M480-30

CHARACTERISTICS

Microprocessor	Intel 486
Clock	25 MHz
Architecture	MICROCHANNEL
Memory	The motherboard supports 8 MB installed on 2 banks. Configurations: **4 MB on system board** (4 1 Mbx9 SIMMs) Expandible to 8 MB through KIT **EXM 26-807** (4 1 Mbx9 SIMMs) Expandible only with the 4 MB memory expansion board **MEM26-804**. This board can be expanded to 8 MB using **KIT EXM 26-807**, to 20 MB using **2 EXM 26-809 KITS** (2 4 Mbx9 SIMM), or to 32 MB by removing the SIMMs installed on the board and installing **4 EXM 26-809 KITS**
Memory access	80 ns
Coprocessor	Weitek WTL 4167
Floppy Disk	1.44 MB 3.5" panasonic J-257 1.44 MB 3.5" Sony MP-F17 1.44 MB Mitsubishi MF355C 1.44 MB 3.5" Y-E Data YD-702B
Hard Disk This Personal Computer can mount either MCA intelligent hard disks (with ESDI interface) or SCSI hard disks	**ESDI interface MCA hard disks** 3.5" 100 MB CONNER CP30109 MCA 3.5" 200 MB CONNER CP3209 MCA 3.5" 60 MB CONNER CP30129 MCA 3.5" 120 MB CONNER CP30129 MCA **SCSI hard disks** 210 MB CONNER CP3200F/CP30200 210 MB SEAGATE 270 MB QUANTUM 340 MB CONNER CP3300 / CP3360 510 MB CONNER CP3500 / CP3540 525 MB CONNER CP30540
Streaming Tape	80,120 MB IRWIN 285
Expansion Slots	5 available: One 16-bit; one 16-bit with video board extension; three 32-bit
Video Adapter	82C452 integrated on motherboard
Floppy Disk Controller	WD57C65 integrated on motherboard
Hard Disk Controller	**MCA version** - Intelligent hard disk drives **SCSI version** - SCSI hard disk controller **GO582-GO610**
Mouse	PS/2- and AT-compatible GRD 25-025
Keyboard	Compact 101/102-key ANK27-101 ANK27-102

MOTHERBOARD

BA880 - P2.1 - Base
Assembly
BA865 - P2.1 - 4 MB
BA900 - P2.1 - 8 MB

BA951 - Base Assembly
BA952 - 4 MB
BA953 - 8 MB

BIOS

Rev. 1.06

POWER SUPPLY

HANTAREX

PS14 220 V - Lev. 04 MI
PS14 115 V - Lev. 04 MI

ALITEC

PS14 H 220 V - Lev. 01
PS12 H 115 V - Lev. 01

CONSOLE

IF 638   Lev. 01
IF 469   Lev. 01

HDU INTERFACE

GO582 - SCSI version

GO610 - SCSI version

Intelligent MCA
interface buffers

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MOTHERBOARD

	LEVEL	D.R.S. CODE	ROM BIOS	INTEGRATED CONTROLLERS AND MODIFICATIONS
BA880	Base Assembly - Code BA880 identifies the printed circuit on which the SIMM modules are mounted according to memory size. The pcb with SIMM modules installed takes the name of the different BAs described below.			
BA865	Nasc.		PPUS U118 PPUT U119 Rev. 1.02	Printed circuit (BA880) with 4 MB For a description of the components see the table below
	Lev. 02		PPJJ U118 PPJK U119 Rev. 1.04	Solves the Parallel Port Test Error problem at POD, supports the new video modes and improves performance of interrupt 15H in CBIOS
	Lev. 03		Rev. 1.05	Allows use of Intel 80486 processor step D0 New BIOS to solve problems of: CBIOS POD, Floppy, INT 10 ABIOS Parallel and serial
	Lev. 04		Rev. 1.05	C&T component F82C452A introduced replacing component F82C452. This also involves replacing the 74F244 at location U32 with the 74FCT244CT
	Lev. 05		Rev. 1.05	
	Lev. 06		Rev. 1.06	New BIOS to solve the problem with the 120 MB hard disk during system configuration
BA900	Nasc.		Rev. 1.05	Printed circuit (BA880) with 8 MB. This board has the same components as BA865
	Lev. 01		Rev. 1.05	C&T component F82C452A introduced replacing component F82C452. This also involves replacing the 74F244 at location U32 with the 74FCT244CT
	Lev. 02			
	Lev. 03		Rev. 1.06	New BIOS to solve the problem with the 120 MB hard disk during system configuration

