325AX/333AX
325AXB/333AXB

325AX/333AX/325AXB/333AXB
V.01 Aug., 1992

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1 INTRODUCTION

1-1
SPECIFICATIONS

❏ CPU:
80386SX-25/33, Cx486SLC-25/33

❏ COPROCESSOR:
80387SX, 87SLC
SYNC/ASYNC, selection

❏ MEMORY:
Page mode is in odd banks and page interleaved in even banks up to 16MB on board 9-bit SIMMx8 (4 banks)
Uses 256KB, 1MB, or 4MBx9 bit SIMM modules

❏ I/O SLOTS:
16-bitx5, 8-bitx2

❏ I/O BUS TYPE:
Standard AT Bus

❏ SHADOW RAM:
System BIOS, Video BIOS, and Adapter ROM

❏ SIZE:
190mm x 220mm

□ BIOS:
AMI (single 64K EPROM configuration)

**1-2
SOFTWARE
COMPAT-
IBILITY**

□ MS-DOS 3.3, MS-DOS 4.01, 5.0, UNIX (SCO V/386)

□ IBM OS/2 Ver 1.2, 2.0, MS OS/2 Ver 1.1

□ MS Windows 3.0, 3.1, Novell Netware/386 3.01, 3.11

□ Lotus 1-2-3 Ver. 2.0, 2.01 Lotus 1-2-3 Ver. 3.0

□ AutoCAD 2.6, AutoCAD R10, R11

□ OrCAD 3.01

□ GEM 3.0 and..., etc.

**1-3
PERFORM-
ANCE**

	LANDMARK V1.14	POWER METER V1.7
	(MHz)	(MIPS)
325AX	32.53	4.6
333AX	43.1	5.8
325AXB	65.4	5.7
333AXB	88.2	7.7

**1-4
MAINBOARD
LAYOUT**

The next page contain the mainboard layout:
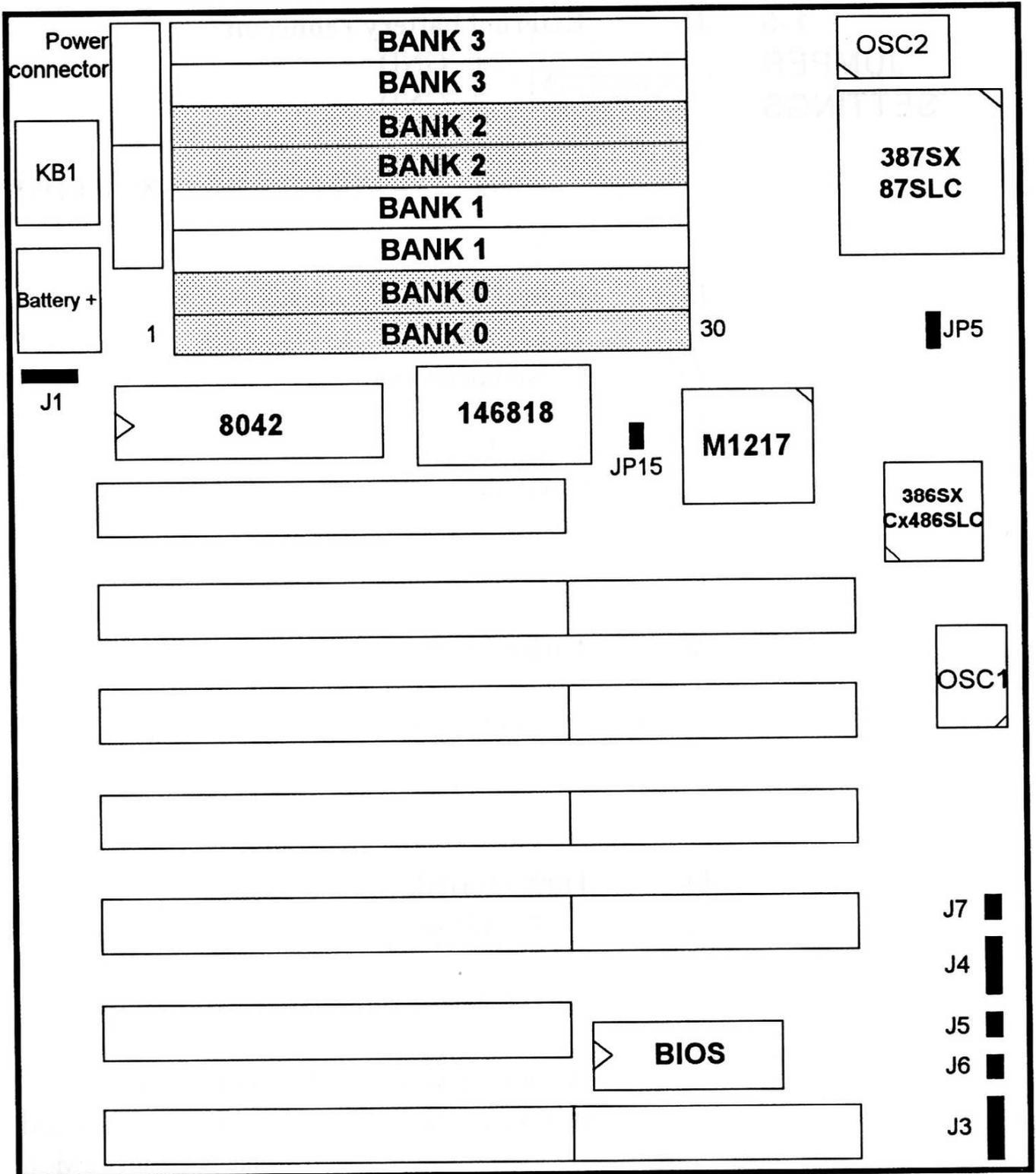
325AX/333AX/325AXB/333AXB Board Layout

