

1.0 TITLE

2200 CPU/Memory Diagnostics

3.0 REFERENCE DOCUMENTS

4.0 CONFIGURATION REQUIREMENTS

4.1 Hardware

Minimum required configuration

The VP, MVP, LVP or SVP must have the following boards, and an appropriate disk drive for the media to be used.

210-6793-1  
210-6792  
210-6791  
210-6790  
210-6789A  
210-6788 or 210-7588  
210-6787 or 210-7587

2236 or equivalent terminal

4.2 Software

Media containing the 2200 CPU/Memory Diagnostic which is made up of the following files:

@@ Initial boot menu (to customer diagnostic menu)  
@A CPU Instructions Diagnostic  
@B Control Memory Diagnostic  
@C Data Memory Diagnostic  
@D CPU Register Diagnostic  
@E Chain Routine  
@P User Diagnostic Menu SF'16 - 19  
@DG Customer Diagnostic Menu  
@ Field Service Diagnostic Menu SF'28 - 31  
(@ the blank is a backslash in the filename)

## 5.0 PROGRAM DESCRIPTION

*These diagnostics will run on all VP series systems old and new, therefore any old versions are obsolete. The old diagnostics on early versions of BASIC-2 will not run properly on a new expanded system (512K of Data Memory and 64K on Control Memory).*

*This package uses four menus (2200 System Menu, Customer Diagnostic Menu, User Menu and Field Service Menu) from which the user may select an appropriate diagnostic program. These diagnostics can be used as an exerciser, a burn-in, or as an aid for repairing CPU and Memory boards.*

*The CPU Registers Diagnostic, Data Memory Diagnostic and Control Memory Diagnostics allow errors to be displayed on the screen or printed on the printer.*

### 5.1 System/Customer Menus

*The System Menu is used to load the Customer Diagnostic Menu into Control Memory. The System Menu also lists the SF' keys used to load the User and Field Service Menus.*

*The User and Field Service Menus allow the CE to select the same diagnostics via an SF' Key.*

### 5.2 User Menu

*If an error is encountered while trying to load the System Menu, try to load the User Menu. The User Menu doesn't use Control Memory and loads much easier than the System or Customer Menus.*

### 5.3 Field Service Menu

*The Field Service Menu is for more specific testing. Individual tests within a diagnostic can be executed without continuing on to the following tests. For example, the Addressing tests could be continuously cycled through without going to the Simple Marching 1's/0's or Moving Inversions Tests. After the program is loaded, depressing 'RESET' and SF'15 disables the individual test feature.*

## 5.4 CPU Instructions

*The CPU Instructions diagnostic, tests the instruction set of the VP/MVP/SVP/LVP series Central Processor. Because of the complexity and size of the Instructions Diagnostic no features are allowed other than Chain Mode.*

## 5.5 CPU Registers

*The CPU Registers diagnostic checks the functionality of the CPU Registers and the stack.*

## 5.6 Control/Data Memory

*The Data and Control Memory diagnostics will verify the functionality of the user (data) memory and system (control) memory.*

*These diagnostics utilize an Auto-sizing routine to identify the amount of memory the system actually has (Data or Control) . If a dead bank failure occurs, the Auto-sizing routine will not function properly and will indicate an erroneous memory size. Provisions have been made within the diagnostic which allow the operator to enter the actual amount of memory the system has. The Memory diagnostic also allows selection of the RAM board type to be tested. The RAM board type must be entered for correct error reporting in the Address tests only, though it is not totally necessary for a functional test of the RAM chips.*

*The Memory Diagnostics report the actual amount of memory they see.*

*In Data Memory, each additional 64K after the first 64K bank has the first 8K of that bank overlaid to point back to the first 64K. Therefore, each 64K of physical memory added results in only 56K of additional memory to be tested.*

*The Data Bus Stuck, Data Bus Shorts, Bank/Page Addressing, Parity Generator, Address Line Shorts, Address Line/Pin Open and Address Multiplexer tests of the Memory Diagnostics each execute 15 times for screening purposes only.*

## 5.4 Chain Mode

All of the diagnostics may be run sequentially in Chain Mode with a pass count incremented after each completion. When in Chain Mode, the CPU Instructions diagnostic has a Chain Mode pass count and a diagnostic pass count. The diagnostic pass count will increment to '004F' before loading the Control Memory diagnostic.

