

DR70-A,B,C

DR70 REPAIR DIAG  
CZDRMAO

AH-T420A-MC  
FICHE 1 OF 2

OCT 1983  
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The main body of the document is a large, dense grid of technical data. Each cell in the grid contains a small, structured table or diagram, likely representing a specific component or system. The text within these cells is extremely small and difficult to read, but the overall layout is organized into a regular grid pattern. The grid covers the majority of the page area below the header.



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Table with multiple columns and rows of technical data, including various alphanumeric codes and symbols. The text is faint and difficult to read, but appears to be organized in a grid format. Some visible fragments include 'CZDRMA0', 'AH-T420A-MC', and various alphanumeric strings.





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IDENTIFICATION

PRODUCT CODE: AC-T419A-MC  
PRODUCT NAME: CZDRMAO DR70 REPAIR DIAG  
PRODUCT DATE: FEBRUARY 25, 1983  
MAINTAINER: CSS/GOVERNMENT NETWORKS GROUP DIAGNOSTIC ENGINEERING  
COSTA MESA, CALIFORNIA  
AUTHOR: H. PAUL HOLSINGER

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DIGITAL	PDP	UNIBUS	MASSBUS
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## 0.0 MODIFICATION HISTORY

25-JAN-83 INITIAL DESIGN  
23-FEB-83 REVISION A.0 SUBMITTED FOR RELEASE

## 1.0 GENERAL INFORMATION

## 1.1 PROGRAM ABSTRACT

THIS PROGRAM CONTAINS A SET OF TESTS WHICH WILL VERIFY THE INTEGRITY OF THE DR70 INTERFACE CABLED TO AN RH11 OR RH70 MASSBUS CONTROLLER. THE TESTS REQUIRE THAT THE USER INTERFACE TO THE DR70 BE DISCONNECTED AND THE M8432 TEST MODULE AND CABLING BE INSTALLED. TESTING THE INTERFACE IS LIMITED TO ONE UNIT ONLY.

THE DEFAULT SET OF TESTS WILL EXERCISE BOTH REVISION "A" AND "B" INTERFACE BOARDS. ADVANCED TEST(S) MAY BE SELECTED DEPENDING UPON THE OPERATING REQUIREMENTS OF THE DR70 INTERFACE ENVIRONMENT.

## 1.2 RELATED DOCUMENTS AND STANDARDS

THE USER SHOULD REFER TO THE FOLLOWING MANUALS/OPTION DESCRIPTIONS FOR MORE DETAILED INFORMATION.

DOCUMENT	REV	DESCRIPTION
CSS-WO-F-5.2-26		RH70 MASSBUS CONTROLLER OPTION DES.
CSS-WO-F-5.2.27		RH11 MASSBUS CONTROLLER OPTION DES.
YW-C084C-00	P1	DR70B MASSBUS CHANNEL INTERFACE OPTION DES.
AC-S296A-AC	A0	CIQMAO XXDP+ PROGRAMMER'S MANUAL



## 2.0 HARDWARE REQUIREMENTS

### 2.1 SYSTEM REQUIREMENTS

THE PROGRAM IS DESIGNED TO TEST THE OPTION ONLY ON THE PDP-11 FAMILY PROCESSORS, WITH AT LEAST 16K MEMORY. PRIOR TO INSTALLATION OF THE DR70 INTERFACE, THE SYSTEM MUST HAVE EITHER AN RH11 OF RH70 MASSBUS CONTROLLER INSTALLED.

### 2.2 MEDIA

THIS DIAGNOSTIC IS AVAILABLE FROM THE SOFTWARE DISTRIBUTION CENTER (SDC) ON MULTIMEDIA. REFER TO THE HARDWARE DOCUMENTATION KIT HANDBOOK FOR ORDERING INFORMATION.

### 2.3 DIAGNOSTIC HIERARCY PREREQUISITES

BEFORE THE PROGRAM IS LOADED, THE RH11(RH70) MASSBUS CONTROLLER, THE DR70 AND THE M8432 TEST MODULE AND CABLING SHOULD BE INSTALLED ON THE PDP SYSTEM, AND CHECKED USING A FEW QUICK TESTS.

THE SYSTEM SHOULD BOOT XXDP+ PROPERLY: IMPROPER INSTALLATION MAY CAUSE THE BUS TO HANG, AND PREVENT ANY I/O FROM TAKING PLACE.

RH11(RH70) REGISTER ADDRESSING: THE RH11(RH70) REGISTERS SHOULD BE EXAMINED WITHOUT ADDRESS ERROR USING THE SWITCH REGISTER.

DR70 DRIVE TYPE: THE DRIVE TYPE REGISTER (CSR + 26) CONTENTS SHOULD BE EXAMINED TO DETERMINE THAT THE DR70 INTERFACE IS PRESENT ON THE MASSBUS, AND THE PROPER UNIT SELECT SWITCHES HAVE BEEN SET.

### 2.4 ASSUMPTIONS

ALL MASSBUS AND UNIBUS CABLING AND TERMINATORS ARE ASSUMED TO BE FUNCTIONING PROPERLY.

### 2.5 RESTRICTONS

THIS DIAGNOSTIC SUPPORTS TESTING OF A SINGLE DR70 CABLED TO A DEDICATED MASSBUS CONTROLLER. THE USER INTERFACE MUST BE REMOVED AND REPLACED BY THE M8432 MAINTENANCE CARD.



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### 3.0 SOFTWARE REQUIREMENTS

#### 3.1 DIAGNOSTIC SUPERVISOR

THIS DIAGNOSTIC HAS BEEN WRITTEN FOR USE WITH THE DIAGNOSTIC RUNTIME SERVICES SOFTWARE (SUPERVISOR). THESE SERVICES PROVIDE THE INTERFACE TO THE OPERATOR AND TO THE SOFTWARE ENVIRONMENT. THIS PROGRAM CAN BE USED WITH XXDP+, ACT, APT, SLIDE AND PAPER TAPE. FOR A COMPLETE DESCRIPTION OF THE RUNTIME SERVICES, REFER TO THE XXDP+ USER'S MANUAL. THERE IS A BRIEF DESCRIPTION OF THE RUNTIME SERVICES IN SECTION 4 OF THIS DOCUMENT.

#### 3.2 REQUIRED FILES

THE DISTRIBUTION KIT SHOULD CONTAIN THE FOLLOWING FILES:

ZDRMAO.BIN	DIAGNOSTIC PROGRAM
ZDRMAO.HLP	DIAGNOSTIC HELP INFORMATION
DRS.HLP	SUPERVISOR HELP INFORMATION

#### 3.3 ASSUMPTIONS

IT IS ASSUMED THAT THE OPERATOR IS FAMILIAR WITH THE PDP-11 SYSTEM USING THE DR70 OPTION, AND THAT THE OPERATOR HAS READ THIS PROGRAM DOCUMENTATION BEFORE ATTEMPTING TO LOAD THE DIAGNOSTIC.



## 4.0 OPERATING INSTRUCTIONS

THIS SECTION CONTAINS A BRIEF DESCRIPTION OF THE RUNTIME SERVICES.  
FOR DETAILED INFORMATION, REFER TO THE XXDP+ USER'S MANUAL (CHQUS).

## 4.1 COMMANDS

THERE ARE ELEVEN LEGAL COMMANDS FOR THE DIAGNOSTIC RUNTIME SERVICES  
(SUPERVISOR). THIS SECTION LISTS THE COMMANDS AND GIVES A VERY  
BRIEF DESCRIPTION OF THEM. THE XXDP+ USER'S MANUAL HAS MORE DETAILS.

COMMAND	EFFECT
START	START THE DIAGNOSTIC FROM AN INITIAL STATE
RESTART	START THE DIAGNOSTIC WITHOUT INITIALIZING
CONTINUE	CONTINUE AT TEST THAT WAS INTERRUPTED (AFTER ^C)
PROCEED	CONTINUE FROM AN ERROR HALT
EXIT	RETURN TO XXDP+ MONITOR (XXDP+ OPERATION ONLY!)
ADD	ACTIVATE A UNIT FOR TESTING (ALL UNITS ARE CONSIDERED TO BE ACTIVE AT START TIME)
DROP	DEACTIVATE A UNIT
PRINT	PRINT STATISTICAL INFORMATION (IF IMPLEMENTED BY THE DIAGNOSTIC - SECTION 7.0)
DISPLAY	TYPE A LIST OF ALL DEVICE INFORMATION
FLAGS	TYPE THE STATE OF ALL FLAGS (SEE SECTION 4.3)
ZFLAGS	CLEAR ALL FLAGS (SEE SECTION 4.3)

A COMMAND CAN BE RECOGNIZED BY THE FIRST THREE CHARACTERS. SO  
YOU MAY, FOR EXAMPLE, TYPE "STA" INSTEAD OF "START".



## 4.2 SWITCHES

THERE ARE SEVERAL SWITCHES WHICH ARE USED TO MODIFY SUPERVISOR OPERATION. THESE SWITCHES ARE APPENDED TO THE LEGAL COMMANDS. ALL OF THE LEGAL SWITCHES ARE TABULATED BELOW WITH A BRIEF DESCRIPTION OF EACH. IN THE DESCRIPTIONS BELOW, A DECIMAL NUMBER IS DESIGNATED BY 'DDDDD'.

SWITCH	EFFECT
/TESTS:LIST	EXECUTE ONLY THOSE TESTS SPECIFIED IN THE LIST. LIST IS A STRING OF TEST NUMBERS, FOR EXAMPLE - /TESTS:1:5:7-10. THIS LIST WILL CAUSE TESTS 1,5,7,8,9,10 TO BE RUN. ALL OTHER TESTS WILL NOT BE RUN.
/PASS:DDDDD	EXECUTE DDDDD PASSES (DDDDD = 1 TO 64000)
/FLAGS:FLGS	SET SPECIFIED FLAGS. FLAGS ARE DESCRIBED IN SECTION 4.3.
/EOP:DDDDD	REPORT END OF PASS MESSAGE AFTER EVERY DDDDD PASSES ONLY. (DDDDD = 1 TO 64000)
/UNITS:LIST	TEST/ADD/DROP ONLY THOSE UNITS SPECIFIED IN THE LIST. LIST EXAMPLE - /UNITS:0:5:10-12 USE UNITS 0,5,10,11,12 (UNIT NUMBERS = 0-63)

## EXAMPLE OF SWITCH USAGE:

START/TESTS:1-5/PASS:1000/EOP:100

THE EFFECT OF THIS COMMAND WILL BE: 1) TESTS 1 THROUGH 5 WILL BE EXECUTED, 2) ALL UNITS WILL TESTED 1000 TIMES AND 3) THE END OF PASS MESSAGES WILL BE PRINTED AFTER EACH 100 PASSES ONLY. A SWITCH CAN BE RECOGNIZED BY THE FIRST THREE CHARACTERS. YOU MAY, FOR EXAMPLE, TYPE '/TES:1-5' INSTEAD OF '/TESTS:1-5'.

BELOW IS A TABLE THAT SPECIFIES WHICH SWITCHES CAN BE USED BY EACH COMMAND.

	TESTS	PASS	FLAGS	EOP	UNITS
START	X	X	X	X	X
RESTART	X	X	X	X	X
CONTINUE		X	X	X	
PROCEED			X		
DROP					X
ADD					X
PRINT					
DISPLAY					X
FLAGS					
ZFLAGS					
EXIT					



## 4.3 FLAGS

FLAGS ARE USED TO SET UP CERTAIN OPERATIONAL PARAMETERS SUCH AS LOOPING ON ERROR. ALL FLAGS ARE CLEARED AT STARTUP AND REMAIN CLEARED UNTIL EXPLICITLY SET USING THE FLAGS SWITCH. FLAGS ARE ALSO CLEARED AFTER A START COMMAND UNLESS SET USING THE FLAG SWITCH. THE ZFLAGS COMMAND MAY ALSO BE USED TO CLEAR ALL FLAGS. WITH THE EXCEPTION OF THE START AND ZFLAGS COMMANDS, NO COMMANDS AFFECT THE STATE OF THE FLAGS; THEY REMAIN SET OR CLEARED AS SPECIFIED BY THE LAST FLAG SWITCH.