1-5 JUMPER SETTINGS

J1   **External battery connector**

```
[ O O O O ]
  1       4
```
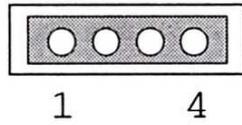
1. GND
2. GND
3. NC
4. +VDD(External battery power input)

J3   **PowerLED & Keylock**

```
┌───┐
│ O │ 1
│ O │
│ O │
│ O │
│ O │ 5
└───┘
```
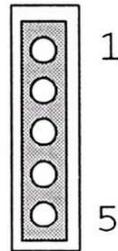
1. LED output
2. No connection
3. GND
4. Keylock
5. GND

J5   **Turbo LED**

```
┌───┐
│ O │ +1
│ O │
└───┘
```
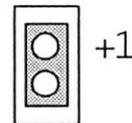
1. LED   (+)
2. LED   (-)

J6   **Turbo Switch**

short: high speed

```
┌───┐
│ O │ 1
│ O │
└───┘
```
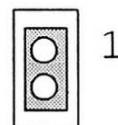
open: Low speed or speed chosen by keyboard

```
┌───┐
│ O │
│ O │
└───┘
```
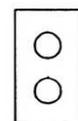
{CTRL} {ALT}   {+} : High speed
{CTRL} {ALT}   {-} : Low speed or speed
                     change by turbo switch

J4   **Speaker Connector**
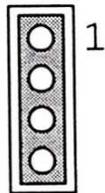
1. +5VDC
2. No connection
3. No connection
4. Speaker output

J7   **Hardware reset switch**
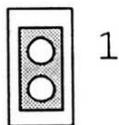
1. GND
2. Power good

JP5   **Coprocessor SYNC/ASYNC selection**
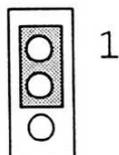
1-2   short : SYNC
        coprocessor speed same as cpu speed
2-3   short : ASYNC
        coprocessor can use 20 or 25MHz
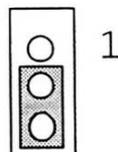
Note:
when coprocessor run ASYNC mode.OSC2 must be insert Oscillator.20MHz coprocessor use 40MHz OSC,25MHz coprocessor use 50MHz OSC.

JP15   **Parrity check Enable/Disable**
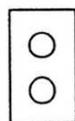
open : Enable
short : Disable
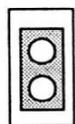
2 CONFIGURATION

2-1 MEMORY BANK CONFIGURA-TION

The 325AX/333AX/325AXB/333AXB supports 256K, 1M, 4M DRAM for up to 16MB total. The following table shows valid RAM combinations.