The Control Memory Moving Inversions test executes twice on each pass when in Chain Mode. This is done, because in multiple passes of the Moving Inversions test, RAM is not reflooded with the flood pattern, but relies on memory having the flood pattern left over from the first pass of Moving Inversions test.

The Data Memory diagnostic always executes two passes while in the Moving Inversions test before incrementing the program pass count. The second pass of the Moving Inversions test will complement the parity bit from the first pass.

While in Chain Mode the memory size selection, Ram board type selection and the capability of sending errors to the printer are disabled.

If an ERROR occurs while in chain mode, the diagnostic running at the time will not load the next diagnostic in line, but loop continuously in the failing one. This will keep the errors displayed on the screen until operator intervenes.

To disable Chain Mode, depress 'RESET' and SF'15.

## 6.0 LOAD PROCEDURE

### 6.1 System/Customer Menu

Apply power, as instructed during the power up sequence, press 'RESET' then the appropriate special function key to load "@@" (System Menu). Dependent on the disk address that the System Menu is to be loaded from, select one of the following and continue as instructed by the menu:

<u>SF</u>	<u>Load from device</u>
'00	310 (D11)
'01	B10 (D10)
'02	320 (D21)
'03	B20 (D20)
'04	330 (D31)
'05	B30 (D30)

Loading '@@' loads the System Menu from which, if this is a operating system package, the customer can then load MVP BASIC-2, or the Customer Diagnostic Menu. If this is being loaded from the diagnostic package, BASIC-2 is not available. See Appendix B for all test selection menus.

### 6.2 User Menu

Apply power, if needed, then press 'RESET' and the appropriate special function key to load "@P" (User Menu). Dependent on the disk address that the Menu is to be loaded from, select one of the following and continue as instructed by the menu:

<u>SF</u>	<u>Load from device</u>
'16	310 (D11)
'17	B10 (D10)
'18	320 (D21)
'19	B20 (D20)

### 6.3 Field Service Menu

If needed, apply power then press 'RESET' and the appropriate special function key to load "@" (Field Service Menu) is saved as "at backslash" not "at blank". Dependent on the disk address that the Menu is to be loaded from, select one of the following and continue as instructed by the menu:

<u>SF</u>	<u>Load from device</u>
'28	310 (D11)
'29	B10 (D10)
'30	320 (D21)
'31	B20 (D20)

After the menu loads depress the Special Function Key (SF) corresponding to the diagnostic desired. At this point, if an error occurs while loading the diagnostic should be displayed.

### 7.0 OPERATING INSTRUCTIONS

The user is given the option of selecting the display console or printer 215 (do not select printer 204) to report any errors in the CPU Registers, Data Memory and Control Memory Diagnostics.

#### 7.1 Auto-sizing

If using the Field Service Menu with the Memory Diagnostics, check the memory size as found by the auto-size routine. The memory size and RAM board type features are needed only for board repair purposes. If the amount shown is incorrect, follow the screen instructions to enter the correct memory size.

After selecting the options, pressing 'CONTINUE' will start execution.

#### 7.2 Errors

If an error is encountered during CPU Registers Diagnostic or Data/Control Memory Diagnostics, the test and error information will be displayed on the screen or printed on a printer, and the CPU Instruction Diagnostic halts. If an error occurs when the printer is selected for error reporting and is 'READY', the message: "Errors are on Printer" will be displayed on the console screen. If the printer is 'BUSY', the error reporting will default back to the console screen and the message: "Printer wasn't Ready" will be displayed.