FLAG	EFFECT
HOE	HALT ON ERROR - CONTROL IS RETURNED TO RUNTIME SERVICES COMMAND MODE
LOE	LOOP ON ERROR
IER*	INHIBIT ALL ERROR REPORTS
IBE*	INHIBIT ALL ERROR REPORTS EXCEPT FIRST LEVEL (FIRST LEVEL CONTAINS ERROR TYPE, NUMBER, PC, TEST AND UNIT)
IXE*	INHIBIT EXTENDED ERROR REPORTS (THOSE CALLED BY PRINTX MACRO'S)
PRI	DIRECT MESSAGES TO LINE PRINTER
PNT	PRINT TEST NUMBER AS TEST EXECUTES
BOE	'BELL' ON ERROR
UAM	UNATTENDED MODE (NO MANUAL INTERVENTION)
ISR	INHIBIT STATISTICAL REPORTS (DOES NOT APPLY TO DIAGNOSTICS WHICH DO NOT SUPPORT STATISTICAL REPORTING)
IDR	INHIBIT PROGRAM DROPPING OF UNITS
ADR	EXECUTE AUTODROP CODE
LOT	LOOP ON TEST
EVL	EXECUTE EVALUATION (ON DIAGNOSTICS WHICH HAVE EVALUATION SUPPORT)

\* ERROR MESSAGES ARE DESCRIBED IN SECTION 3.1

SEE THE XXDP+ USER'S MANUAL FOR MORE DETAILS ON FLAGS. YOU MAY SPECIFY MORE THAN ONE FLAG WITH THE FLAG SWITCH. FOR EXAMPLE, TO CAUSE THE PROGRAM TO LOOP ON ERROR, INHIBIT ERROR REPORTS AND TYPE A 'BELL' ON ERROR, YOU MAY USE THE FOLLOWING STRING:

```
/FLAGS:LOE:IER:BOE
```



## 4.4 HARDWARE QUESTIONS

WHEN A DIAGNOSTIC IS STARTED, THE RUNTIME SERVICES WILL PROMPT THE USER FOR HARDWARE INFORMATION BY TYPING "CHANGE HW (L) ?" YOU MUST ANSWER "Y" AFTER A START COMMAND UNLESS THE HARDWARE INFORMATION HAS BEEN "PRELOADED" USING THE SETUP UTILITY (SEE CHAPTER 6 OF THE XXDP+ USER'S MANUAL). WHEN YOU ANSWER THIS QUESTION WITH A "Y", THE RUNTIME SERVICES WILL ASK FOR THE NUMBER OF UNITS (IN DECIMAL). YOU WILL THEN BE ASKED THE FOLLOWING QUESTIONS FOR EACH UNIT.

CHANGE HW (L) ?

# UNITS (D) ?

UNIT 0  
 DEVICE ADDRESS (O) 172440 ?  
 VECTOR ADDRESS (O) 224 ?  
 PRIORITY (D) 5 ?  
 DRIVE (D) 0 ?

UPON INITIAL LOADING OF THE PROGRAM, THE OPERATOR MAY ELECT TO UTILIZE THE ABOVE DEFAULT P-TABLE VALUES, WHICH HAVE ALREADY BEEN ASSEMBLED INTO THE PROGRAM. ADDITIONALLY, THE OPERATOR MAY CHOOSE TO MODIFY THE DEFAULT P-TABLE VALUES BY ANSWERING THE HARDWARE QUESTIONS TO BUILD THE HARDWARE P-TABLE FOR UNIT 0. THE OPERATOR MUST SPECIFY BOTH THE DEVICE AND INTERRUPT VECTOR ADDRESSES OF THE INTERFACE, WHICH ARE SELECTED BY THE APPROPRIATE JUMPERS ON THE RH11 OR RH70 CONTROLLER ADDRESS BOARD. IN ADDITION, THE OPERATOR MUST SPECIFY THE BUS REQUEST INTERRUPT PRIORITY AND THE DRIVE NO. SELECTED FOR THE INTERFACE.

THE DEFAULT VALUES PRESENT ARE PROVIDED TO AVOID CONFLICT WITH THE STANDARD PDP-11 SYSTEMDEVICE ADDRESSES. CONSULT THE PDP-11 PERIPHERALS HANDBOOK FOR THE STANDARD ASSIGNMENTS.



#### 4.5 SOFTWARE QUESTIONS

AFTER YOU HAVE ANSWERED THE HARDWARE QUESTIONS OR AFTER A RESTART OR CONTINUE COMMAND, THE RUNTIME SERVICES WILL ASK FOR SOFTWARE PARAMETERS. THESE PARAMETERS WILL GOVERN SOME DIAGNOSTIC SPECIFIC OPERATION MODES. YOU WILL BE PROMPTED BY "CHANGE SW (L) ?" IF YOU WISH TO CHANGE ANY PARAMETERS, ANSWER BY TYPING "Y". THE SOFTWARE QUESTIONS AND THE DEFAULT VALUES ARE DESCRIBED IN THE NEXT PARAGRAPH(S).

##### 4.5.1 SOFTWARE PARAMETER CONTROL

THE SOFTWARE QUESTION PARAMETERS ARE USED BY THE PROGRAM TO BUILD A TEST SELECTION WORD, WHICH CONTROLS DEFAULT AND OPTIONAL INTERFACE TESTING. THIS APPROACH ALLOWS EASY MODIFICATION OF INDIVIDUAL TEST EXECUTION CRITERIA, IF REQUIRED. THE TEST SELECTION MASK IS REBUILT EACH PASS, AND MAY BE MODIFIED AFTER ANY START, RESTART OR CONTINUE COMMAND. NOTE THAT ALL PARAMETER DEFAULT VALUES ARE INITIALLY CLEARED, WHICH OMITTS ALL OPTIONAL TESTING.

##### 4.5.2 SOFTWARE QUESTION DESCRIPTIONS

###### (1) REVISION "A" INTERFACE (L) N ?

A "Y" RESPONSE TO THIS QUESTION WILL ADD/OMIT ALL TEST SECTIONS WHICH APPLY TO THE REVISION "A" DR70 INTERFACE.

###### (2) ATO ATTN DISABLED [SW4 'OFF'] (L) N ?

A "Y" RESPONSE TO THIS QUESTION WILL BOTH ADD THE OPTIONAL TEST FOR SWITCH 4 DESCRIBED IN SECTION 8.4.3 AND OMIT THE USER ATTENTION TEST DESCRIBED IN SECTION 8.1.6. NOTE THIS QUESTION ONLY APPLIES TO REVISION "B" DR70 INTERFACE TESTING.

###### (3) AT3 ATTN DISABLED [SW5 'OFF'] (L) N ?

A "Y" RESPONSE TO THIS QUESTION WILL BOTH ADD THE OPTIONAL TEST FOR SWITCH 5 DESCRIBED IN SECTION 8.4.4, AND OMIT THE USER ATTENTION TEST DESCRIBED IN SECTION 8.1.6. NOTE THIS QUESTION ONLY APPLIES TO REVISION "B" DR70 INTERFACE TESTING.



(4) AT3 TRANSFER ABORT DISABLED [SW6 'OFF'] (L) N ?

A 'Y' RESPONSE TO THIS QUESTION WILL ADD THE OPTIONAL TEST FOR SWITCH 6 DESCRIBED IN SECTION 8.4.5. NOTE THIS QUESTION ONLY APPLIES TO REVISION 'B' DR70 INTERFACE TESTING.

(5) BYTE MODE OPERATION [SW7 'ON'] (L) N ?

THIS QUESTION WILL ALLOW THE OPERATOR TO MAKE ALL INTERFACE DATA TRANSFER TESTING IN BYTE MODE. REFER TO THE BYTE MODE TESTS DESCRIBED IN SECTION 8.3.

(6) INPUT PARITY DISABLED [SW8 'OFF'] (L) N ?

THIS QUESTION WILL DISABLE THE PARITY GENERATION TEST DESCRIBED IN SECTION 8.4.2. NOTE THAT THIS QUESTION IS USEFUL ONLY FOR DR70 'B' BOARDS WITHOUT THE INVERT PARITY LOGIC ECO.

(7) OPERATOR SPECIFIED DATA PATTERN (L) N ?

THIS QUESTION WILL ENABLE THE OPERATOR TO SPECIFY DATA PATTERN AND TRANSFER BLOCK SIZE FOR EITHER BYTE OR WORD MODE TESTS DESCRIBED IN SECTIONS 8.4.6 AND 8.4.7.

(8) ADJUST TRANSFER BANDWIDTH (L) N ?

THIS QUESTION WILL ALLOW THE OPERATOR TO MAKE ADJUSTMENTS TO THE SCLK TRANSFER PERIOD. A 'Y' RESPONSE WILL CAUSE THE TEST IN 8.4.8 TO BE EXECUTED BEFORE THE END OF PASS.



#### 4.6 OPERATOR HELP INFORMATION

TWO HELP FILES HAVE BEEN CREATED TO AID THE OPERATOR IN RUNNING THE PROGRAM. THE FILES CONTAIN THE MOST USEFUL INFORMATION CONTAINED IN THIS DOCUMENT. NOTE THE OPERATOR IS ASKED IF HE WANTS THE INFORMATION DISPLAYED ONLY ONCE EACH TIME THE PROGRAM IS LOADED, AFTER ALL SOFTWARE QUESTIONS HAVE BEEN ANSWERED. THE DEFAULT RESPONSE TO EACH QUESTION IS NEGATIVE.

PRINT SUPERVISOR HELP FILE: DRS.HLP (L) N ?

PRINT DIAGNOSTIC HELP FILE: ZDRMA0.HLP (L) N ?

#### 4.7 EXTENDED P-TABLE DIALOGUE

WHEN YOU ANSWER THE HARDWARE QUESTIONS, YOU ARE BUILDING ENTRIES IN A TABLE THAT DESCRIBES THE DEVICES UNDER TEST. THIS PROGRAM IS DESIGNED TO TEST ONLY ONE DR70 INTERFACE UNIT (0-7).



## 4.8 SAMPLE PROGRAM EXECUTION

THE FOLLOWING SAMPLE PROGRAM EXECUTION WILL ILLUSTRATE THE MINIMUM REQUIRED COMMANDS NECESSARY TO EXECUTE THE DEFAULT TESTS. NOTE THAT THIS EXAMPLE CAN BE USED ONLY IF ALL DEFAULT HARDWARE AND SOFTWARE CONDITIONS HAVE BEEN MET. OPERATOR INPUT IS DENOTED BY THE UNDERLINED TEXT. EXECUTION TIME FOR A SINGLE PASS IS APPROXIMATELY ONE SECOND.

```
.RUN ZDRMA0 <CR>
-----
ZDRMA0.BIN
DIAG. RUN-TIME SERVICES
ZDRM-A-0
DR70 REPAIR DIAGNOSTIC
UNIT IS DR70 MASSBUS INTERFACE
RESTART ADDR: 146730
DR>START/PASS:1 <CR>
-----
CHANGE HW (L)   ? N <CR>
-----
CHANGE SW (L)   ? N <CR>
-----
PRINT SUPERVISOR HELP FILE: DRS.HLP (L) N ? N <CR>
-----
PRINT DIAGNOSTIC HELP FILE: ZDRMA0.HLP (L) N ? N <CR>
-----
ZDRM EOP      1
              0 CUMULATIVE ERRORS
DR>
```

WHEN YOU FOLLOW THIS PROCEDURE YOU WILL BE USING ONLY THE DEFAULTS FOR FLAGS AND SOFTWARE PARAMETERS. THESE DEFAULTS ARE DESCRIBED IN SECTIONS 4.3 AND 4.5.