CFG	SIMM MODULES				TOTAL MEMORY
	BANK 0	**BANK 1**	**BANK 2**	**BANK 3**	
1	256Kx2	0	0	0	512K
2	256Kx2	256Kx2	0	0	1M
3	256Kx2	256Kx2	256Kx2	256Kx2	2M
4	1Mx2	0	0	0	2M
5	1Mx2	1Mx2	0	0	4M
6	1Mx2	1Mx2	1Mx2	1Mx2	8M
7	4Mx2	0	0	0	8M
8	4Mx2	4Mx2	0	0	16M

1	BANK 3	30
1	BANK 3	30
1	BANK 2	30
1	BANK 2	30
1	BANK 1	30
1	BANK 1	30
1	BANK 0	30
1	BANK 0	30

2-2

THE M1217 CHIP

The 325AX/333AX/325AXB/333AXB mainboard uses a ALI M1217 integrated chip to integrate device functions which include: DMA controllers, a Memory Mapper, Timers, Counters, Interrupt Controllers, a Bus Controller, and all supporting circuitry required for PC core logic, The M1217 also supports page mode, 2 or 4-way interleaving in both pipelined and non-pipelined modes, shadow RAM over entire C0000-DFFFF range, and BIOS shadowing in 64K increments.

2-3

MEMORY MAP

The following table indicates 325AX/333AX/325AXB/333AXB mainboard memory addresses.

Address	Description
000000 -09FFFFH	System RAM
0A0000 -0BFFFFH	Video Memory or Shadow RAM
0C0000 -0EFFFFH	BIOS extension or Shadow RAM
0F0000 -0FFFFFH	ROM or Shadow RAM
100000 -FBFFFFH	Expanded or Extended Memory
FE0000 -FEFFFFH	BIOS extension
FF0000 -FFFFFFH	ROM

3 AMI BIOS SETUP

```
┌─────────────────────────────────────────────────────────────────┐
│                                                                   │
│     BIOS SETUP PROGRAM - AMI BIOS SETUP UTILITIES                 │
│     (C) 1990 American Megatrends Inc., All Rights Reserved        │
│                                                                   │
├─────────────────────────────────────────────────────────────────┤
│                                                                   │
│                                                                   │
│                 ┌───────────────────────┐                         │
│                 │ STANDARD CMOS SETUP    │                         │
│                 └───────────────────────┘                         │
│                   ADVANCED CMOS SETUP                             │
│           AUTO CONFIGURATION WITH BIOS DEFAULTS                   │
│         AUTO CONFIGURATION WITH POWER-ON DEFAULTS                 │
│                    CHANGE PASSWORD                               │
│                    HARD DISK UTILITY                             │
│                 WRITE TO CMOS AND EXIT                           │
│              DO NOT WRITE TO CMOS AND EXIT                       │
│                                                                   │
│                                                                   │
├─────────────────────────────────────────────────────────────────┤
│   Standard CMOS Setup for changing Time, Date, Hard Disk Type, etc.│
│                                                                   │
│  ESC: Exit    ↓ → ↑ ←      :Sel    F2/F3: Color   F10: Save & Exit│
└─────────────────────────────────────────────────────────────────┘
```

Figure 3-1 Setup Program Initial Screen

AMI BIOS is designed into the motherboard to allow users to configure their systems. At boot-up, after memory tests have been completed, press the **<DEL>** key. The above screen is displayed.

3-1 STANDARD CMOS SETUP

Choose the **STANDARD CMOS SETUP** option from the **INITIAL SETUP SCREEN** Menu (Fig. 3-1) and the above screen is displayed. This standard Setup Menu allows users to configure such system components as date, time, hard disk drive, floppy drive, display, and memory. Once a field is highlighted, on-line help information is displayed in the left bottom of the Menu screen.

```
┌─────────────────────────────────────────────────────────────────┐
│        BIOS SETUP PROGRAM - STANDARD CMOS SETUP                  │
│        (C) 1990 American Megatrends Inc., All Rights Reserved    │
├─────────────────────────────────────────────────────────────────┤
│ Date(mn/date/year) :  Fri, Aug, 14 1992   Base memory size  :640 KB
│ Time(hour/min/sec) :  11:29:21            Ext. memory size   :3328KB
│ Daylight Savings    : Disable        Cyln Head WPcom LZone Sect Size
│ Hard disk  C: type  : Not Installed
│ Hard disk  D: type  : Not Installed
│ Floppy drive A  :   : 1.2 MB, 5.25"
```