All tests in the CPU Registers, Control and Data Memory Diagnostics will restart at the beginning after the error is displayed with the exception of Moving Inversions in the Memory Diagnostics. Moving Inversions restarts at the failing location unless scope loop is selected then, Moving Inversions will restart from the beginning after an error.

Errors will be displayed on the screen until the screen is full. At this point testing will stop, depressing 'CONTINUE' clears the screen of errors and continues from the point where it stopped until the screen is full again.

Depressing 'RUN' will cause repeated clearing and filling of the console screen with the error reports. While in 'RUN' mode, depressing 'CONTINUE' will disable 'RUN' mode.

If printer address '204' is selected, THE DIAGNOSTIC WILL HANG during an error. Do not select this printer.

### 7.3 Scope Loop

If in the Field Service mode, depressing 'L' puts the program into a scope loop. After 'L' is pressed, the last line is cleared from the screen, the test name and "TEST SHOWN IN SCOPE LOOP" is displayed. The test shown will loop continuously whether it passes or fails. From this point, nothing more will be displayed on the screen.

When 'CONTINUE' is pressed, the screen is cleared of errors and normal error reporting is resumed.

The CPU Instructions Diagnostics only halts on error.

To restart the programs from the beginning, depress 'RESET' then SF'15.

### 8.0 REVISION HISTORY

### 9.0 MISCELLANEOUS

These Diagnostics will be on the VP (Rel. 2.5 and above), MVP (Rel. 2.3 and above) system platters and in the 2200 Diagnostic Package.

# APPENDIX A

## MODULE DESCRIPTIONS

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## 1.0 CPU Instructions Diagnostics

This diagnostic is designed to test the instruction set of the MVP Central Processor. The testing sequence is as follows:

- a) Immediate Register instructions.
- b) Register instructions.
- c) Extended Register instructions.
- d) Branch instructions.
- e) Immediate Register instructions with Read/Write.
- f) Register instructions with Read/Write.
- g) Mini Instructions with Read/Write.
- h) Return to step a).

If *RESET* is keyed during this program, the *KEY SF'?* message should be redisplayed.

If an *ERROR* occurs, the system is unable to execute a particular instruction, the *CRT* cursor will stop at *XX* of the failing instruction.

## 2.0 Control Memory Diagnostics

### 2.1 Error code descriptions

*BECM* = Bit Error Control Memory

FORMAT: *BECM* aaaa xxxxxx Pass pppp'

Where:

aaaa = address (PC's)  
xxxxxx = XOR of read and expected data  
pppp = current pass number at error time

*AECM* = Address Error Control Memory

FORMAT: *AECM* aaaa aaaa xxxxxx PASS pppp''

WHERE:

aaaa = address (two conflicting addresses)  
xxxxxx = XOR of read and expected data  
pppp = current pass number at error time

## 2.2 Addressing Tests

### Data Bus Stuck Test

*This test is designed to insure the basic interconnections (ie. Voltages, Chip enables, read/write logic, data lines) are existent within the module under test.*

### Data Bus Shorts Test

*This test is designed to insure the data lines are not shorted to each other.*

### Bank/Page Addressing Test

*This test is designed to insure that all 4K banks on all boards can be addressed separately from each other.*

### Address Line Shorts Test

*This test verifies the low order address line are not shorted to each other.*

### Address Lines or Open Pins Test

*This test finds address line problems such as an address stuck at one state to the ram(s).*

### Address Multiplexer Test for 16K RAM Chip Boards (7588 only)

*This test checks the high order address lines and the multiplexer that sends them to the RAMs.*

## 2.3 Ram Chip Tests

### Simple Marching 1's/0's Test

*This test is used only to remove the solid RAM failures before Moving Inversions.*