4.9 SW1 DEFAULT SWITCH POSITIONS

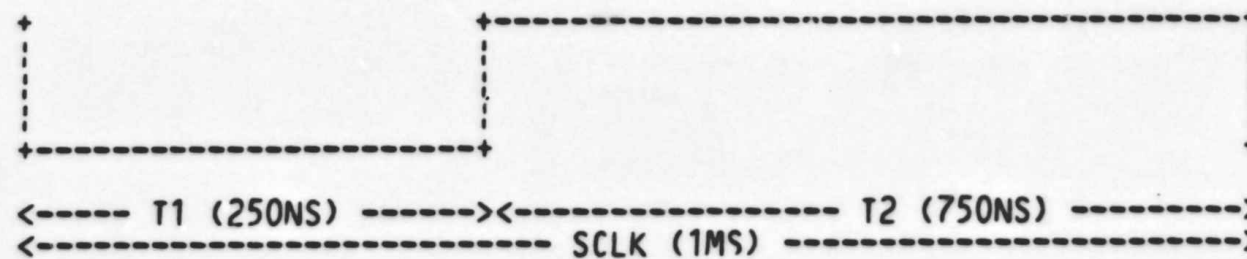
THE FOLLOWING TABLE SHOWS THE NECESSARY SWITCH POSITIONS REQUIRED FOR EXECUTION OF THE DEFAULT TESTS.

SWITCH(ES)	DESCRIPTION	DEFAULT POSITION
SW1-1 SW1-2 SW1-3	MASSBUS DRIVE SELECT BITS 1-3 (SW1-1 IS LSB)	ALL THREE SWITCHES MUST BE CLOSED (ON) TO TEST DRIVE ZERO
SW1-4	ATO USER ATTENTION ENABLE	ATO ATTN. ENABLED (ON)
SW1-5	AT3 USER ATTENTION ENABLE	AT3 ATTN. ENABLED (ON)
SW1-6	AT3 TRANSFER ABORT ENABLE	AT3 ABORT ENABLED (ON)
SW1-7	DR70 BYTE MODE OPERATION	WORD MODE XFERS (OFF)
SW1-8	USER INPUT PARITY ENABLE	PARITY ENABLED (ON)

4.10 TRANSFER RATE ADJUSTMENT

THE DR70 MASSBUS DATA TRANSFER RATE IS CONTROLLED BY AN ON-BOARD SYNC CLOCK (SCLK) PULSE. THIS TRANSFER RATE HAS BEEN FACTORY SET AT 1 MHZ BEFORE SHIPMENT. THIS RATE MAY BE SET TOO FAST FOR SOME SYSTEMS, PRODUCING DATA LATE (DLT) ERRORS AT THE MASSBUS CONTROLLER. IN THIS CASE, THE DR70 SCLK SHOULD BE ADJUSTED BY EXECUTING TEST 27 (BANDWIDTH ADJUSTMENT) AND PLACING AN OCILLISCOPE PROBE ON THE M8440 BOARD TEST POINT (TP1). THE FREQUENCY ADJUSTMENT IS MADE USING THE TWO CALIBRATION POTENTIOMETERS, R57 AND R32. NOTE THAT R57 CONTROLS THE SCLK LOW PULSE WIDTH (T1) AND SHOULD BE SET AT NO LESS THAN 250 NS FOR PROPER OPERATION. THIS DIAGNOSTIC WILL PASS ALL DATA TRANSFER TESTS WITH SCLK SET AT A MAXIMUM RATE OF 1.12 MHZ ON BOTH RH70 AND RH11 MASSBUS CONTROLLERS.

DR70 SYNC CLOCK (SCLK) PULSE WITH MINIMUM TIMES.



### 5.0 DEVICE INFORMATION TABLES

THE DR70 P-TABLE ENTRY CONTAINS ONLY THE MINIMUM INFORMATION REQUIRED TO ADDRESS THE DEVICE AND SERVICE INTERRUPTS. NOTE THAT THESE PARAMETERS ARE DETERMINED BY JUMPERS ON THE RH11 OR RH70 MASSBUS CONTROLLER ADDRESS BOARD. REFER TO SECTION 4.4 FOR THE HARDWARE PARAMETER QUESTIONS AND DEFAULT VALUES.

**DEVICE ADDRESS:** THIS PARAMETER SPECIFIES THE UNIBUS BASE ADDRESS FOR THE MASSBUS CONTROLLER. ALL REGISTERS ARE MAPPED ONTO THE BUS STARTING AT THIS ADDRESS.

**VECTOR ADDRESS:** THIS PARAMETER SPECIFIES THE INTERRUPT SERVICE ADDRESS VECTOR FOR THE DEVICE, WHICH MUST CONTAIN THE SERVICE ROUTINE START ADDRESS.

**PRIORITY:** THIS PARAMETER SPECIFIES THE DEVICE INTERRUPT PRIORITY, WHICH DETERMINES AT WHAT PRIORITY THE SERVICE ROUTINE WILL RUN.

**DRIVE:** THIS PARAMETER CORRESPONDES TO THE DRIVE OR UNIT SELECT SWITCHES SET ON THE INTERFACE.



## 6.0 ERROR INFORMATION

THERE ARE THREE LEVELS OF ERROR MESSAGES THAT MAY BE ISSUED BY A DIAGNOSTIC: GENERAL, BASIC AND EXTENDED. GENERAL ERROR MESSAGES ARE ALWAYS PRINTED UNLESS THE "IER" FLAG IS SET (SECTION 4.3). THE GENERAL ERROR MESSAGE IS OF THE FORM:

NAME TYPE NUMBER ON UNIT NUMBER TST NUMBER PC:XXXXXX  
ERROR MESSAGE

NAME = DIAGNOSTIC NAME  
TYPE = ERROR TYPE (SYS FATAL, DEV FATAL, HARD OR SOFT)  
NUMBER = ERROR NUMBER  
UNIT NUMBER = 0 - N (N IS LAST UNIT IN PTABLE)  
TST NUMBER = TEST AND SUBTEST WHERE ERROR OCCURRED  
PC:XXXXXX = ADDRESS OF ERROR MESSAGE CALL

BASIC ERROR MESSAGES ARE MESSAGES THAT CONTAIN SOME ADDITIONAL INFORMATION ABOUT THE ERROR. THESE ARE ALWAYS PRINTED UNLESS THE "IER" OR "IBR" FLAGS ARE SET (SECTION 4.3). THESE MESSAGES ARE PRINTED AFTER THE ASSOCIATED GENERAL MESSAGE.

EXTENDED ERROR MESSAGES CONTAIN SUPPLEMENTARY ERROR INFORMATION SUCH AS REGISTER CONTENTS OR GOOD/BAD DATA. THESE ARE ALWAYS PRINTED UNLESS THE "IER", "IBR" OR "IXR" FLAGS ARE SET (SECTION 4.3). THESE MESSAGES ARE PRINTED AFTER THE ASSOCIATED GENERAL ERROR MESSAGE AND ANY ASSOCIATED BASIC ERROR MESSAGES.

## 6.1 BASIC ERROR MESSAGES

ALL BASIC ERROR MESSAGES ARE DESIGNED TO BE SPECIFIC AND SELF-EXPLANATORY. PLEASE REFER TO THE DIAGNOSTIC PROGRAM LISTING GLOBAL TEXT SECTION FOR A COMPLETE LIST OF THE BASIC ERROR MESSAGES.

### 6.1.1 REGISTER VALUE/ADDRESSING ERRORS

- 'REGISTER ADDRESS ERROR''
- 'NON-EXISTENT DRIVE ERROR''
- 'REGISTER INITIALIZATION ERROR''
- 'REGISTER ERROR''
- 'CS1 FUNCTION BIT ERROR''
- 'FUNCTION STATUS BIT ERROR''

### 6.1.2 MASSBUS CONTROLLER ERRORS

- 'MASSBUS CONTROLLER ERROR''
- 'MASSBUS CONTROLLER RDY BIT NOT RESET BY IRY''
- 'MASSBUS CONTROLLER RDY BIT NOT SET BY IRY''
- 'CONTROLLER NOT CLEARED BY MASSBUS INIT''

### 6.1.3 INTERFACE STATUS REGISTER ERRORS

- ''INTERFACE STATUS ERROR''
- ''INTERFACE STATUS ERROR ON INTERFACE CLEAR CMD''
- ''INTERFACE STATUS USER ATTN BIT NOT SET/RESET''
- ''INTERFACE STATUS USER ATTENTION BIT NOT RESET''
- ''INTERFACE STATUS IRY NOT SET ON ERROR''
- ''INTERFACE STATUS IRY BIT RESET WHEN CYC BIT SET''
- ''INTERFACE STATUS IRY NOT RESET BY DATA TRANSFER CMD''
- ''IRY NOT SET BY WORD TRANSFER END OF BLOCK''
- ''IRY NOT SET BY WORD TRANSFER ABORT''
- ''IRY NOT SET BY INTERFACE CLEAR CMD''
- ''IRY NOT SET BY BYTE TRANSFER END OF BLOCK''
- ''IRY NOT SET BY BYTE TRANSFER ABORT''



## 6.1.4 USER ATTENTION CONDITION ERRORS

'ATA NOT SET ON USER ATTN CONDITION'  
'ATA NOT SET BY ERR ACTIVE'  
'ATA NOT RESET BY INTERFACE CLEAR CMD'  
'NO INTERRUPT WHEN INTERFACE STATUS ATA SET'  
'ATA NOT RESET BY WRITING TO ATTN SUMMARY BIT'  
'ATA NOT RESET BY LOADING DATA TRANSFER CMD'  
'ATTENTION SUMMARY BIT NOT SET BY UNIT UNDER TEST'

## 6.1.5 USER INTERFACE ERRORS

'ERO NOT SET THROUGH M8432 TEST MODULE'  
'ERO NOT RESET BY INTERFACE CLEAR CMD'  
'ERR NOT SET BY ERO ACTIVE'  
'ERR NOT RESET BY INTERFACE CLEAR CMD'

## 6.1.6 DATA TRANSFER ERRORS

'WORD TRANSFER NOT COMPLETE'  
'WORD TRANSFER ERROR ON INTERFACE WRITE'  
'WORD TRANSFER ERROR ON INTERFACE READ'  
'WORD TRANSFER COMPARISON ERROR'  
'BYTE TRANSFER NOT COMPLETE'  
'BYTE TRANSFER ERROR ON INTERFACE WRITE'  
'BYTE TRANSFER ERROR ON INTERFACE READ'  
'BYTE TRANSFER COMPARISON ERROR'

## 6.1.7 TRANSFER INTERRUPT ERRORS

'NO INTERRUPT ON WORD TRANSFER END OF BLOCK'  
'NO INTERRUPT ON BYTE TRANSFER END OF BLOCK'

## 6.1.8 TRANSFER ABORT ERRORS

'NO WORD TRANSFER ABORT ON INTERFACE WRITE'  
'NO WORD TRANSFER ABORT ON INTERFACE READ'  
'NO BYTE TRANSFER ABORT ON INTERFACE WRITE'  
'NO BYTE TRANSFER ABORT ON INTERFACE READ'  
'CONTROLLER TRE BIT NOT SET BY TRANSFER ABORT LOGIC'

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#### 6.1.9 CONTROL/DATA PARITY ERRORS

"INTERFACE STATUS IDP NOT SET BY DATA PARITY ERROR"  
"INTERFACE STATUS IDP NOT RESET BY INTERFACE CLEAR CMD"  
"INTERFACE STATUS ICP NOT RESET BY WRITE TO IDP BIT"  
"INTERFACE STATUS ICP NOT SET BY CONTROL PARITY ERROR"  
"INTERFACE STATUS ICP NOT RESET BY INTERFACE CLEAR CMD"  
"INTERFACE STATUS ICP NOT RESET BY WRITE TO ICP BIT"

#### 6.1.10 USER ATTENTION/ABORT SWITCH ERRORS

"SW4 DOES NOT DISABLE ATO INPUT TO INTERFACE ATA"  
"SW5 DOES NOT DISABLE AT3 INPUT TO INTERFACE ATA"  
"SW6 DOES NOT DISABLE AT3 TRANSFER ABORT LOGIC"



## 6.2 EXTENDED ERROR MESSAGES

EACH ERROR CONDITION SENSED WHILE TESTING THE INTERFACE WILL PRODUCE AT LEAST ONE EXTENDED ERROR MESSAGE IN ADDITION TO THE ERROR BANNER AND BASIC MESSAGE. THESE EXTENDED MESSAGES WILL PROVIDE USEFUL INFORMATION ABOUT THE INTERFACE/CONTROLLER REGISTER STATUS. EACH TYPE OF EXTENDED IS DISCUSSED BELOW.