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Floppy drive B : Not Installed	31	1	2	3	4	5	6
Primary display : Monochrome	7	8	9	10	11	12	13
Keyboard : Installed	14	15	16	17	18	19	20
Month: Jan, Feb, ... Dec	21	22	23	24	25	26	27
Date : 01, 02, 03, ... 31							
Year : 1901, 1902, ... 2099	28	29	30	31	1	2	3
ESC:Exit, ↓→↑←:Select, PU/PD:Modify	4	5	6	7	8	9	10

Figure 3-2 CMOS Setup Screen

TYPE	CYLINDERS	HEADS	WRITE-PRECOMP	LANDING ZONE	CAPACITY (MBYTES)
1	306	4	128	305	10
2	615	4	300	615	20
3	615	6	300	615	31
4	940	8	512	940	62
5	940	6	512	940	47
6	615	4	65535	615	20
7	462	8	256	511	31
8	733	5	65535	733	30
9	900	15	65535	901	112
10	820	3	65535	820	20
11	855	5	65535	855	35
12	855	7	65535	855	50
13	306	8	128	319	20
14	733	7	65535	733	43
15	000	0	000	000	00
16	612	4	0000	663	20
17	977	5	300	977	41
18	977	7	65535	977	57
19	1024	7	512	1023	60
20	733	5	300	732	30
21	733	7	300	732	43
22	733	5	300	733	30
23	981	10	65535	981	81
24	925	7	0000	925	54
25	925	9	65535	925	69
26	754	7	754	754	44
27	754	11	65535	754	69
28	699	7	256	699	41
29	823	10	65535	823	68
30	918	7	918	918	53
31	1024	11	65535	1024	94
32	1024	15	65535	1024	128
33	1024	5	1024	1024	43
34	816	15	65535	816	191
35	1024	9	65535	1024	77

AMI Hard Disk Types Reference Table

TYPE	CYLINDERS	HEADS	WRITE-PRECOMP	LANDING ZONE	CAPACITY (MBYTES)
36	1024	8	512	1024	68
37	615	8	128	615	41
38	745	4	512	745	41
39	987	7	987	987	57
40	820	6	820	820	41
41	977	5	977	977	41
42	981	5	981	981	41
43	755	16	65535	755	100
44	887	13	65535	887	191
45	968	10	65535	968	161
46	751	8	0	751	50

3-2 ADVANCED CMOS SETUP

By choosing the **"ADVANCED CMOS SETUP"** option from the **INITIAL SETUP SCREEN** Menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the mainboard.

```
┌─────────────────────────────────────────────────────────────────────┐
│           BIOS SETUP PROGRAM - ADVANCED CMOS SETUP                    │
│        (C) 1990 American Megatrends Inc., All Rights Reserved         │
├─────────────────────────────────────────────────────────────────────┤
│  Typematic Rate Programming  : Disabled  │ Adaptor ROM Shadow D800,32K :Disabled  │
│  Typematic Rate Delay (msec) : 500       │ Adaptor ROM Shadow E000,32K :Disabled  │
│  Typematic Rate (Chars/sec)  : 15        │ Adaptor ROM Shadow E800,32K :Disabled  │
│  Above 1 MB Memory Test      : Disabled  │ System  ROM Shadow F000,64K :Enabled   │
│  Memory Test Tick Sound      : Enabled   │ 16bit ISA cycle insert wait  :1w/s     │
│  Memory Parity Error Check   : Enabled   │ Slow Refresh                 :Enabled  │
│  Hit <DEL> Message Display   : Enabled   │                                        │
│  Hard Disk Type 47 Data Area : 0:300     │                                        │
│  Wait For <F1> If Any Error  : Enabled   │                                        │
│  System Boot Up Num Lock     : On        │                                        │
│  Numeric  Processor          : Absent    │                                        │
│  Floppy Drive Seek At Boot   : Enabled   │                                        │
│  System Boot Up Sequence     : A:, C:    │                                        │
│  Internal Cache Memory       : Disabled  │                                        │
│  Password Checking Option    : Disabled  │                                        │
│  Video    ROM Shadow C000,32K : Enabled  │                                        │
│  Adaptor ROM Shadow C800,32K : Disabled  │                                        │
│  Adaptor ROM Shadow D000,32K : Disabled  │                                        │
├─────────────────────────────────────────────────────────────────────┤
│  ESC      ↓→↑←  : Exit :Sel (CTRL) PU/PD: modify   F1: Help  F2/F3: Color │
│  F5: Old Values          F6:  BIOS Setup Defaults  F7: Power-on Defaults  │
└─────────────────────────────────────────────────────────────────────┘
```

Figure 3-3 Advanced CMOS Setup Screen

Note: When use Cyrix CPU, you must choose "Enable" for "Internal Cache Memory.