	LEVEL	D.R.S. CODE	ROM BIOS	INTEGRATED CONTROLLERS AND MODIFICATIONS
BA951	Base Assembly - Code BA951 identifies the printed circuit on which the SIMM modules are mounted accordimng to memory size. The pcb with the SIMM modules installed takes the name of the different BAs described below. This printed circuit replaces BA880.			
BA952	Nasc.	553013 L	Rev. 1.05	Printed circuit (BA951) with 4 MB. This board has the same components as the BA865 - replaces BA865.
	Lev. 01 MI		Rev. 1.05	Component 74F245 at location U50 replaced by component 74LS245 to solve the floppy disk write error problems
	Lev. 02 MI		Rev. 1.05	- Component 16550A at location U47 (NMOS technology) replaced by component 16550C (CMOS technology) - The 10 mF Vcc - GND filter capacitors are replaced by the coresponding ones with T = -20/+80
	Lev. 03		Rev. 1.06	- New BIOS to solve the problems with the 120 MB hard disk during system configuration. - To improve functional margins, a capacitor was installed at location C9413 and a resistor at location R148.
	Lev. 03		Rev. 1.06	New Samsung KMM59100BN-7 SIMMs (3-chip, 1 MBx9, 80 ns SIMMs) in alternative to the Samsung KMM591000C-8 SIMMs (9-chip, 1 MBx9, 80 ns SIMMs) which are no longer available on the market. The board does not change level.

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	LEVEL	D.R.S. CODE	ROM BIOS	INTEGRATED CONTROLLERS AND MODIFICATIONS
BA953	Nasc.	553014 M	Rev. 1.05	Printed circuit (BA951) with 8 MB. This board has the same components as BA 865. Replaces BA900
	Lev. 01 MI		Rev. 1.05	Component 74F245 at location U50 replaced by component 74LS245 to solve the floppy disk write error problems
	Lev. 02 MI		Rev. 1.05	- Component 16550A at location U47 (NMOS technology) replaced by component 16550C (CMOS technology) - The 10 mF Vcc - GND filter capacitors are replaced by the coresponding ones with T = -20/+80
	Lev. SINF Suppressed		Rev. 1.05	**This board will no longer be produced.** The different memory expansions, differentianting the BA952 from the BA953, will be implemented at system level so that only the BA952 will continue to exist.
	Lev. 02 SI		Rev. 1.05	New BIOS to solve the problems with the 120 MB hard disk during system configuration
	Lev. 02 SI		Rev. 1.05	New Samsung KMM59100BN-7 SIMMs (3-chip, 1 MBx9, 80 ns SIMMs) in alternative to the Samsung KMM591000C-8 SIMMs (9-chip, 1 MBx9, 80 ns SIMMs) which are no longer available on the market. The board does not change level.

BOARDS

NAME	DESCRIPTION	D.R.S. CODE	CHARACTERISTICS
CPU System board	BA865		P2.1 - 4 MB
CPU System board	BA900		P2.1 - 8 MB
CPU System board	BA952	553013 L	4 MB
CPU System board	BA953	553014 M	8 MB
220 V power supply	PS 14	412909 X	
110 V power supply	PS 14	497314 P	
Console board	IF638	497272 P	
Console board	IF469	977930 V	
Interface board	MI549	497272 V	
SCSI hard disk controller	GO582	553004 U	
SCSI hard disk controller	GO610	557933 P	Replaces GO582