### 24 Bit Moving Inversions Test

*This test is designed to exercise and test the functionality of the RAM chips.*

### 3.0 Data Memory Diagnostics

#### 3.1 Error Code Descriptions

*BEDM = Bit Error Data Memory*

*FORMAT: BEDM bb.aaaa Even = xx Odd = xx PASS pppp''*

*WHERE:*

*bb = bank address (code)  
aaaa = address (PC's)  
xx = XOR of read and expected data for even and odd  
PPPP = that current pass number at error time*

*AEDM = Address Error Data Memory*

*FORMAT: AEDM bb.aaaa bb.aaaa xx PASS pppp''*

*WHERE:*

*bb = bank address (code)  
aaaa = address (two conflicting addresses)  
xx = XOR of read and expected data  
pppp = that current pass number at error time*

#### 3.3 Addressing Tests

##### Data Bus Stuck Test

*This test is designed to insure the basic interconnections (ie. Voltages, Chip enables, read/write logic, data lines) are existent within the module under test.*

##### Data Bus Shorts Test

*This test is designed to ensure the data lines are not shorted to each other.*

##### Bank Page Addressing

*This test is designed to insure that all banks (64K=bank) and pages can be addressed separately from each other. All banks after the first 64K bank have the first 8K physically mapped back to the first 64K bank. This overlay of memory is also tested.*

##### Parity Generator Test

*This test is designed to insure the parity generator on the 6789 board is working.*

### Address Line Shorts Test

This test verifies the low order address line are not shorted to each other.

### Address Lines or Open Pins Test

This test finds address line problems such as an address stuck at one state to the ram(s).

### Address Multiplexer Test for 16K RAM Chip Boards (7587 only)

This test checks the high order address lines and the multiplexer that sends them to the rams.

## 3.4 RAM CHIP TESTS

### Simple Marching 1's/0's

This test is used only to remove the solid RAM failures before Moving Inversions.

### 8 Bit Moving Inversions

This test is designed to exercise and test the functionality of the RAM chips.

## 4.0 CPU Registers Diagnostics

### 4.1 Error Code Descriptions

#### 8 Bit Registers Test

Format:

Error Type 1:	Register TT Xor = (xx)	Pass = pppp
Error Type 2:	Register TT and CC Xor = (XX)	Pass = pppp

Where:

TT = Register under test  
CC = Conflict register  
XX = XOR of expected and actual patterns  
pppp = current pass number at time of error

ERROR:

Error type 1 is caused when register TT fails to hold the test pattern.

Error type 2 is caused when while testing register TT, register CC was found not to contain the expected.

### Auxiliary Memory Test

#### Format:

Error Type 1:                    Aux #TT Xor = (XXXX)      Pass = pppp  
Error Type 2:                    Aux #TT and Aux #CC Xor = (XXXX)  
   Pass = pppp  
Error Type 3:                    Stack and Aux #TT Xor = (XXXX)      Pass  
   = pppp

#### WHERE:

TT = Auxiliary Register under test  
CC = Conflict auxiliary register  
XXXX = XOR of expected and actual patterns  
pppp = current pass number at time of error

#### Error:

Error type 1 is caused when auxiliary register TT fails to hold the test pattern.

Error type 2 is caused when while testing register TT, register CC was found not to contain the expected.

Error type 3 is caused when while testing register TT, the Stack was found not to contain the expected.

### Stack Memory Test

#### Format:

Error Type 1:                    Aux #TT failure Xor = (XXXX)      Pass =  
   pppp  
Error Type 2:                    Stack Failure Xor = (XXXX)      Pass =  
   pppp

#### WHERE:

TT = Auxiliary Register under test  
XXXX = XOR of expected and actual patterns  
pppp = that current pass number at error time

#### Error:

Error type 1 is caused when auxiliary register TT fails to hold the test pattern.

Error type 2 is caused when the Stack fails to hold the test pattern.

