions of the jumpers are described below.
PJ1 Install jumper to set the board to use SECONDARY address.
PJ2 Short pin 1-2 for the systems that do not read the STATUS register to reset IRQ14. Normally short pin 2-3.
PJ3 Always open. Option for grounding pin 34 of the drive interface. This is needed if the drive needs this pin to be grounded when MASTER/SLAVE mode is used.
******
I N S T A L L *********************************
Notes on installation
Drive mounting
horizontally vertically
++ ++ +++ +++   x       ++ +     x++x



#### Mounting Instructions

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When mounting the drive, the cabinet frame should be spaced a minimum of 0.1 inch (2.5 mm) from the outer surface of the HDA and PCB to allow vibration to be absorbed by the drive vibration mounting.

The drive may be mounted using the 4 tapped holes located on the side mounting frames or the 4 holes on the bottom frame of the drive. Screws should not penetrate more than 0.1 inches (2.5 mm) from the outer surface of drive frame in order to ensure adequate clearance between screw tips and the PCB.

The drive frame is electrically isolated from the HDA (signal ground).

Mounting screws M3X0.5 or 6-32UNC, four in bottom, two in each side.

#### Cooling

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Cabinet packaging designs must provide ample air circulation around the drive to ensure environmental limits are not exceeded.

The temperature at the points indicated below should be less than the values shown.

Outside surfaces of HDA	140*F (60	)*C)
Side frame	149*F (6	5*C)
(Heat sink side)		
IC's on the PCB	149*F (6	5*C)

Power Input Connector

Drive side connector	:	DUPONT P/N 68946-001 or equivalent			
No. of pins	:	4 pins			
Polarity	:	Fixed by non-reversible shroud			
Cable-side connector	:	AMP P/N 1-480424-0 and pin P/N 170147-2			
		(chain type), or 170148-2 (loose type)			
Power cable	:	Must meet the maximum current consumption of			
		the drive and the voltage at the connector			
		end.			

Frame Ground Connector

The HDA module (head/disk assembly container) and DC ground (signal 0V) are short-circuited at the time of factory shipment. However, the drive frame (the area where the tapped mounting tap holes are provided) is isolated from DC ground.

DC ground connector Drive side : Faston terminal AMP P/N 61761-2 Mating connector : Faston terminal AMP P/N 62187-1

#### DC Power and pin connector assignments

+-					-+	pin	1	+12 VDC
	4	3	2	1		pin	2	+12 Volts Return
+-					+	pin	3	+ 5 Volts Return
						pin	4	+ 5 VDC

General Description

The MK230FC comprises a series of intelligent disk drives, hereinafter referred to as the MK230FC or simply as the drive.

The drive features an IBM PC-AT(R) embedded controller that requires a simplified adapter board for interfacing to an AT or AT compatible bus. Size and mounting details are identical to industry standard 3.5" mini floppy disk drives. All drives have high performance and feature fast access times, a formatted recording capacity of up to 106 Megabytes and very high reliability. The drives employ Winchester technology and a closed loop servo control system.

Installation Note for MK234FC

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General Information The new MK234FC units delivered in November 89 has a translation mode implemented. This could causes some problems by installation. Following is a description how to install this drive by working with the translation mode.

1. Setup

In a normal IBM BIOS table the drive parameter of the TOSHIBA drive is not implemented. (845 cylinder, 7 heads, 35 sectors, 101 MB). Because of this purpose, user has to use a drive type by using the setup program, which has more capacity as the TOSHIBA drive.

EXAMPLE Type 9: 900 cylinder, 15 heads, 17 sectors, 112 MB

 Low Format Low format run is not necessary, because in general the TOSHIBA drive is pre formatted with an interleave of 1:1.

3. Fdisk

By using DOS 3.3 the drive has to be setup in partitions of maximum size of 32MB. By using a drive type with higher capacity as the TOSHIBA be careful not to overtake the maximum capacity of the TOSHIBA drive (101 MB).