INTEGRATED CONTROLLERS	INTEGRATED CONTROLLERS
Memory Controller 82C322 Supports 256 K-1 M of DRAM Shadow RAM Supports up to 16 MB Wait state programming **DMA controller 82C223** Performs DMA operations 8 independent DMA channels Performs extended mode operations Memory addressing capacity of 16 MB Performs DMA serial operations Provides virtual DMA on channel 0 and channel 4 **8042** Keyboard and mouse controller **82C452** Super V.G.A. video controller **NS16550A** Serial port controller **WD57C65** Floppy disk controller	**Data Buffer Controller 82C325** Bus Conversion and Bus Swapping functions Parity genertion and error checking in the DRAM Contains the MCA architecture POS registers **82C226** Non-Volatile RAM Real Time Clock DMA Controller Interrupt Controller **82C226** Two 8259 interrupt controllers 8254 compatible timer Watchdog timer Real Time Clock compatible with the MC146818 114 byte CMOS RAM Parallel port controller **MCA Controller 82C231** MCA compatibility Memory timing 32-bit - 16-bit bus converter

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USER DISKETTE / SYSTEM TEST / DRIVERS

LEVEL	COMPATIBILITY
User Disk lev. 1.01 User Disk lev. 1.03.1	User Disk used only for 100 systems. Solves the configuration conflict with the OLICOM board
User Disk lev. 1.04	Replaces the previous version in order to correcct the calculation of extended memory when 16 MB are already installed on the system board and an XGA board is installed on the bus.
User Disk lev. 2.0	New User Disk to solve the configuration problems caused by the incorrect management of ADF files when Token Ring and SCSI boards are present.
EVC driver for ACAD10 and ACAD11 D.A.M. driver for OS/2 and PageMaker	
EVD driver ver. 7.1 rev. 2.0	Solves the problems relating to the ACAD mode and 72 real mode driver of the previous EVD versions.

CONSOLE

	LEVEL	D.R.S. CODE	COMPATIBILITY
IF638	Nasc. Lev. 01	497314 P	 Changes to adequately comply with EMI standards.
IF469	Lev. 01 MI	977930 V	Console of the M380-40 Personal Computer

PS14/PS14H POWER SUPPLY UNIT

POWER SUPPLY	LEVEL	DESCRIPTION
PS14 ver. 220 V HANTAREX	Nasc.	
	Lev. 01	Improved ventilation and electric noise immunity.
	Lev. 02	Mylar protection set between inductor L101 and the support for compliance with safety standards.
	Lev. 03	Mylar protection removed. Safety standards respected by using a new type of inductor.
	Lev. 04	Adapted to comply with the new standards for reinforced insulation and reliability improvements. Changes to component TL7705 (IC351).
PS14 ver. 115 V HANTAREX	Nasc. Lev. 01 Lev. 02 Lev. 03 Lev. 04	This version has evolved in exactly the same way as the 220 V version
PS14 H ver. 220 V HANTAREX	Nasc.	New type of power supply unit.
	Lev. 01	A capacitor has been replaced to solve the problems with the IR-MA3 board.
PS14 H ver. 115 V HANTAREX	Nasc. Lev. 01	New type of power supply unit. This version has evolved in exactly the same way as the 220 V version
PS14 H ver. 220 V ALITEC	Nasc.	New supplier.
	Lev. 01	A capacitor has been replaced to solve the problems with the IR-MA3 board.
PS14 H ver. 110 V ALITEC	Nasc. Lev. 01	New supplier. This version has evolved in exactly the same way as the 220 V version.

MCA INTELLIGENT HARD DISK INTERFACE MI 549

LEVEL	NOTES
Lev. Nasc.	Specific for the P750 and M480-30

COMPATIBILITY

BOARD/DEVICE	COMPATIBILITY
SCSI hard disk signals cable	Cable has been modified for easier insertion of the SCSI terminator
Terminator	The GO610 no longer requires the installation of a terminator on the SCSI cable since it already has incorporated terminators.

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SCSI HARD DISK INTERFACE

BOARD	D.R.S. CODE	LEVEL	DESCRIPTION
GO582	553004 U	Nasc. Lev. 01	SCSI hard disk controller New board layout
GO610	557933 P	Nasc.	Replaces GO582 Following are the differences between the two boards: - The termination resistances are incorporated on board GO610 so it does not need the installation of external terminators on the cable as board GO582 does. - A different printed circuit board is used. - New BIOS

GO582 BOARD CONFIGURATION

The GO582 board must be configured with identifier **7** and must have the terminator inserted. The terminator is on the cable.

The first hard disk of the system must be configured with identifier **6** and have the terminators inserted.