## 6.2.1 REGISTER ADDRESSING ERRORS

ALL REGISTER ADDRESSING ERRORS ARE ACCUMULATED AND REPORTED IN TABULAR FORM. AN EXAMPLE IS GIVEN BELOW.

REG	ADRS
DR.CS1	172440
DR.IS	172452

## 6.2.2 REGISTER INITIALIZATION ERRORS

ONLY SPECIFIC REGISTER INITIALIZATION VALUES ARE TESTED BY THE PROGRAM. ANY UNEXPECTED VALUES ARE ACCUMULATED AND LISTED IN TABULAR FORM, WITH THEIR ACTUAL, EXPECTED, XOR AND EXPANDED BIT VALUES. AN EXAMPLE IS GIVEN BELOW.

REG	ACT	EXP	XOR	BIT(S)
DR.CS1	144260	004270	140010	SC TRE F3

## 6.2.3 REGISTER ERRORS

ALL SPECIFIC REGISTER ERRORS ARE REPORTED WITH THEIR ACTUAL, EXPECTED, XOR AND EXPANDED BIT VALUES. AN EXAMPLE IS GIVEN BELOW.

REG	ACT	EXP	XOR	BIT(S)
RH.CS1	100700	000300	100400	DLT MDPE

## 6.2.4 CONTROLLER/INTERFACE STATUS ERRORS

IN SOME CASES, A SPECIFIC REGISTER ERROR MAY HAVE BEEN CAUSED BY THE INTERACTION BETWEEN THE MASSBUS CONTROLLER AND THE INTERFACE, AND A SINGLE REGISTER VALUE DISPLAY IS INSUFFICIENT TO ISOLATE THE PROBLEM. IN THESE CASES, ALL CONTROLLER AND INTERFACE REGISTERS ARE DISPLAYED WITH THE INTENT TO GIVE THE OPERATOR A SNAPSHOT OF THE SYSTEM FOR ANALYSIS. AN EXAMPLE IS GIVEN BELOW.

CONTROLLER STATUS				
RH.CS1	[172440]	144260	:	SC TRE DVA RDY F4 F3
RH.WC	[172442]	177664	:	:
RH.BA	[172444]	003224	:	:
RH.CS2	[172450]	100307	:	DLT OR IR U2 U1 U0

INTERFACE STATUS				
DR.FS	[172446]	004010	:	FR3 DS3
DR.IS	[172452]	100210	:	ATA IRY AT3
DR.IB	[172454]	000400	:	:
DR.AS	[172456]	000200	:	AS7
DR.OB	[172460]	000000	:	:
DR.DT	[172466]	000005	:	:

## 6.2.5 DATA COMPARISON ERRORS

ALL DATA TRANSFER TESTS WILL COMPARE DATA READ AGAINST DATA WRITTEN. ANY DISCREPANCIES ARE RECORDED AND ONLY THE FIRST EIGHT OCCURENCES ARE LISTED, ALONG WITH THE TOTAL ERROR COUNT. IN ADDITION, THE INPUT BUFFER DATA ADDRESS AND DECIMAL WORD NUMBER ARE GIVEN, TO AID IN ISOLATION OF PARTICULAR DATA TRANSFER PROBLEMS. AN EXAMPLE IS GIVEN BELOW.

ADRS	WRD	RECVD	EXPTD	XOR
002040	1	107776	177776	070000
002042	2	117777	177775	060002
002056	10	136777	176777	040000

TOTAL ERRORS: 3

## 6.2.6 DATA PATTERN DISPLAY

DURING INVERTED PARITY GENERATION TESTING, THE PROGRAM WILL DISPLAY THE STATUS OF ALL REGISTERS, AS DESCRIBED ABOVE. IN ADDITION, THE



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PROGRAM WILL DISPLAY THE SPECIFIC DATA PATTERN THAT PRODUCED THE  
ERROR IN THAT SUBTEST, AS SHOWN.

DATA PATTERN: 177777

### 6.3 FORCED MESSAGES

DETECTION OF CERTAIN ERRORS INDICATE A CRITICAL INSTALLATION OR HARDWARE CONFIGURATION FAULT AND WILL FORCE THE APPROPRIATE MESSAGE TO BE DISPLAYED TO FACILITATE CORRECTION OF THE PROBLEM. NOTE THAT THE MESSAGE(S) ARE DISPLAYED REGARDLESS OF OPERATOR SPECIFIED FLAGS/ SWITCHES AND WILL ONLY BE LISTED ONCE EACH TIME THE PROGRAM IS LOADED.

- 'P-TABLE ERROR ON UNIT 0''
- 'CHECK MASSBUS CONTROLLER CSR ADDRESS''
- 'CHECK DRIVE SELECT SWITCHES 1-3''
- 'CHECK UNIT FOR POWER ON''
- 'CHECK SWITCH SW1-7 SET TO 'OFF' POSITION''
- 'CHECK SWITCH SW1-8 SET TO 'ON' POSITION''
- 'CHECK M8432 TEST MODULE LOOP-BACK CABLE''



## 7.0 PERFORMANCE AND PROGRESS REPORTS

AT THE END OF EACH PASS, THE PASS COUNT IS GIVEN ALONG WITH THE TOTAL NUMBER OF ERRORS REPORTED SINCE THE DIAGNOSTIC WAS STARTED. THE 'EOP' SWITCH CAN BE USED TO CONTROL HOW OFTEN THE END OF PASS MESSAGE IS PRINTED. SECTION 4.2 DESCRIBES SWITCHES.

ADDITIONALLY THE PROGRAM SUPPORTS THE 'PRINT' FUNCTION, WHICH ALLOWS THE OPERATOR TO DISPLAY STATISTICAL DATA ABOUT THE TESTS. EACH TEST THAT COMPLETES EXECUTION WILL LOG ITS PASS AND ERROR COUNT INTO THE REPORT TABLES. EACH TIME THE PROGRAM INITIALIZES THROUGH THE START COMMAND CODE, ALL REPORT TABLE ENTRIES ARE CLEARED. THE PROGRAM WILL CONTINUE TO LOG THE INFORMATION UNTIL THE REQUIRED NUMBER OF PASSES ARE EXECUTED, OR AN OPERATOR BREAK IS DETECTED. THE OPERATOR MAY THEN USE THE PRINT COMMAND TO DISPLAY THE TEST SUMMARY, AS SHOWN BELOW. NOTE THAT DATA IS DISPLAYED ONLY FOR TESTS THAT WERE EXECUTED.

DR>STA/TES:1-4:17-20/PAS:1000/EOP:1000/FLA:IER

CHANGE HW ? N

CHANGE SW ? N

ZDRMA0 EOP 1000

160 CUMULATIVE ERRORS

DR>PRI

## DIAGNOSTIC SUMMARY:

TEST	PASSES	ERRORS
1	1000	0
2	1000	0
3	1000	0
4	1000	12
17	1000	100
18	1000	0
19	1000	0
20	1000	48

## 7.1 REPORT DATA CONTROL

EACH TIME THE 'PRINT' COMMAND IS GIVEN, THE REPORT TABLE DATA IS RESET TO ZERO FOR ALL TESTS. THIS IS ALSO TRUE FOR BOTH 'START' AND 'RESTART' COMMANDS. NOTE THE 'CONTINUE' COMMAND CAN BE USED TO AVOID A TABLE RESET.

## 8.0 PROGRAM DESCRIPTION

THE MAIN GROUP OF TESTS IN THE PROGRAM ARE CONSIDERED THE DEFAULT TEST GROUP, WHICH WILL TEST THE BASIC INTERFACE FUNCTIONS. THE INTERFACE IS DESIGNED TO ACCOMODATE SEVERAL ADDITIONAL FUNCTIONS, WHICH MAY BE SELECTED BY THE USER, USING THE ON-BOARD DIP SWITCHES.

THESE FUNCTIONS ARE INCLUDED IN THE TEST SEQUENCE, ONLY WHEN SELECTED USING THE PROGRAM SOFTWARE PARAMETERS, AND MAY AUTOMATICALLY EXCLUDE SOME DEFAULT TESTS AFFECTED BY THE OPTIONAL FUNCTIONS. IT IS ASSUMED THAT THE OPERATOR IS FAMILIAR WITH THE REQUIREMENTS OF THE INTERFACE ENVIRONMENT AND THE TESTS DESCRIBED BELOW BEFORE THE PROGRAM IS LOADED.



## 8.1 DEFAULT REGISTER LOGIC TESTS

SECTIONS 8.1.1 - 8.1.11 DESCRIBE ALL DEFAULT TESTS AND THEIR CONDITIONS FOR EXECUTION. WITH THE EXCEPTION OF THE REGISTER ADDRESSING TEST, ALL TESTS BEGIN WITH A MASSBUS CONTROLLER CLEAR, WHICH WILL INITIALIZE ALL REGISTERS TO A KNOWN STATE. NOTE THAT ANY ERROR DETECTED AFTER A MASSBUS CONTROLLER CLEAR IS CONSIDERED DEVICE FATAL AND WILL DISPLAY ALL REGISTERS CONTENTS AND ABORT THE CURRENT PASS.

### 8.1.1 REGISTER ADDRESSING: (TEST 1)

THIS TEST WILL DETERMINE THAT THE RH11 OR RH70 MASSBUS CONTROLLER IS CONFIGURED WITH THE CORRECT UNIBUS DEVICE ADDRESS, AND THAT THE CORRECT DR70 INTERFACE UNIT IS UNDER TEST. TEST FAILURE INDICATES THAT EITHER THE SPECIFIED REGISTER(S) CANNOT BE ADDRESSED, AND THAT THE MASSBUS CONTROLLER ADDRESS IS INCORRECT, OR THE INCORRECT UNIT HAS BEEN SELECTED AND THE INTERFACE UNIT SELECT SWITCHES SHOULD BE CHECKED. NOTE THAT TEST FAILURE WILL ABORT THE ENTIRE PASS.

### 8.1.2 REGISTER INITIALIZATION: (TEST 2)

THIS TEST WILL CHECK THAT SPECIFIC REGISTERS HAVE BEEN CORRECTLY INITIALIZED BY A MASSBUS CONTROLLER CLEAR SIGNAL. TEST FAILURE WILL LIST THE REGISTER(S) WITH THEIR ACTUAL, EXPECTED AND XOR VALUES AFTER THE MASSBUS CLEAR. NOTE THAT NOT ALL REGISTERS ARE TESTED, AND THAT FAILURE MAY INDICATE THAT EITHER THE CONTROLLER OR THE INTERFACE ARE BAD OR THAT THE INCORRECT DR70 REVISION HAS BEEN SELECTED.

### 8.1.3 CONTROL/STATUS 1 REGISTER FUNCTION BITS: (TEST 3)

THIS TEST WILL DETERMINE THAT ALL CONTROL/STATUS 1 REGISTER FUNCTION BITS MAY BE SET/RESET THROUGH THE MASSBUS CONTROLLER. TEST FAILURE WILL LIST THE CS1 REGISTER ACTUAL, EXPECTED AND XOR VALUES AND INDICATES PROBABLE FAULT ON THE INTERFACE BOARD.

### 8.1.4 INTERFACE FUNCTION/STATUS REGISTER BITS: (TEST 4)

THIS TEST WILL DETERMINE THAT ALL INTERFACE STATUS DRIVE STATUS BITS MAY BE SET/RESET BY THE USER INTERFACE. TEST FAILURE WILL LIST THE FUNCTION/STATUS REGISTER ACTUAL, EXPECTED AND XOR VALUES, AND MAY INDICATE A FAULT ON THE INTERFACE BOARD. NOTE THAT THIS TEST DEPENDS UPON PROPER OPERATION OF THE M8432 TEST MODULE AND LOOP-BACK CABLING. IN THE EVENT THAT NO DRIVE STATUS BITS MAY BE SET, THE OPERATOR IS PROMPTED TO CHECK THAT THE LOOP-BACK CABLE HAS BEEN PROPERLY INSTALLED.