EXAMPLE By using drive type 9, fdisk program shows following partition size:

C : cylinder 0 to 256 (32 MB) D : cylinder 257 to 513 (32 MB) E : cylinder 514 to 770 (32 MB) F : cylinder 771 to 899 (16 MB)

By using the complete size, which is shown by fdisk program, the TOSHIBA maximum capacity would be overtaken. So the last partition must be made smaller. This can be also done by the fdisk program. By this example the maximum size for partition F has to be 5 MB (40 cylinder):

F : cylinder 771 to 801 (5 MB)

Key Features ------Dual-ported 32K byte FIFO data buffer

56 bit computer generated ECC polynomial with 11 bit burst error correction capability

Data transfer rate up to 4.0 megabytes/second using programmed I/O

Automatic retry and corrections for read disk errors

Reassignment of field-found defective sectors

Dedicated Landing zone

Fail-safe power down return to landing zone with automatic carriage lock

Proven HDA technology with dedicated servo

Emulation of IBM PC AT Task File and all AT commands plus additional commands

24 mA AT bus drive capability

Transparent defect mapping

Powerful self-diagnostic capability

#### Seek Time

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		MK230FC
Track-to-Track	msec. typ.	7
Average 	msec. typ. msec. max.	25   50
+  Latency +	msec. avg.	8.33

Error Reporting

At the start of the execution of the command, the command register is checked for condition which would lead to an aborted command. Then the operation is attempted. Any subsequent error terminates the command at the point that it is discovered. The errors that are valid for each command are summarized below.

	+	++				
COMMAND	ERROR REGISTER	STATUS REGISTER				
	BBK UNC IDNF ABRT TK00  DAM	1  DRDY DWF DSC CORR ERR				

Recalibrate				V	V		V	V	V		V	
Read Sector	V	V	V	V		V	V	V	V	V	V	ĺ
Read Sec. Long	V		V	V		V	V	V	V		V	I
Write Sector	V		V	V	ĺ		V	V	V		V	ĺ
Write Sec. Long	V		V	V	ĺ		V	V	V		V	ĺ
Read Verify Sec.	V	V	V	V		V	V	V	V	V	V	ĺ
Format Track			V	V			V	V	V		V	
Seek			V	V			V	V	V		V	I
Exec. Drive Diag.				V	ĺ						V	ĺ
Set. Parameters				V						V	V	
Read Buffer				V							V	
Write Buffer				V							V	
Identify Drive				V			V	V	V		V	
Power Control				V							V	
Inval.Cmnd. Codes				V							V	
	++	++	+	+	+	+	+	+	+	+	+	+

Key: BBK = Bad block detected = Uncorrectable data error UNC IDNF = Requested ID not found ABRT = Abort command error TK00 = Track zero not found error = Data address mark not found error DAM DRDY = Drive not ready detected = Drive write fault detected DWF DSC = Disk seek complete not detected CORR = Corrected data error ERR = Error bit in the Status Register = Valid errors for each command 77

### Format operation

MK230FC has ability to maintain defects by itself. The drive has own information about the defects on the media and will handle defective sectors by itself. MK230FC is shipped already formatted by the manufacturer assigning defects. So user should not format (Low level format) the drive unless detected new defect (growing defect).

To assign the defective sector to spare location, the user should set 40H for the ID field data of FORMAT TRACK command. Then the drive will alternate sector during format operation. It is not correct to format the track when there is no growing defects. The drive may alternate sector by its own defect information on the media. The previously alternated sector will be alternated again and may fall in to lack of alternate sectors.

## Product Description

The MK230FC consists of an HDA (Head Disk Assembly), a printed circuit board and a steel frame. The HDA is a sealed module and contains a disk spindle assembly, a head actuator assembly and an air filtration system. Reliability is enhanced through the use of Winchester technology. The actuator is a rotary voice coil motor and provides high-speed access.

The disks are driven directly by a DC spindle motor. Air filtration is provided by means of a high performance air filtration system using both breather and circulation filters.

The drive provides a carriage lock mechanism which actuates automatically on power down, thus preventing head/media damage during non-operating or transportation conditions.

The printed circuit board is located externally to the HDA and

contains all the electronic circuitry necessary to operate the drive except the head drivers. The board also holds the power supply and interface signal connectors. Only the head control IC's are located inside the HDA.