A second hard disk can be configured with any identifier from **0** to **5**.

SCSI IDENTIFIER	USE
0	Available for expansions
1	Available for expansion - Used by second HDU
2	Available for expansions
3	Available for expansions
4	Available for expansions
5	Available for expansions
6	First hard disk installed in system
7	Identifier of the GO582 controller

MOTHERBOARD COMPONENTS AND JUMPERS

KEYBOARD
CONTROLLER

PARALLEL PORT
WATCH DOG TIMER
REAL TIME CLOCK

SERIAL PORT

FLOPPY DISK
CONNECTOR

BANK 1

FLOPPY DISK
CONTROLLER

BANK 0

VIDEO RAM

BIOS

82C452
VGA
PLUS

DMA
CONTROLLER

BUS
CONTROLLER

MEMORY
CONTROLLER

BT471
DAC

DATA BUFFER
CONTROLLER

WEITEK
COPROCESSOR

CPU

J3
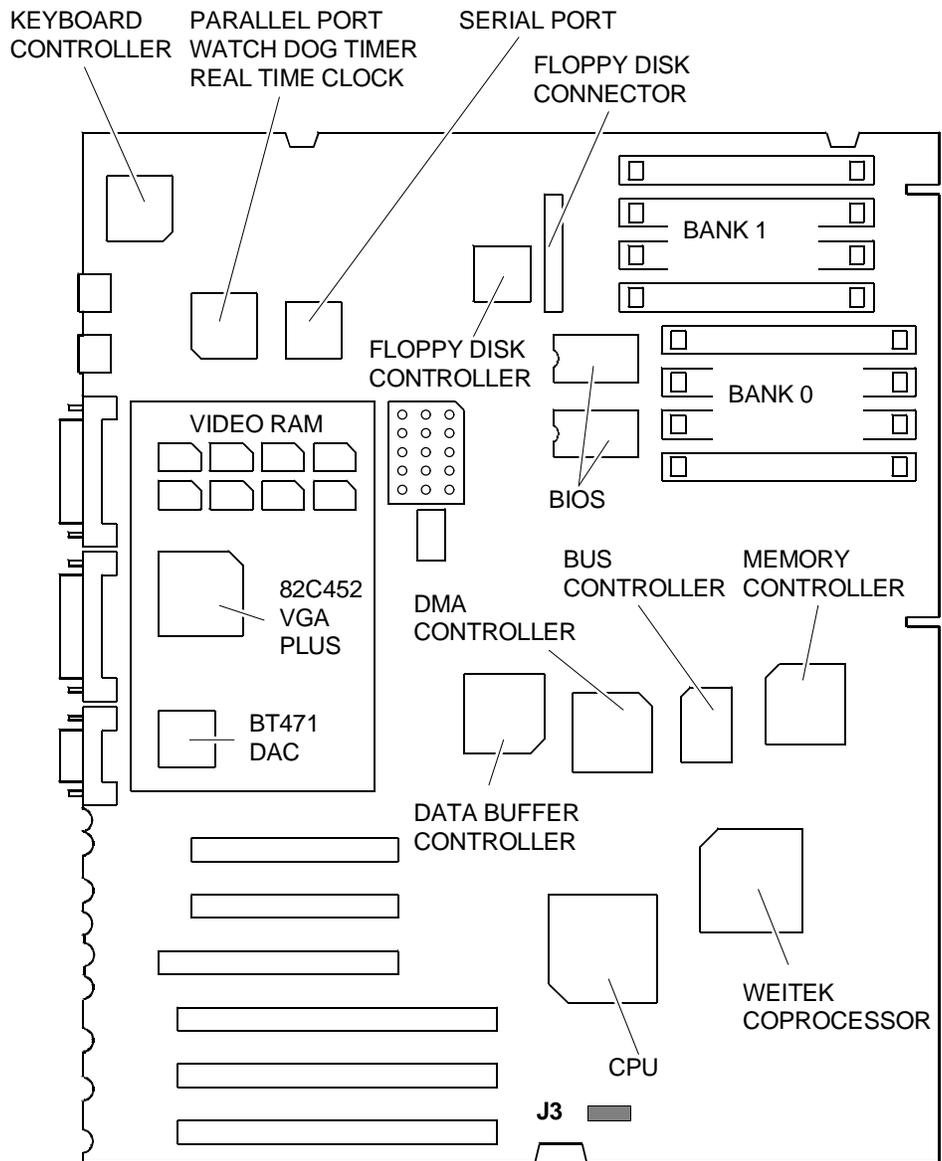
BUE0A

Jumper J3   **OUT**: Normal position
                  IN: Disables the password
                           Erases the system configuration restoring the default
                           configuration