**8.1.5 INTERFACE STATUS ATTENTION CONDITION: (TEST 5)**

THIS TEST WILL BE EXECUTED ONLY WHEN THE DEFAULT USER ATTENTION FUNCTIONS ARE IN EFFECT. THE TEST WILL VERIFY THAT THE INTERFACE STATUS REGISTER USER ATTENTION BITS MAY BE SET/RESET BY THE DRIVE UNDER TEST. TEST FAILURE WILL LIST THE INTERFACE STATUS REGISTER ACTUAL, EXPECTED AND XOR VALUES, AND AGAIN MAY INDICATE A PROBLEM IN USING THE M8432 TEST MODULE AND CABLE.

**8.1.6 INTERFACE STATUS USER ATTENTION CONDITIONS: (TEST 6)**

THIS TEST WILL BE EXECUTED ONLY WHEN THE DEFAULT USER ATTENTION FUNCTIONS ARE IN EFFECT. THE TEST WILL VERIFY THAT THE INTERFACE STATUS REGISTER ATTENTION BIT IS SET BY USER ATTENTION CONDITIONS AND MAY BE RESET BY A DRIVE CLEAR COMMAND. TEST FAILURE WILL LIST THE INTERFACE STATUS REGISTER ACTUAL, EXPECTED AND XOR VALUES, AND INDICATES A FAULT ON THE INTERFACE BOARD.

**8.1.7 INTERFACE STATUS USER ERROR CONDITION: (TEST 7)**

THIS TEST CHECKS FIRST THAT THE INTERFACE STATUS REGISTER USER ERROR BIT MAY BE SET, AND WILL SET BOTH THE GENERAL ERROR AND ATTENTION CONDITION BITS, AND SECONDLY THAT ALL BITS MAY BE RESET BY A DRIVE CLEAR COMMAND. TEST FAILURE WILL LIST THE INTERFACE STATUS REGISTER ACTUAL, EXPECTED AND XOR VALUES, AND INDICATES EITHER A FAULT ON THE INTERFACE BOARD OR A LOOP-BACK CABLE PROBLEM.

**8.1.8 INTERFACE STATUS READY STATUS ON ERROR: (TEST 8)**

THIS TEST WILL VERIFY THAT THE INTERFACE READY STATUS WILL BE RESET BY LOADING A VALID DATA TRANSFER COMMAND INTO THE DRIVE CONTROL REGISTER, AND WILL BE SET BY A USER ERROR CONDITION. TEST FAILURE WILL DISPLAY BOTH THE CONTROLLER AND INTERFACE REGISTERS CONTENTS.



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8.1.9 INTERFACE STATUS ADVANCED ATTENTION FUNCTIONS: (TEST 9)

THIS TEST WILL VERIFY THAT AN INTERFACE ATTENTION CONDITION WILL GENERATE A DEVICE INTERRUPT, AND THAT UNIT UNDER TEST WILL SET THE CORRESPONDING ATTENTION SUMMARY REGISTER BIT. IN ADDITION, THE TEST WILL INSURE THAT THE ATTENTION CONDITION IS REMOVED BY WRITING TO THE ATTENTION SUMMARY REGISTER BIT. FAILURE TO RECEIVE INTERRUPT WILL DISPLAY ALL REGISTERS CONTENTS, AND MAY INDICATE THAT THE INCORRECT INTERRUPT VECTOR ADDRESS OR PRIORITY HAS BEEN SELECTED FOR THE MASSBUS CONTROLLER. AN ATTENTION SUMMARY REGISTER FAILURE WILL LIST THE REGISTER ACTUAL, EXPECTED AND XOR VALUES, AND INDICATES A FAULT ON THE INTERFACE BOARD.

## 8.2 DEFAULT WORD TRANSFER TESTS

SECTIONS 8.2.1 - 8.2.5 DESCRIBE ALL INTERFACE WORD TRANSFER TESTS. THESE TESTS ARE EXECUTED WITH THE DEFAULT TESTS, UNLESS BYTE TRANSFERS ARE SELECTED BY THE OPERATOR. THE TESTS WILL TRANSFER 64-WORD BLOCKS TO AND FROM THE INTERFACE, UTILIZING THE TEST MODULE SILO AND CABLING.

### 8.2.1 WORD DATA TRANSFER LOGIC: (TEST 10)

THIS TEST WILL BE EXECUTED ONLY UNDER THE DEFAULT (WORD) TRANSFER MODE CONDITIONS. THE TEST WILL CHECK THAT AN INTERFACE CYCLE REQUEST WILL NOT RESET EITHER THE INTERFACE OR CONTROLLER READY STATUS BITS UNTIL A VALID DATA TRANSFER COMMAND IS ISSUED TO THE DRIVE, AND THAT THE READY STATUS IS PRESENT ON TRANSFER COMPLETE. TEST FAILURE WILL DISPLAY ALL REGISTERS CONTENTS, AND INDICATES A PROBABLE FAULT ON THE INTERFACE BOARD.

### 8.2.2 WORD DATA TRANSFER INTERRUPTS: (TEST 11)

THIS TEST WILL BE EXECUTED ONLY UNDER THE DEFAULT (WORD) TRANSFER MODE CONDITIONS. THE TEST WILL VERIFY THAT BOTH BLOCK WRITE AND BLOCK READ TO AND FROM THE INTERFACE WILL GENERATE AN INTERRUPT. BOTH INTERFACE AND CONTROLLER STATUS ARE CHECKED FOR ERRORS, AND AN INTERRUPT MUST BE RECEIVED. ANY ERROR CONDITIONS WILL CAUSE TEST FAILURE AND DISPLAY OF ALL REGISTERS CONTENTS.



**8.2.3 WORD DATA TRANSFER INTEGRITY: (TEST 12)**

THIS TEST WILL BE EXECUTED ONLY UNDER THE DEFAULT (WORD) TRANSFER MODE CONDITIONS. THE TEST WILL PERFORM BLOCK TRANSFER TO AND FROM THE INTERFACE VIA THE TEST MODULE, AND TEST THE DATA INTEGRITY. FOUR DISTINCT DATA PATTERNS ARE USED, TO ISOLATE SPECIFIC REGISTER OR BUS FAULTS. TEST FAILURE MAY BE DUE TO CONTROLLER/INTERFACE ERROR STATUS, NO INTERRUPT RECEIVED OR ERROR IN COMPARISON OF DATA READ AND DATA WRITTEN. STATUS/INTERRUPT ERRORS WILL CAUSE ALL REGISTERS TO BE DISPLAYED. DATA ERRORS WILL CAUSE THE RECEIVED, EXPECTED AND XOR DATA VALUES TO BE DISPLAYED. ONLY THE FIRST EIGHT DATA ERROR VALUES ARE LISTED ALONG WITH THE TOTAL ERROR COUNT.

**8.2.4 WORD TRANSFER ABORT THROUGH XABT BIT: (TEST 13)**

THIS TEST WILL BE EXECUTED ONLY UNDER THE DEFAULT (WORD) TRANSFER CONDITIONS AND WILL VERIFY THAT THE REVISION 'B' BOARD DATA TRANSFERS MAY BE TERMINATED BY WRITING TO THE INTERFACE STATUS REGISTER XABT BIT. BOTH READ AND WRITE TRANSFERS ARE TESTED, AND THE TRANSFER MUST HALT ONLY A FEW CYCLES AFTER THE XABT BIT IS SET. TEST FAILURE WILL CAUSE ALL REGISTERS CONTENTS TO BE DISPLAYED, AND MAY INDICATE THE INCORRECT DR70 REVISION HAS BEEN SPECIFIED.

**8.2.5 WORD TRANSFER ABORT THROUGH USER ATTENTION: (TEST 14)**

THIS TEST WILL BE EXECUTED ONLY UNDER THE DEFAULT (WORD) TRANSFER AND DEFAULT USER ATTENTION TEST CONDITIONS. THE TEST WILL VERIFY THAT THE REVISION 'B' BOARD DATA TRANSFERS MAY BE TERMINATED BY SETTING THE USER ATTENTION CONDITION AT03. BOTH READ AND WRITE TRANSFERS ARE TESTED, AND THE TRANSFER MUST HALT WITHIN A FEW CYCLES AFTER THE INTERFACE STATUS REGISTER AT03 ATTENTION BIT IS SET. TEST FAILURE MAY OCCUR IF THE TRANSFER DOES NOT HALT SOON ENOUGH OR IF THE AT03 ATTENTION ABORT ENABLE (SWITCH 6) HAS BEEN SET INCORRECTLY, AND WILL CAUSE THE CONTENTS OF ALL REGISTERS TO BE DISPLAYED.

### 8.3 BYTE TRANSFER TESTS

SECTIONS 8.3.1 - 8.3.5 DESCRIBE THE INTERFACE BYTE TRANSFER TESTS. THESE TESTS WILL EXERCISE THE INTERFACE BYTE TIMING CONTROL SECTION OF THE INTERFACE, AND ARE EXECUTED ONLY WHEN SELECTED BY THE OPERATOR. THE TESTS WILL TRANSFER 64 PACKED-BYTE BLOCKS TO AND FROM THE INTERFACE UTILIZING THE TEST MODULE SILO AND CABLING. NOTE THAT BYTE MODE TESTS CANNOT IMPLICITLY DETECT WHETHER THE DR70 IS OPERATING IN WORD OR BYTE TRANSFER MODES.

#### 8.3.1 BYTE DATA TRANSFER LOGIC: (TEST 15)

THIS TEST WILL BE EXECUTED ONLY WHEN THE OPERATOR SELECTS THE BYTE TRANSFER MODE CONDITIONS. THE TEST WILL CHECK THAT AN INTERFACE CYCLE REQUEST WILL NOT RESET EITHER THE INTERFACE OR CONTROLLER READY STATUS BITS UNTIL A VALID DATA TRANSFER COMMAND IS ISSUED TO THE DRIVE, AND THAT THE READY STATUS IS PRESENT ON TRANSFER COMPLETE. TEST FAILURE WILL DISPLAY ALL REGISTERS CONTENTS, AND INDICATES A PROBABLE FAULT ON THE INTERFACE BOARD.

#### 8.3.2 BYTE DATA TRANSFER INTERRUPTS: (TEST 16)

THIS TEST WILL BE EXECUTED ONLY UNDER THE OPTIONAL BYTE TRANSFER MODE CONDITIONS. THE TEST WILL VERIFY THAT BOTH BLOCK WRITE AND BLOCK READ TO AND FROM THE INTERFACE WILL GENERATE AN INTERRUPT. BOTH INTERFACE AND CONTROLLER STATUS ARE CHECKED FOR ERRORS, AND AN INTERRUPT MUST BE RECEIVED. ANY ERROR CONDITIONS WILL CAUSE TEST FAILURE AND DISPLAY OF ALL REGISTERS CONTENTS.



**8.3.3 BYTE DATA TRANSFER INTEGRITY: (TEST 17)**

THIS TEST WILL BE EXECUTED ONLY UNDER THE OPTIONAL BYTE TRANSFER MODE CONDITIONS. THE TEST WILL PERFORM BLOCK TRANSFER TO AND FROM THE INTERFACE VIA THE TEST MODULE, AND TEST THE DATA INTEGRITY. FOUR DISTINCT DATA PATTERNS ARE USED, TO ISOLATE SPECIFIC REGISTER OR BUS FAULTS. TEST FAILURE MAY BE DUE TO CONTROLLER/INTERFACE ERROR STATUS, NO INTERRUPT RECEIVED OR ERROR IN COMPARISON OF DATA READ AND DATA WRITTEN. STATUS/INTERRUPT ERRORS WILL CAUSE ALL REGISTERS TO BE DISPLAYED. DATA ERRORS WILL CAUSE THE RECEIVED, EXPECTED AND XOR DATA VALUES TO BE DISPLAYED. ONLY THE FIRST EIGHT DATA ERROR VALUES ARE LISTED ALONG WITH THE TOTAL ERROR COUNT.