3-3 AUTO CONFIGURA- TION WITH BIOS DEFAULTS

"AUTO CONFIGURATION WITH BIOS DE-FAULTS" loads the default system values directly from ROM. If the stored record created by the Setup program becomes corrupted (and therefore unusable), these defaults will load automatically when you turn the computer on.
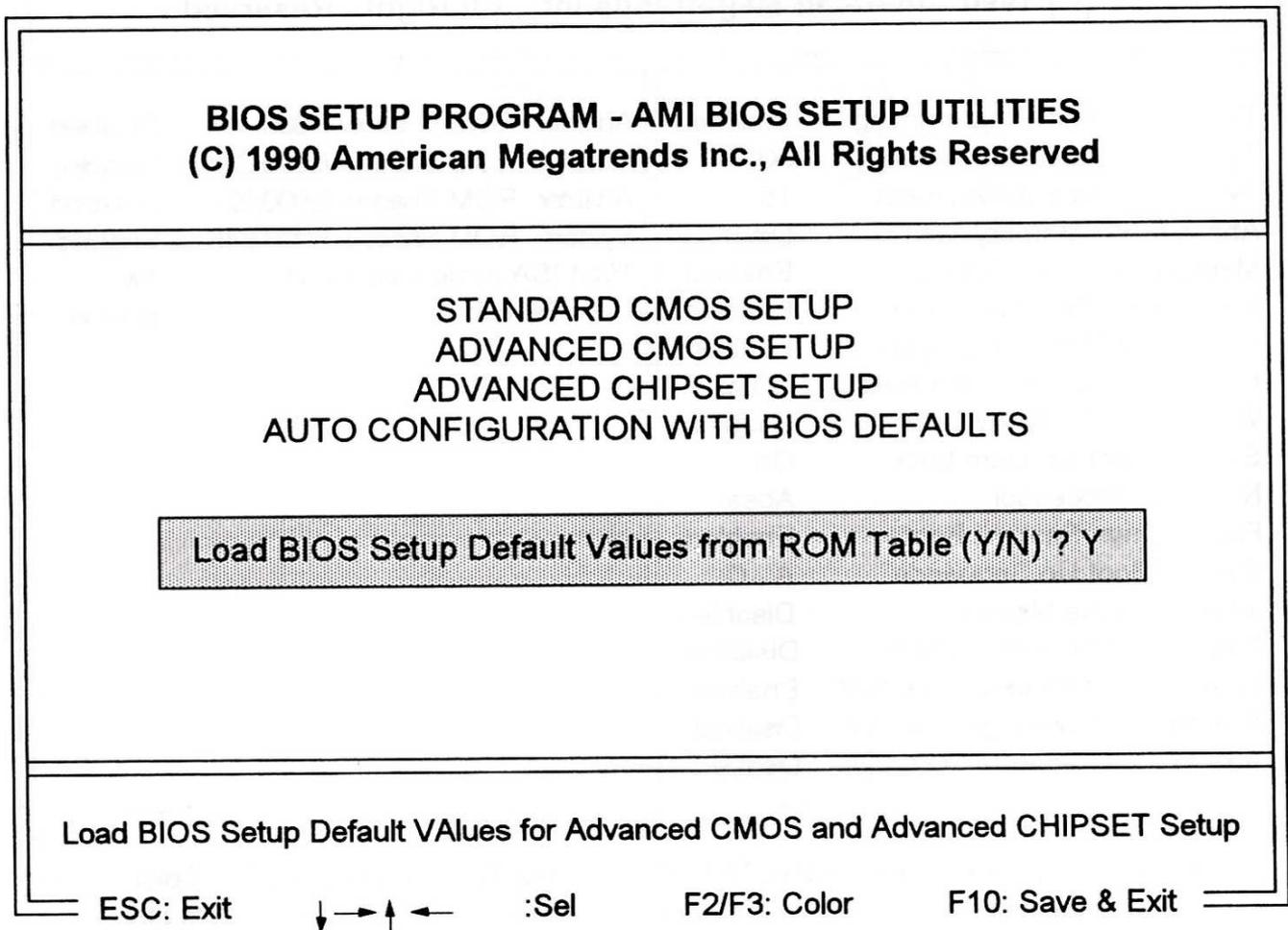
BIOS SETUP PROGRAM - AMI BIOS SETUP UTILITIES
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STANDARD CMOS SETUP
ADVANCED CMOS SETUP
ADVANCED CHIPSET SETUP
AUTO CONFIGURATION WITH BIOS DEFAULTS