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SOFTWARE COMPATIBILITY

OPERATING SYSTEMS	NOTES
IBM DISK Operating System, Ver. 4.01 IBM Operating System/2, Ver. 1.10 IBM Operating System/2 Extended Edition, Ver. 1.1 and Ver. 1.10 Olivetti's Microsoft OS/2, Ver. 1.10	Requires a formatted DSDD diskette during installation on hard disk

HARDWARE COMPATIBILITY

MODEM	I/O INTERFACE PRODUCTS
Hayes Smartmodem 1200P Hayes Smartmodem 2400P IBM PS/2 300/1200 Internal Modem/A (6450349)	FUTURE DOMAIN HOST ADAPTER (MCS-350) IBM PS/2 Dual Async Adapter/A (6450347)
EXPANSION MEMORIES	**MOUSE**
IBM PS/2 80386 2-6 MB Exp. Memory Option IBM PS/2 80386 2-8 MB Exp. Memory Option Olivetti Memory Expansion board MEM 26-503 Profit System Elite 16/2	IBM PS/2 Mouse (6450350) Microsoft Serial Mouse MSC PC Mouse PS/2 Olivetti New Advanced Mouse (GRD 25-052)
DISPLAY UNITS	**UNITS, NETWORKING & LAN PRODUCTS**
IBM PS/2 Monochrome Display 8503 IBM PS/2 Color Display 8512 IBM PS/2 Color Display 8513 IBM PS/2 Color Display 8514	IBM PC Network IBM PC Network (Baseband Adapter) IBM Token Ring Network Novell Advanced netware ver. 2.12 3COM Network (Ethernet) 10NET Network
GRAPHIC PRODUCTS	**OTHER PRODUCTS**
IBM PS/2 Display Adapter 8514/A MATROX PG2 - 1281 HI-RES Graphics Controller	SOFTWARE SECURITY Parallel Port Block

SYSTEM MEMORY MAP

ADDRESS	SIZE	FUNCTION	CACHE
00000000 - 0007FFFF	512 KB	System DRAM	YES
00080000 - 0009FFFF	128 KB	I/O RAM	YES
000A0000 - 000BFFFF	128 KB	Video controller RAM	NO
000C0000 - 000DFFFF	128 KB	I/O ROM	NO
000E0000 - 000FFFFF	128 KB	BIOS (SHADOW RAM)	YES
00100000 - 007FFFFF		System RAM	YES
00800000 - 00FFFFFF		System RAM	YES
01000000 - BFFFFFFF		System RAM	YES
C0000000 - C1FFFFFF		Weitek Coprocessor	NO
C2000000 - DFFFFFFF		System RAM	YES
E0000000 - FFFDFFFF		System RAM	YES
FFFE0000 - FFFFFFFF	128 KB	System ROM BIOS	NO

DMA CHANNELS

CHANNEL	FUNCTION	CHANNEL	FUNCTION	CHANNEL	FUNCTION
0	Reserved	3	Available	6	Available
1	Available	4	Reserved	7	Available
2	Floppy disk	5	Available		