**8.3.4 BYTE TRANSFER ABORT THROUGH XABT BIT: (TEST 18)**

THIS TEST WILL BE EXECUTED ONLY UNDER THE OPTIONAL BYTE TRANSFER CONDITIONS AND WILL VERIFY THAT THE REVISION 'B' BOARD DATA TRANSFERS MAY BE TERMINATED BY WRITING TO THE INTERFACE STATUS REGISTER XABT BIT. BOTH READ AND WRITE TRANSFERS ARE TESTED, AND THE TRANSFER MUST HALT ONLY A FEW CYCLES AFTER THE XABT BIT IS SET. TEST FAILURE WILL CAUSE ALL REGISTERS CONTENTS TO BE DISPLAYED, AND MAY INDICATE THE INCORRECT DR70 REVISION HAS BEEN SPECIFIED.

**8.3.5 BYTE TRANSFER ABORT THROUGH USER ATTENTION: (TEST 19)**

THIS TEST WILL BE EXECUTED ONLY UNDER THE OPTIONAL BYTE TRANSFER AND DEFAULT USER ATTENTION TEST CONDITIONS. THE TEST WILL VERIFY THAT THE REVISION 'B' BOARD DATA TRANSFERS MAY BE TERMINATED BY SETTING THE USER ATTENTION CONDITION AT03. BOTH READ AND WRITE TRANSFERS ARE TESTED, AND THE TRANSFER MUST HALT WITHIN A FEW CYCLES AFTER THE INTERFACE STATUS REGISTER AT03 ATTENTION BIT IS SET. TEST FAILURE MAY OCCUR IF THE TRANSFER DOES NOT HALT SOON ENOUGH OR IF THE AT03 ATTENTION ABORT ENABLE (SWITCH 6) HAS BEEN SET INCORRECTLY, AND WILL CAUSE THE CONTENTS OF ALL REGISTERS TO BE DISPLAYED.

#### 8.4 ADVANCED FEATURE TESTS

THE TESTS DESCRIBED IN 8.4.1 - 8.4.6 WILL NOT BE EXECUTED UNDER ANY DEFAULT TEST CONDITIONS. SELECTION OF ONE OR MORE OPTIONAL TESTS CAN ONLY BE MADE IN RESPONSE TO THE SOFTWARE TABLE PARAMETER SECTION. NOTE THAT WHEN LOADED, ALL SOFTWARE TABLE OPTIONAL PARAMETERS ARE CLEARED, BUT ONCE SELECTED WILL BECOME THE DEFAULT VALUES UNLESS RESET THROUGH ANOTHER SOFTWARE TABLE PARAMETER DIALOGUE (SECTION 4.5).

NOTE THAT THE DIAGNOSTIC CANNOT IMPLICITLY DETECT ANY SWITCH POSITIONS AND MUST RELY UPON ACCURACY OF ANSWERS GIVEN TO THE SOFTWARE QUESTIONS TO DETERMINE MODES OF OPERATION. EXTRANEIOUS ERRORS MAY OCCUR WHEN ANY SWITCH POSITION IS CHANGED WITHOUT RESTARTING THE PROGRAM AND CHANGING THE RESPONSE TO THE APPROPRIATE SOFTWARE QUESTION.

##### 8.4.1 INTERFACE STATUS CONTROL PARITY ERROR: (TEST 20)

THIS TEST IS EXECUTED UNDER UNDER THE DEFAULT DR70 REVISION LEVEL. THE TEST WILL VERIFY THAT THE INTERFACE STATUS REGISTER CONTROL PARITY ERROR BIT MAY BE SET BY ISSUING A COMMAND WITH INVERTED PARITY, AND WILL BE RESET BY ISSUING AN INTERFACE WRITE COMMAND WITH NORMAL PARITY. TEST FAILURE WILL DISPLAY ALL REGISTERS CONTENTS.

##### 8.4.2 INTERFACE STATUS DATA PARITY ERROR: (TEST 21)

THIS TEST WILL BE EXECUTED UNDER THE DEFAULT DR70 REVISION LEVEL. THE TEST WILL DETERMINE THAT THE INTERFACE STATUS REGISTER DATA PARITY ERROR BIT MAY BE SET BY INVERTED DATA PARITY GENERATION ON THE INTERFACE, AND WILL BE RESET BY ISSUING A DRIVE CLEAR COMMAND TO THE INTERFACE. THE TEST MAY BE EXCLUDED THROUGH OPERATOR SELECTION. TEST FAILURE WILL DISPLAY ALL REGISTERS CONTENTS, AND MAY INDICATE A PARITY GENERATION ERROR, OR THAT THE INCORRECT USER PARITY ENABLE/INHIBIT HAS BEEN SELECTED.



**8.4.3 INTERFACE USER ATTENTION ATO DISABLE: (TEST 22)**

THIS TEST IS EXECUTED ONLY WHEN TESTING THE REVISION 'B' INTERFACE AND WHEN SELECTED BY THE OPERATOR THROUGH THE SOFTWARE QUESTIONNING. THE TEST WILL VERIFY THAT THE DR70 BOARD SWITCH 4 WILL INHIBIT THE USER ATTENTION ATO FROM INPUT TO INTERFACE STATUS ATA, WHEN IN THE 'OFF' POSITION. TEST FAILURE MAY INDICATE THAT THE INTERFACE BOARD SWITCH HAS BEEN SET INCORRECTLY AND WILL DISPLAY THE ACTUAL, EXPECTED, AND XOR INTERFACE STATUS REGISTER VALUES.

**8.4.4 INTERFACE USER ATTENTION AT3 DISABLE: (TEST 23)**

THIS TEST IS EXECUTED ONLY WHEN TESTING THE REVISION 'B' INTERFACE AND WHEN SELECTED BY THE OPERATOR THROUGH THE SOFTWARE QUESTIONNING. THE TEST WILL VERIFY THAT THE DR70 BOARD SWITCH 5 WILL INHIBIT THE USER ATTENTION AT3 FROM INPUT TO INTERFACE STATUS ATA, WHEN IN THE 'OFF' POSITION. TEST FAILURE MAY INDICATE THAT THE INTERFACE BOARD SWITCH HAS BEEN SET INCORRECTLY AND WILL DISPLAY THE ACTUAL, EXPECTED, AND XOR INTERFACE STATUS REGISTER VALUES.

**8.4.5 USER ATTENTION AT3 TRANSFER ABORT DISABLE: (TEST 24)**

THIS TEST IS EXECUTED ONLY WHEN TESTING THE REVISION 'B' INTERFACE AND WHEN SELECTED BY THE OPERATOR THROUGH THE SOFTWARE QUESTIONNING. THE TEST WILL VERIFY THAT THE DR70 BOARD SWITCH 6 WILL INHIBIT THE USER ATTENTION AT3 FROM CAUSING A DATA TRANSFER ABORT, WHEN IN THE 'OFF' POSITION. THE TEST IS MADE USING ONLY READ BLOCK DATA TRANSFERS, AND MAY BE EXECUTED IN EITHER WORD OR BYTE TRANSFER MODE. TEST FAILURE MAY INDICATE THAT THE INTERFACE BOARD SWITCH HAS BEEN SET INCORRECTLY AND WILL DISPLAY THE ACTUAL, EXPECTED, AND XOR INTERFACE STATUS REGISTER VALUES.

**8.4.6 WORD BLOCK TRANSFER (OPERATOR DATA PATTERN) (TEST 25)**

THIS TEST IS DESIGNED TO AID THE OPERATOR IN ISOLATING PROBLEMS WHICH MAY BE DATA SPECIFIC. THE TEST IS EXECUTED ONLY BY OPERATOR SELECTION IN WORD TRANSFER MODE. THE OPERATOR MAY SUPPLY A ONE WORD DATA PATTERN AND TRANSFER BLOCK SIZE. THE PROGRAM WILL CONTINUE TO WRITE AND READ BLOCKS TO AND FROM THE INTERFACE, UNTIL OPERATOR INTERVENTION THROUGH A CONTROL/C BREAK. TEST FAILURE INDICATORS ARE IDENTICAL TO THE DEFAULT WORD TRANSFER ERRORS (TEST 12).

**8.4.7 BYTE BLOCK TRANSFER (OPERATOR DATA PATTERN) (TEST 26)**

THIS TEST IS DESIGNED TO AID THE OPERATOR IN ISOLATING PROBLEMS WHICH MAY BE DATA SPECIFIC. THE TEST IS EXECUTED ONLY BY OPERATOR SELECTION IN BYTE TRANSFER MODE. THE OPERATOR MAY SUPPLY A ONE BYTE DATA PATTERN AND TRANSFER BLOCK SIZE. THE PROGRAM WILL CONTINUE TO WRITE AND READ BLOCKS TO AND FROM THE INTERFACE, UNTIL OPERATOR INTERVENTION THROUGH A CONTROL/C BREAK. TEST FAILURE INDICATORS ARE IDENTICAL TO THE DEFAULT BYTE TRANSFER ERRORS (TEST 17).

**8.4.8 TRANSFER BANDWIDTH ADJUSTMENT: (TEST 27)**

THIS TEST WILL OPTIONALLY ALLOW THE OPERATOR TO ADJUST THE TRANSFER BANDWIDTH OR SCLK PERIOD TO MATCH THE SYSTEM REQUIREMENTS OF THE INTERFACE, USING AN OSCILLOSCOPE TO MEASURE THIS PERIOD DURING WORD OR BYTE MODE DATA TRANSFERS. THE TEST WILL PROMPT THE OPERATOR TO BEGIN THE ADJUSTMENT AND TO INPUT A CONTROL/C FROM THE CONSOLE DEVICE WHEN THE BANDWIDTH IS SET. THE TEST THEN BEGINS TO LOOP ON BLOCK WRITE TRANSFERS TO THE INTERFACE, TO CONTINUOUSLY PROVIDE AN SCLK PERIOD THAT CAN BE OBSERVED AND ADJUSTED.





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PROGRAM HEADER

002044	000000			
002046		L\$EXP1::	.WORD 0	;EXPANSION WORD
002046	000000			
002050		L\$MREV::	.WORD 0	;SVC REV AND EDIT #
002050	003			
002051	003			
002052		L\$EF::	.BYTE C\$REVISION .BYTE C\$EDIT	;DIAG. EVENT FLAGS
002052	000000			
002054	000000			
002056		L\$SPC::	.WORD 0	
002056	000000			
002060		L\$DEVP::	.WORD 0	; POINTER TO DEVICE TYPE LIST
002060	005176			
002062		L\$REPP::	.WORD LSDVTYP	;PTR. TO REPORT CODE
002062	017172			
002064		L\$EXP4::	.WORD L\$RPT	
002064	000000			
002066		L\$EXP5::	.WORD 0	
002066	000000			
002070		L\$AUT::	.WORD 0	;PTR. TO ADD UNIT CODE
002070	000000			
002072		L\$DUT::	.WORD 0	;PTR. TO DROP UNIT CODE
002072	000000			
002074		L\$LUN::	.WORD 0	;LUN FOR EXERCISERS TO FILL
002074	000000			
002076		L\$DESP::	.WORD 0	;POINTER TO DIAG. DESCRIPTION
002076	005226			
002100		L\$LOAD::	.WORD L\$DESC	;GENERATE SPECIAL AUTOLOAD EMT
002100	104035			
002102		L\$ETP::	EMT E\$LOAD	;POINTER TO ERR_TBL
002102	000000			
002104		L\$IICP::	.WORD 0	;PTR. TO INIT CODE
002104	017322			
002106		L\$CCP::	.WORD L\$INIT	;PTR. TO CLEAN-UP CODE
002106	020214			
002110		L\$ACP::	.WORD L\$CLEAN	;PTR. TO AUTO CODE
002110	020212			
002112		L\$PRT::	.WORD L\$AUTO	;PTR. TO PROTECT TABLE
002112	017314			
002114		L\$TEST::	.WORD L\$PROT	;TEST NUMBER
002114	000000			
002116		L\$DLY::	.WORD 0	;DELAY COUNT
002116	000000			
002120		L\$HIME::	.WORD 0	;PTR. TO HIGH MEM
002120	000000			