Load BIOS Setup Default Values from ROM Table (Y/N) ? Y

Load BIOS Setup Default VAlues for Advanced CMOS and Advanced CHIPSET Setup

ESC: Exit   ↓ → ↑ ←   :Sel   F2/F3: Color   F10: Save & Exit

Figure 3-4 Auto Configuration with BIOS Defaults Screen

3-4 AUTO CONFIGURA-TION WITH POWER-ON DEFAULTS

The **"AUTO CONFIGURATION WITH POWER-ON DEFAULTS"** loads the settings detected when you turn on the computer. If your system is behaving erratically you can use this feature to check for incorrect settings.
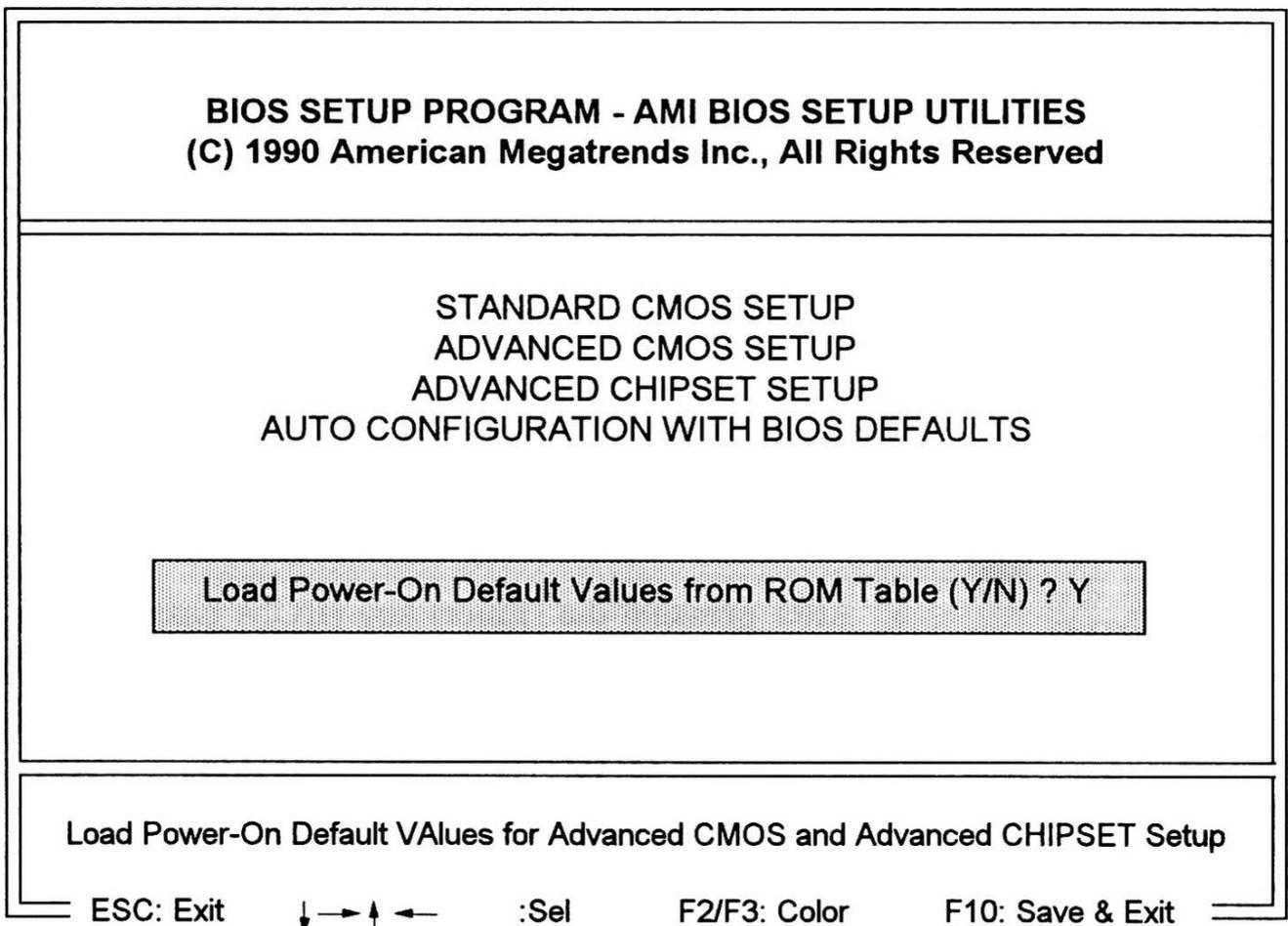
```
BIOS SETUP PROGRAM - AMI BIOS SETUP UTILITIES
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              STANDARD CMOS SETUP
              ADVANCED CMOS SETUP
              ADVANCED CHIPSET SETUP
      AUTO CONFIGURATION WITH BIOS DEFAULTS


  Load Power-On Default Values from ROM Table (Y/N) ? Y



Load Power-On Default VAlues for Advanced CMOS and Advanced CHIPSET Setup

ESC: Exit    ↓→↑←      :Sel      F2/F3: Color      F10: Save & Exit
```