## 4.2 Register Diagnostics

### General Purpose Registers

*This diagnostic is designed to test the registers in such a manner that it may be determined whether or not bits have gone bad, or whether a conflict in addressing (of registers) exists.*

*When RESET is keyed during this program, The KEY SF'? message should be displayed.*

## 4.3 Auxiliary

*This diagnostic is designed to check the Auxiliary registers to determine whether each Auxiliary register will:*

- a) Hold a particular pattern.*
- b) Have any effect on any other auxiliary register.*
- c) Have any effect on any stack level.*

*When RESET is keyed during this program, the key SF'? message should be displayed.*

## 4.4 Stack

*This diagnostic is designed to check the Stack, to determine whether each Stack level will:*

- a) Hold a particular pattern.*
- b) Have an effect on any other Stack level.*
- c) Have an effect on any Auxiliary register.*

*When RESET is keyed during this program, the KEY SF'? message should be displayed.*

## APPENDIX B

### MENU SCREENS

#### System Power-Up Menu

```
!
!
!          ***** SYSTEM 2200 *****
!
!   Select item with SPACE & BACKSPACE.
MEMORY 0120 K
!   Key RUN to execute, CLEAR or PREV SCRN for previous screen.
TERMINAL 1
!
!
!
!
!
!
# MVP BASIC-2
!
!
. Diagnostics
!
!
```

#### Diagnostic Package Power-Up Menu

```
!
!
!          ***** CPU/MEMORY DIAGNOSTICS *****
!
!   Select item with SPACE & BACKSPACE.
MEMORY 0120 K
!   Key RUN to execute, CLEAR or PREV SCRN for previous screen.
TERMINAL 1
!
!
!
!
!           # Customer Diagnostic Menu
!
!
!           . Press RESET then SF'16 - 19 for User Diagnostic Menu
!           . Press RESET then SF'28 - 31 for Field Service Diagnostic Menu
!
!
```



Customer Diagnostic Menu

```
!
!  
!
!  
!          ***** CUSTOMER DIAGNOSTIC MENU *****  
!  
!  Select item with SPACE & BACKSPACE.                MEMORY 0120 K  
!  Key RUN to execute, CLEAR or PREV SCRN for previous screen.  TERMINAL 1  
!  
!  
!          # CPU Instructions  
!          . Control Memory  
!          . Data Memory  
!          . CPU Registers  
!          . All of the Above  
!  
!  
!  
!
```

User Menu

```
!  
!  
!  KEY SF' ?  
!  
!  
!          *** USER MENU ***  
!  
!  
!          SF'00 - CPU Instructions  
!          SF'01 - Control Memory  
!          SF'02 - Data Memory  
!          SF'03 - CPU Registers  
!          SF'04 - All of the Above  
!  
!  
!
```

Field Service Menu

---

!  
!  
! KEY SF'?  
!  
!  
! \*\*\* FIELD SERVICE MENU \*\*\*  
!  
! SF'00 - CPU Instructions Diagnostic  
! SF'01 - Control Memory Addressing  
! SF'02 - Control Memory Moving Inversions  
! SF'03 - Control Memory Addr. and Move. Inv.  
! SF'04 - Data Memory Addressing  
! SF'05 - Data Memory Moving Inversions  
! SF'06 - Data Memory Addr. and Move. Inv.  
! SF'07 - B Bit Registers  
! SF'08 - Auxiliary Registers  
! SF'09 - Stack Registers  
! SF'10 - B Bit, Auxiliary and Stack  
!  
!  
!

## APPENDIX C

### RUN TIME SCREENS

#### CPU Diagnostics

---

```
!
!  
!  
!   ***CPU DIAGNOSTIC *** Rev. 11B4  
!   Pass LLLL  
!  
!   IMMED REG XX  
!   REG INSTR XX  
!   X-REG INSTR XX  
!   MASK BR XX  
!   REG BR XX  
!   IMMED R/W XX  
!   REG R/W XX  
!   AUX/STACK R/W XX  
!  
!
```

LLLL = Number of completed loops  
XX = Microinstruction currently being tested (in HEX)

---

```
!  
!  
!  
!   *** CPU REGISTERS DIAGNOSTICS *** Rev. 1170  
!  
!   No Err's          Press 'P' to Print Errors at /215 ('T' for /204).  
!  
!   Press 'CONTINUE' to Start  
!  
!
```

!  
!  
!  
!  
!  
!  
!  
!  
!  
!