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DISPATCH TABLE

1380  
1381  
1382 002122

1383  
1384  
1385 002122

1386  
1387 002122 000033

002122 020240  
002124 020556  
002126 020702  
002130 021430  
002132 022216  
002134 023006  
002136 023326  
002140 023676  
002142 024052  
002144 024520  
002146 025040  
002150 025320  
002152 027534  
002154 030234  
002156 030750  
002160 031270  
002162 031550  
002164 033544  
002166 034250  
002170 034770  
002172 035336  
002174 036606  
002176 037014  
002200 037222  
002202 037510  
002204 040236  
002206 041006  
002210

.SBTTL DISPATCH TABLE

STARS

::\*\*\*\*\*

::

DISPATCH TABLE

STARS

::\*\*\*\*\*

DISPATCH 27

.WORD 27

L\$DISPATCH::

.WORD T1  
.WORD T2  
.WORD T3  
.WORD T4  
.WORD T5  
.WORD T6  
.WORD T7  
.WORD T8  
.WORD T9  
.WORD T10  
.WORD T11  
.WORD T12  
.WORD T13  
.WORD T14  
.WORD T15  
.WORD T16  
.WORD T17  
.WORD T18  
.WORD T19  
.WORD T20  
.WORD T21  
.WORD T22  
.WORD T23  
.WORD T24  
.WORD T25  
.WORD T26  
.WORD T27

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 37  
DEFAULT HARDWARE P-TABLE

1389  
1390  
1391 002212  
  
1392  
1393  
1394 002212  
  
1395  
1396 002212 000004  
002212  
002214  
  
1397  
1398 002214 172440  
1399 002216 000224  
1400 002220 000005  
1401 002222 000000  
1402  
1403 002224  
002224

.SBTTL DEFAULT HARDWARE P-TABLE

STARS  
:\*\*\*\*\*  
:  
:  
: DEFAULT P-TABLE VALUES  
STARS  
:\*\*\*\*\*

BGNHW  
L\$HW: .WORD L10000-L\$HW/2  
  
:DEVICE ADDRESS  
:INTERRUPT VECTOR ADDRESS  
:BUS REQUEST PRIORITY  
:DRIVE NUMBER  
0  
  
ENDHW  
L10000:



```

1405      .SBTTL  SOFTWARE P-TABLE
1406
1407 002224  STARS
          :*****
1408      :
1409      :      SOFTWARE P-TABLE
1410      :
1411      :      EACH FLAG CAN BE MODIFIED BY THE OPERATOR
1412      :      ON START/RESTART COMMAND.  ALL FLAGS ARE
1413      :      INITIALLY FALSE; A VALUE OF '1' INDICATES
1414      :      THE CONDITION IS TRUE.
1415 002224  STARS
          :*****
1416
1417 002224      BGNSW
          002224      .WORD  L10001-L$$W/2
          002226      L$$W::
1418
1419 002226      000000      REVFLG::      .WORD  0      ;DR70 REV 'A'
1420 002230      000000      AT0FLG::      .WORD  0      ;DISABLE AT0 ATTN
1421 002232      000000      AT3FLG::      .WORD  0      ;DISABLE AT3 ATTN
1422 002234      000000      ABOFLG::      .WORD  0      ;DISABLE AT3 ABORT LOGIC
1423 002236      000000      BYTFLG::      .WORD  0      ;BYTE MODE TRANSFER
1424 002240      000000      PARFLG::      .WORD  0      ;GENERATE PARITY ERROR
1425 002242      000000      DPFLG::      .WORD  0      ;USER DATA PATTERN FLAG
1426 002244      000000      BWFLG::      .WORD  0      ;ADJUST BAND WIDTH
1427 002246      002246      ENDSW
          L10001:
1428
1429 002246      ENDMOD
1430
1431      .SBTTL

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 39  
GLOBAL EQUATES SECTION

1444  
1472 002246  
1473 002246

1474  
1475  
1476 002246

1477  
1478 002246

.SBTTL GLOBAL EQUATES SECTION  
BGNMOD

STARS  
:\*\*\*\*\*

GLOBAL EQUATES

STARS  
:\*\*\*\*\*

EQUALS

:  
: BIT DIFINITIONS

100000	BIT15== 100000
040000	BIT14== 40000
020000	BIT13== 20000
010000	BIT12== 10000
004000	BIT11== 4000
002000	BIT10== 2000
001000	BIT09== 1000
000400	BIT08== 400
000200	BIT07== 200
000100	BIT06== 100
000040	BIT05== 40
000020	BIT04== 20
000010	BIT03== 10
000004	BIT02== 4
000002	BIT01== 2
000001	BIT00== 1

001000	BIT9== BIT09
000400	BIT8== BIT08
000200	BIT7== BIT07
000100	BIT6== BIT06
000040	BIT5== BIT05
000020	BIT4== BIT04
000010	BIT3== BIT03
000004	BIT2== BIT02
000002	BIT1== BIT01
000001	BIT0== BIT00

:  
: EVENT FLAG DEFINITIONS  
: EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION

000040	EF.START== 32.	: START COMMAND WAS ISSUED
000037	EF.RESTART== 31.	: RESTART COMMAND WAS ISSUED
000036	EF.CONTINUE== 30.	: CONTINUE COMMAND WAS ISSUED
000035	EF.NEW== 29.	: A NEW PASS HAS BEEN STARTED
000034	EF.PWR== 28.	: A POWER-FAIL/POWER-UP OCCURRED

:  
: PRIORITY LEVEL DEFINITIONS

000340	PRI07== 340
000300	PRI06== 300
000240	PRI05== 240
000200	PRI04== 200

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 39-1  
GLOBAL EQUATES SECTION

000140	PRI03== 140
000100	PRI02== 100
000040	PRI01== 40
000000	PRI00== 0
	:
	:OPERATOR FLAG BITS
	:
000004	EVL== 4
000010	LOT== 10
000020	ADR== 20
000040	IDU== 40
000100	ISR== 100
000200	UAM== 200
000400	BOE== 400
001000	PNT== 1000
002000	PRI== 2000
004000	IXE== 4000
010000	IBE== 10000
020000	IER== 20000
040000	LOE== 40000
100000	HOE== 100000



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GLOBAL EQUATES SECTION

1480 002246

STARS

::\*\*\*\*\*

1481

1482

1483 002246

::  
: REGISTER BIT EQUATES: (REG.\*\*\*)  
:

STARS

::\*\*\*\*\*

1484

1485

1486

1487

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1497

1498

1499

1500

1501

1502

1503

1504

1505

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1514

1515

1516

1517

1518

1519

1520

000001  
000002  
000004  
000010  
000020  
000040  
000100  
000200  
000400  
001000  
002000  
004000  
020000  
040000  
100000

:

CONTROL /STATUS 1 REGISTER BIT EQUATES

CS1.GO == BIT00 :GO BIT (R/W) \*  
CS1.F0 == BIT01 :FUNCTION BIT 0 (R/W) \*  
CS1.F1 == BIT02 :FUNCTION BIT 1 (R/W) \*  
CS1.F2 == BIT03 :FUNCTION BIT 2 (R/W) \*  
CS1.F3 == BIT04 :FUNCTION BIT 3 (R/W) \*  
CS1.F4 == BIT05 :FUNCTION BIT 4 (R/W) \*  
CS1.IE == BIT06 :INTERRUPT ENABLE (R/W)  
CS1.RDY == BIT07 :READY (RO)  
CS1.A16 == BIT08 :UNIBUS ADDR BIT 16 (R/W)  
CS1.A17 == BIT09 :UNIBUS ADDR BIT 17 (R/W)  
CS1.PSEL == BIT10 :PORT SELECT (R/W)  
CS1.DVA == BIT11 :DEVICE AVAILABLE (RO) \*  
CS1.MCPE == BIT13 :MB CNTRL BUS PAR ERR (RO)  
CS1.TRE == BIT14 :TRANSFER ERROR (R/W)  
CS1.SC == BIT15 :SPECIAL CONDITION (RO)

:

CONTROL /STATUS 2 REGISTER BIT EQUATES

CS2.U0 == BIT00 :UNIT SELECT BIT 0 (R/W)  
CS2.U1 == BIT01 :UNIT SELECT BIT 1 (R/W)  
CS2.U2 == BIT02 :UNIT SELECT BIT 2 (R/W)  
CS2.BAI == BIT03 :UB ADDR INCR INHIBIT (R/W)  
CS2.PAT == BIT04 :PARITY TEST (R/W)  
CS2.CLR == BIT05 :CONTROLLER CLEAR (WO)  
CS2.IR == BIT06 :INPUT READY (RO)  
CS2.OR == BIT07 :OUTPUT READY (RO)  
CS2.MDPE == BIT08 :MB DATA BUS PAR ERR (RO)  
CS2.MXF == BIT09 :MISSED TRANSFER (R/W)  
CS2.PGE == BIT10 :PROGRAM ERROR (RO)  
CS2.NEM == BIT11 :NON EXISTENT MEMORY (RO)  
CS2.NED == BIT12 :NON EXISTENT DRIVE (RO)  
CS2.UPE == BIT13 :UNIBUS PARITY ERROR (R/W)  
CS2.WCE == BIT14 :WRITE CHECK ERROR (RO)  
CS2.DLT == BIT15 :DATA LATE (RO)

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GLOBAL EQUATES SECTION

```

1522
1523 ; INTERFACE STATUS REGISTER BIT EQUATES
1524
1525 000001 IS.AT0 == BIT00 ;USER DEFINED ATTENTION BIT 0
1526 000002 IS.AT1 == BIT01 ;USER DEFINED ATTENTION BIT 1
1527 000004 IS.AT2 == BIT02 ;USER DEFINED ATTENTION BIT 2
1528 000010 IS.AT3 == BIT03 ;USER DEFINED ATTENTION BIT 3
1529 000020 IS.CYC == BIT04 ;PRIME CYCLE FLIP-FLOP BIT
1530 000200 IS.IRY == BIT07 ;INTERFACE READY BIT
1531 000400 IS.IDP == BIT08 ;INTERFACE DATA PARITY ERROR BIT
1532 001000 IS.ICP == BIT09 ;INTERFACE CONTROL PARITY ERROR BIT
1533 002000 IS.ERO == BIT10 ;USER DEFINED ERROR
1534 004000 IS.XABT == BIT11 ;REV 'B' TRANSFER ABORT LOGIC
1535 010000 IS.IP == BIT12 ;INVERT PARITY GENERATION
1536 040000 IS.ERR == BIT14 ;ERROR SUM
1537 100000 IS.ATA == BIT15 ;ATTENTION ACTIVE
1538
1539 ; FUNCTION / STATUS REGISTER BIT EQUATES
1540
1541 000001 FS.ST0 == BIT00 ;STATUS BIT 0 (RO)
1542 000002 FS.ST1 == BIT01 ;STATUS BIT 1 (RO)
1543 000004 FS.ST2 == BIT02 ;STATUS BIT 2 (RO)
1544 000010 FS.ST3 == BIT03 ;STATUS BIT 3 (RO)
1545 000020 FS.ST4 == BIT04 ;STATUS BIT 4 (RO)
1546 000040 FS.ST5 == BIT05 ;STATUS BIT 5 (RO)
1547 000100 FS.ST6 == BIT06 ;STATUS BIT 6 (RO)
1548 000200 FS.ST7 == BIT07 ;STATUS BIT 7 (RO)
1549 000400 FS.F0 == BIT08 ;FUNCTION BIT 0 (R/W)
1550 001000 FS.F1 == BIT09 ;FUNCTION BIT 1 (R/W)
1551 002000 FS.F2 == BIT10 ;FUNCTION BIT 2 (R/W)
1552 004000 FS.F3 == BIT11 ;FUNCTION BIT 3 (R/W)
1553 010000 FS.F4 == BIT12 ;FUNCTION BIT 4 (R/W)
1554 020000 FS.F5 == BIT13 ;FUNCTION BIT 5 (R/W)
1555 040000 FS.F6 == BIT14 ;FUNCTION BIT 6 (R/W)
1556 100000 FS.F7 == BIT15 ;FUNCTION BIT 7 (R/W)