Figure 3-5 Auto Configuration with Power-On Defaults

3-5 CHANGE PASSWORD

To change the password, choose the **"CHANGE PASS-WORD"** option form the Setup main menu and press [Enter].

1. If the CMOS is bad or this option has never been used, there is default password which is stored in the ROM. The screen will display the following messages:

   ▌ Enter ROM Password: ▌

   Press the [Enter] key and continue to change the password.

2. If the CMOS is good or this option has been used to change the default password, the user is asked for the password stored in the CMOS. The screen will display the following message:

   ▌ Enter Current Password: ▌

   Enter the correct password and continue to change the password.

3. After pressing the [Enter] key (ROM password) or current password (user-defined password), you can change the password stored in the CMOS. The passord can be at most 6 characters long.

   Remember, to enable this feature. You must first select the "Password Checking Option" either "Setup", or "Always" in the ADVANCED CMOS SETUP.

3-6
HARD DISK UTILITY

"HARD DISK UTILITY" This utility is basic drive setup software. All of the options are destructive to data existing on a disk and are used for low-level formatting before the DOS "FDISK" and "FORMAT", or similar utilities. You can use this utility on MFM encoded hard drives if they require but have not been low-level formatted by the manufacturer. IDE, ESDI and SCSI drives don't need this utility and you should not use it on them.

Note: The hard disk type should be set in the STANDARD CMOS SETUP. Using the HARD DISK UTILITY is destructive to existing data on a disk.

BIOS SETUP PROGRAM - HARD DISK UTILITIES
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	Cyln	Head	WPcom	LZone	Sect	Size (MB)
Hard Disk C: Type : 37	615	8	128	615	17	41
Hard Disk D: Type : 37	615	8	128	615	47	41

Hard Disk Type can be changed from the STANDARD CMOS SETUP option in Main Menu

Hard Disk Format
Auto Inter Leave
Media Analysis

ESC: Exit ↓ → ↑ ←   :Sel   F2/F3: Color

Figure 3-6 Hard Disk Utility

3-7
WRITE TO CMOS AND EXIT

"WRITE TO CMOS AND EXIT". If you select this and press the [Enter] key the values entered in the setup utilities will be recorded in the CMOS memory of the chip set. The microprocessor will check this every time you turn your system on and compare this to what it finds as it checks the system. This record is required for the system to operate.

3-8
DO NOT WRITE TO CMOS AND EXIT

"DO NOT WRITE TO CMOS AND EXIT" Selecting this option and pressing the [Enter] key lets you exit the Setup program without recording any new values or changing old ones.