\*\*\* CPU REGISTERS DIAGNOSTICS \*\*\* Rev. 1170

No Err's            Press 'P' to Print Errors at /215 ('T' for /204).

Currently running test (Pass 0001)

"Currently running test" will be the name of the test currently running.

Control Memory Diagnostics


---

```

!
!
!
!           *** CONTROL MEMORY DIAGNOSTIC ***   Rev.1170
!
! Memory Size = 0028K                               No Err's
!
!           Press 'P' to Print Errors at /215 ('T' for /204).
!
!           Press 'CONTINUE' to Start
!
!
!

```

---

```

!
!
!
!           *** CONTROL MEMORY DIAGNOSTIC ***   Rev.1170
!
! Memory Size = 0028K                               No Err's
!
!           Press 'P' to Print Errors at /215 ('T' for /204).
!
!           Currently running test (Pass 0001)
!
!
!

```

"Currently running test" will be the name of the test currently running.

This option is on Field Service Menu only.

---

```

!
!
!
!           *** CONTROL MEMORY DIAGNOSTIC ***   Rev. 1170
!
! Memory Size = 0032K   Ramboard Selected = 7588   No Err's
!
!           Press '6' for 6788 or '7' for 7588.
!           Press 'P' to Print Errors at /215 ('T' for /204).
!           Press 'R' to Select Memory Size if Other Than Specified.
!           Press 'CONTINUE' to Start
!
!
!

```

Field Service version only.

---

!  
!  
!  
!                    \*\*\* Enter Actual Memory Size \*\*\*  
!  
!                    (Suspect Module Should be in Second Slot)  
!  
!                    For 7588, Press '1' - 44K, '2' - 60K.  
!  
!                    For 6788, Press '5' - 20K, '6' - 24K.  
!  
!  
!                    BOARD REPAIR USE ONLY !!!  
!  
!

---

!  
!  
!  
!                    \*\*\* CONTROL MEMORY DIAGNOSTIC\*\*\*    Rev. 1170  
!  
!                    Memory Size = 0032K    Ramboard Selected = 7588    No Err's  
!                                       Press '6' for 6788 or '7' for 7588.  
!                                       Press 'P' to Print Errors at /215 ('T' for /204).  
!                                       Press 'R' to Select Memory Size if Other Than Specified.  
!                    (Currently running test)    (Pass 0001)  
!  
!

"Currently running test" will be the name of the test currently running.

Data Memory Diagnostic

```
!
!

---


!
!          *** DATA MEMORY DIAGNOSTIC ***      Rev. 1170
!
! Memory Size = 0120K                          No ERR's
!
!          Press 'P' to Print Errors at /215 ('T' for /204).
!
! Press 'CONTINUE' to Start
!
```

```
!
!

---


!
!          *** DATA MEMORY DIAGNOSTIC ***      Rev. 1170
!
! Memory Size = 0120K                          No ERR's
!
!          Press 'P' to Print Errors at /215 ('T' for /204).
!
! Currently running test (Pass 0001)
!
```

"Currently running test" will be the name of the test currently running.

(Field Service Version only)

```
!
!

---


!
!          *** DATA MEMORY DIAGNOSTIC ***      Rev. 1170
!
! Memory Size = 0120K      Ramboard Selected = 7587      No Err's
!                          Press '6' for 6787 or '7' for 7587.
!                          Press 'P' to Print Errors at /215 ('T' for /204).
!                          Press 'R' to Select Memory Size if Other Than Specified.
! Press 'CONTINUE' to Start
!
```

(Field Service Version only)

!  
!  
!  
!  
!  
!  
!  
!  
!  
!  
!  
!  
!  
!  
!  
!