I/O ADDRESS MAP

ADDRESS	FUNCTION	ADDRESS	FUNCTION
000-01F	DMA controller (channels 0-3)	096 - 097	POS, Connector selection
020-021	First interrupt controller 8259A	0A0 - 0A1	Second 8259A interrupt controller
022	System Setup Indexing registers	0C0 - ODF	DMA controller (4 - 7)
023	System Setup Data registers	0E0	Split address registers
040-047	System timer	0E1	Memory map register
060	Auxiliary device	0E2	Cache control register
061	System port B controller	0E3 - 0E7	Channel restore registers
064	Auxiliary device	0F0 - 0FF	Coprocessor
070-071	RT/CMOS and NMI mask	100 - 107	Programmable option selection
074-076	8 KB CMOS RAM extension	1F0 - 1F8	Hard disk adapter
	Configuration registers	278 - 27B	Parallel port 3
	68B50 Registers	2F8 - 2FF	Serial port 2 (RS-232-C)
081-087	DMA page registers 0 - 3	378 - 37B	Parallel port 2
089-08F	DMA page registers 4 - 7	3BC - 3BF	Parallel port 1
090	Central arbitration conrtol port	3B4 - 3C5	Video subsystem
091	Selected board response	3CE - 3DA	Video subsystem
092	System port A controller	3C6 - 3C9	DAC video, Bt471
092	Reserved	3F0 - 3F7	Floppy disk controller
094	Board enable	3F8 - 3FF	Serial port 1 (RS-232-C)

INTERRUPT LEVELS

LEVEL	FUNCTION	LEVEL	FUNCTION
IRQ0	Output timer channel 0	IRQ8	Real Time Clock
IRQ1	Keyboard interface	IRQ9	Redirected via software to IRQ2
IRQ2	PIC2 interrupt	IRQ10	Available
IRQ3	Optional serial port	IRQ11	Available
IRQ4	Primary serial port	IRQ12	Mouse
IRQ5	Available	IRQ13	Coprocessor
IRQ6	Floppy disk controller	IRQ14	Hard disk controller
IRQ7	Parallel port	IRQ15	Available

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COMPATIBLE HARD DISKS

TYPE	MODEL	CAPACITY	CYL	T	WPC	LZ	SET
1	N.C.	10 MB	306	4	128	305	17
2	Seagate ST225 half size	20 MB	615	4	256	700	17
3	WREN 2 full size	38 MB	925	5	128	924	17
4	CDC WREN 1	28 MB	697	5	128	696	17
5	ST4096	76 MB	1024	9	-1	1023	17
6	OPE XM5340	40 MB	820	6	256	819	17
7	NEC D5146H	40 MB	615	8	128	664	17
8	TM755 slim size	40 MB	981	5	-1	980	17
9	CDC WREN II slim size	40 MB	981	5	128	980	17
10	Micropolis 1324 full size	51 MB	1024	6	128	980	17
11	CDC WREN II full size	53 MB	925	7	128	924	17
12	Micropolis 1325 full size	68 MB	1024	8	-1	1023	17
13	CDC WREN II full size	69 MB	925	9	128	924	17
14	Micropolis 1323-A full size	42 MB	1024	5	-1	1023	17
15	RESERVED						
16	OPE XM5220 85 ms	20 MB	612	4	128	656	17
17	TANDON TM 362 85 ms	20 MB	612	4	-1	663	17
18	Seagate ST251 40 ms	40 MB	820	6	-1	819	17
19	Rodime RO3055 40 ms	43 MB	872	6	0	871	17
20	Miniscribe M8425 68 ms	20 MB	612	4	0	663	17
21	Seagate ST277TR	62 MB	820	6	-1	819	26
22	OPE XM5340/60	62 MB	820	6	128	819	26
23	NEC D5147H	62 MB	615	8	384	664	26
24	NEC D5652	136 MB	820	10	-1	822	34
25	Micropolis 1355 ESDI	135 MB	1021	8	-1	1023	34
26	Micropolis 1353 ESDI	67 MB	1021	4	-1	1023	34
27	NEC D5452	68 MB	823	10	512	822	17
28	Fujitsu M2227D	40 MB	615	8	512	614	17
29	Fujitsu M2227D RLL	60 MB	615	8	512	614	26
30	CDC 94205-77	62 MB	981	5	-1	980	26
31	Formatted, ESDI full size	304 MB	814	15	-1	1	-
32	Formatted, ESDI half size	81 MB	977	5	-1	1	-
33	N.A.	136 MB	820	10	-1	1	-
34	CDC 94196-766	600 MB	1623	15	-1	1	-
35 - 45	RESERVED						
46 - 47	SCSI drivers #1 and #2						

Where: CYL: No. of disk cylinders

T: No. of disk heads

WPC: Precompensation cylinder number

LZ: Head parking cylinder number

SET: No. of disk sectors.

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