\*\*\* Enter Actual Memory Size \*\*\*

(Suspect Module Should be in Second Slot)

For 7587, Press '1' - 144K, '2' - 176K, '3' - 200K, '4' - 232K.

For 6787, Press '5' - 048K, '6' - 064K.

BOARD REPAIR USE ONLY !!!

!  
!  
!  
!  
!  
!  
!  
!  
!  
!  
!  
!  
!  
!  
!  
!

\*\*\* DATA MEMORY DIAGNOSTIC \*\*\* Rev. 1170

Memory Size = 0120K Ramboard Selected = 7587 No Err's  
Press '6' for 6787 or '7' for 7587.  
Press 'P' to Print Errors at /215 ('T' for /204).  
Press 'R' to Select Memory Size if Other Than Specified.  
Currently running test (Pass 0001)

"Currently running test" will be the name of the test currently running.



Chain Mode

---

```

!
!
!   *** CPU DIAGNOSTIC ***   Rev. 11B4
!   Pass 0000
!                                     ! Chain Mode Pass = 0000 !
!   IMMED REG 07
!   REG INSTR 10
!   X-REG INSTR 1A
!   MASK BR 1C
!   REG BR 21
!   IMMED R/W 4A
!   REG R/W 55
!   AUX/STACK R/W 76
!

```

---

```

!
!
!                                     *** CONTROL MEMORY DIAGNOSTIC ***   Rev. 1170
!
!   Memory Size = 0032K                                     No Err's
!
!                                     ! DIAGNOSTIC IS IN CHAIN MODE !
!
!   Currently running test    (Pass 0001) --
!

```

"Currently running test" will be the name of the test currently running.

---

!  
!  
!  
! \*\*\* DATA MEMORY DIAGNOSTIC \*\*\* Rev. 1170  
!  
! Memory Size = 0120K No Err's  
!  
! ! DIAGNOSTIC IS IN CHAIN MODE !  
!  
! Currently running test (Pass 0001) --  
!

"Currently running test" will be the name of the test currently running.

---

!  
!  
!  
! \*\*\* CPU REGISTERS DIAGNOSTICS \*\*\* Rev. 1170  
!  
! No Err's  
!  
! ! DIAGNOSTIC IS IN CHAIN MODE !  
!  
! Currently running test (Pass 0001)  
!

"Currently running test" will be the name of the test currently running.

Error screen example

```
!
!

---


!
!      *** DATA MEMORY DIAGNOSTIC ***   Rev. 1170
!
! Memory Size = 0120K   Ramboard Selected = 7587   0016 Err's
!           Press '6' for 6787 or '7' for 7587.
!           Press 'P' to Print Errors at /215 ('T' for /204).
!           Press 'R' to Select Memory Size if Other Than Specified.
! Currently running test   (Pass 0001)
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001
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!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001
! Screen Full Press 'CONTINUE' or 'RUN' or 'L'
!
!
```

"Currently running test" will be the name of the test currently running.

Scope loop error screen example

```
!
!  
!          *** DATA MEMORY DIAGNOSTIC ***   Rev. 1170  
!  
! Memory Size = 0120K   Ramboard Selected = 7587   0016 Err's  
!           Press '6' for 6787 or '7' for 7587.  
!           Press 'P' to Print Errors at /215 ('T' for /204).  
!           Press 'R' to Select Memory Size if Other Than Specified.  
! Currently running test   (Pass 0001)  
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001  
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001  
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001  
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001  
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001  
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001  
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001  
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001  
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001  
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001  
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001  
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001  
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001  
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001  
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001  
!   BEDM 80.2000 Even = FF Odd = FF           Pass = 0001  
!   Data Bus Stuck Test   (Pass 0001) -- TEST SHOWN IN SCOPE LOOP  
!  
!
```

"Currently running test" will be the name of the test currently running.