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 42  
GLOBAL EQUATES SECTION

```

1558
1559           ;           COMMAND DEFINITIONS
1560
1561           000011      CLR.CMD      ==      11           ;INTERFACE CLEAR COMMAND
1562
1563           000071      RD.CMD       ==      71           ;READ & INCR ADDR COMMAND
1564           000061      WR.CMD       ==      61           ;WRITE & INCR ADDR COMMAND
1565           000171      RIE.CMD      ==      171          ;READ & INCR ADDR WITH INT ENABLED
1566           000161      WIE.CMD      ==      161          ;WRITE & INCR ADDR WITH INT ENABLED
1567
1568           000077      RD2.CMD      ==      77           ;READ & DECR ADDR COMMAND
1569           000067      WR2.CMD      ==      67           ;WRITE & DECR ADDR COMMAND
1570           000177      RIE2.CMD    ==      177          ;READ & DECR ADDR WITH INT ENABLED
1571           000167      WIE2.CMD    ==      167          ;WRITE & DECR ADDR WITH INT ENABLED
1572
1573           ;           TEST SELECT BIT EQUATES
1574
1575           000200      B.REVA       ==      BIT07         ;REV 'A' SELECT
1576           000020      B.UPAR       ==      BIT04         ;USER PARITY DISABLE
1577           000010      B.BYTE       ==      BIT03         ;BYTE MODE XFER SELECT
1578           000004      B.ABORT      ==      BIT02         ;AT3 ABORT DISABLE
1579           000002      B.AT3        ==      BIT01         ;AT3 ATTN DISABLE
1580           000001      B.ATO        ==      BIT00         ;ATO ATTN DISABLE
1581
1582           ;           DEVICE CONFIGURATION
1583
1584           177776      PS            ==      177776        ;PSW LOCATION
1585           177764      CPUID         ==      177764        ;SYSTEM ID (PDP-11/70)
1586           000033      MAXTST       ==      27.           ;CURRENT NUMBER OF TESTS
1587
1588           ;           DEFAULT P-TABLE VALUE EQUATES
1589
1590           172440      CSRADR        ==      172440        ;CSR ADDRESS
1591           000224      VECADR        ==      224           ;INTERRUPT VECTOR ADDRESS
1592           000005      BRPRI         ==      5             ;BUS REQUEST PRIORITY

```



1594  
1595 002246

.SBTTL GLOBAL DATA SECTION  
STARS

\*\*\*\*\*

1596  
1597  
1598  
1599  
1600  
1601 002246

REGISTER DISPLACEMENT VALUES: (D.\*\*\*)

EACH LOCATION CONTAINS THE CORRESPONDING REGISTER'S  
WORD DISPLACEMENT FROM THE DEVICE BASE ADDRESS

STARS

\*\*\*\*\*

1602  
1603 002246

D.TBL::

;TABLE START

1604  
1605 002246 000000  
1606 002250 000002  
1607 002252 000004  
1608 002254 000006  
1609 002256 000010  
1610 002260 000012  
1611 002262 000014  
1612 002264 000016  
1613 002266 000020  
1614 002270 000026  
1615 002272 000030  
1616 002274 000032  
1617  
1618 000030

D.CS1:: .WORD 0 ;CONTROL / STATUS 1  
D.WC:: .WORD 2 ;WORD COUNT  
D.BA:: .WORD 4 ;BUS ADDRESS  
D.FS:: .WORD 6 ;FUNCTION / STATUS  
D.CS2:: .WORD 10 ;CONTROL / STATUS 2  
D.IS:: .WORD 12 ;INTERFACE STATUS  
D.IB:: .WORD 14 ;INPUT BUFFER  
D.AS:: .WORD 16 ;ATTENTION SUMMARY  
D.OB:: .WORD 20 ;OUTPUT BUFFER  
D.DT:: .WORD 26 ;DRIVE TYPE  
D.BAE:: .WORD 30 ;BUFFER ADDR EXTENSION \*  
D.CS3:: .WORD 32 ;CONTROL / STATUS 3 \*

D.SIZ == .-D.TBL ;TABLE SIZE

1620 002276  
 1621  
 1622  
 1623 002276  
 1624  
 1625  
 1626  
 1627 002276  
 1628  
 1629 002276 000000  
 1630 002300 000000  
 1631 002302 000000  
 1632 002304 000000  
 1633 002306 000000  
 1634 002310 000000  
 1635 002312 000000  
 1636 002314 000000  
 1637 002316 000000  
 1638 002320 000000  
 1639 002322 000000  
 1640 002324 000000  
 1641  
 1642 000030

```

STARS
:*****
:
: REGISTER ADDRESS STORAGE: (A.*** )
:
STARS
:*****
:
: REGISTER ADDRESS STORAGE
:
A.TBL:: ;TABLE START
A.CS1:: .WORD 0 ;CONTROL / STATUS 1 172440
A.WC:: .WORD 0 ;WORD COUNT 172442
A.BA:: .WORD 0 ;BUS ADDRESS 172444
A.FS:: .WORD 0 ;FUNCTION / STATUS 172446
A.CS2:: .WORD 0 ;CONTROL / STATUS 2 172450
A.IS:: .WORD 0 ;INTERFACE STATUS 172452
A.IB:: .WORD 0 ;INPUT BUFFER 172454
A.AS:: .WORD 0 ;ATTENTION SUMMARY 172456
A.OB:: .WORD 0 ;OUTPUT BUFFER 172460
A.DT:: .WORD 0 ;DRIVE TYPE 172466
A.BAE:: .WORD 0 ;BUFFER ADDR EXTENSION 172470 *
A.CS3:: .WORD 0 ;CONTROL / STATUS 3 172472 *
A.SIZ == .-A.TBL ;TABLE SIZE

```

1644 002326

STARS  
:\*\*\*\*\*

1645

:  
: REGISTER VALUE STORAGE: (R.\*\*\*)

1646

1647 002326

STARS  
:\*\*\*\*\*

1648

: REGISTER VALUE STORAGE

1649

1650

R.TBL:: ;TABLE START

1651 002326

1652

1653 002326 000000

R.CS1:: .WORD 0

1654 002330 000000

R.WC:: .WORD 0

1655 002332 000000

R.BA:: .WORD 0

1656 002334 000000

R.FS:: .WORD 0

1657 002336 000000

R.CS2:: .WORD 0

1658 002340 000000

R.IS:: .WORD 0

1659 002342 000000

R.IB:: .WORD 0

1660 002344 000000

R.AS:: .WORD 0

1661 002346 000000

R.OB:: .WORD 0

1662 002350 000000

R.DT:: .WORD 0

1663 002352 000000

R.BAE:: .WORD 0

1664 002354 000000

R.CS3:: .WORD 0

1665

1666 000030

R.SIZ == .-R.TBL ;TABLE SIZE



1668 002356

STARS

:\*\*\*\*\*

1669

1670

1671

1672

1673

1674

1675 002356

STARS

:\*\*\*\*\*

REGISTER INITIAL VALUE STORAGE: (IN.\*\*\*)

EACH LOCATION RESERVES A STORAGE LOCATION CONTAINING  
INITIAL REGISTER CONTENTS USED IN THE REGISTER  
INITIALIZATION TEST 2.

1676

1677

1678

1679 002356

1680

1681 002356 004200

1682 002360 000000

1683 002362 000000

1684 002364 000000

1685 002366 000100

1686 002370 000200

1687 002372 000000

1688 002374 000000

1689 002376 000000

1690 002400 000000

1691 002402 000000

1692 002404 000000

1693

1694 000030

: REGISTER INITIAL CONTENTS STORAGE

IN.TBL::

:TABLE START

IN.CS1:: .WORD 4200

:CONTROL / STATUS 1 (DVA & RDY)

IN.WC:: .WORD 0

:WORD COUNT

IN.BA:: .WORD 0

:BUFFER ADDRESS

IN.FS:: .WORD 0

:FUNCTION / STATUS

IN.CS2:: .WORD 100

:CONTROL / STATUS 2 (IR)

IN.IS:: .WORD 200

:INTERFACE STATUS (IRY)

IN.IB:: .WORD 0

:INPUT BUFFER

IN.AS:: .WORD 0

:ATTENTION SUMMARY

IN.OB:: .WORD 0

:OUTPUT BUFFER

IN.DT:: .WORD 0

:DRIVE TYPE

IN.BAE:: .WORD 0

:BUFFER ADDR EXTENSION \*

IN.CS3:: .WORD 0

:CONTROL / STATUS 3 \*

IN.SIZ == .-IN.TBL

:TABLE SIZE

1696 002406

STARS

\*\*\*\*\*

1697

1698

1699

1700

1701

1702 002406

STARS

\*\*\*\*\*

REGISTER NAME ADDRESS POINTERS: (NA.\*\*\*)

EACH LOCATION CONTAINS A POINTER TO THE REGISTER  
NAME FORMAT STRING, USED TO DISPLAY REGISTER NAMES.

1703

1704

1705

1706 002406

1707

1708 002406 005352

1709 002410 005362

1710 002412 005372

1711 002414 005402

1712 002416 005412

1713 002420 005422

1714 002422 005432

1715 002424 005442

1716 002426 005452

1717 002430 005462

1718 002432 005472

1719 002434 005502

1720

1721 000030

:

REGISTER NAME ADDRESS POINTERS

NA.TBL::

;TABLE START ADDRESS

NA.CS1:: .WORD N.CS1 ;POINTER TO ASCII CS1

NA.WC:: .WORD N.WC ;POINTER TO ASCII WC

NA.BA:: .WORD N.BA ;POINTER TO ASCII BA

NA.FS:: .WORD N.FS ;POINTER TO ASCII FS

NA.CS2:: .WORD N.CS2 ;POINTER TO ASCII CS2

NA.IS:: .WORD N.IS ;POINTER TO ASCII IS

NA.IB:: .WORD N.IB ;POINTER TO ASCII IB

NA.AS:: .WORD N.AS ;POINTER TO ASCII AS

NA.OB:: .WORD N.OB ;POINTER TO ASCII OB

NA.DT:: .WORD N.DT ;POINTER TO ASCII DT

NA.BAE:: .WORD N.BAE ;POINTER TO ASCII BAE \*

NA.CS3:: .WORD N.CS3 ;POINTER TO ASCII CS3 \*

NA.SIZ == .-NA.TBL ;TABLE SIZE

1723 002436

STARS

\*\*\*\*\*

1724  
1725  
1726  
1727  
1728  
1729

.....  
.....  
.....  
.....  
.....  
.....

REGISTER BIT NAME ADDRESS POINTERS: (BA.\*\*\*)

EACH LOCATION CONTAINS A POINTER TO THE REGISTER  
BIT NAME FORMAT STRING, USED BY DSPBITS SUBROUTINE  
TO DISPLAY REGISTER NAMES.

1730 002436

STARS

\*\*\*\*\*

1731  
1732  
1733

.....  
.....  
.....

REGISTER BIT NAME ADDRESS POINTERS

1734 002436

BA.TBL::

;TABLE START ADDRESS

1735  
1736 002436 005512  
1737 002440 006134  
1738 002442 006134  
1739 002444 005602  
1740 002446 005702  
1741 002450 005776  
1742 002452 006134  
1743 002454 006064  
1744 002456 006134  
1745 002460 006134  
1746 002462 006134  
1747 002464 006134  
1748  
1749 000030

BA.CS1::	.WORD	B.CS1	;POINTER TO CS1 REGISTER BIT NAMES
BA.WC::	.WORD	B.BIT	;POINTER TO DEFAULT REGISTER BIT NAMES
BA.BA::	.WORD	B.BIT	;POINTER TO DEFAULT REGISTER BIT NAMES
BA.FS::	.WORD	B.FS	;POINTER TO FS REGISTER BIT NAMES
BA.CS2::	.WORD	B.CS2	;POINTER TO CS2 REGISTER BIT NAMES
BA.IS::	.WORD	B.IS	;POINTER TO IS REGISTER BIT NAMES
BA.IB::	.WORD	B.BIT	;POINTER TO DEFAULT REGISTER BIT NAMES
BA.AS::	.WORD	B.AS	;POINTER TO AS REGISTER BIT NAMES
BA.OB::	.WORD	B.BIT	;POINTER TO DEFAULT REGISTER BIT NAMES
BA.DT::	.WORD	B.BIT	;POINTER TO DEFAULT REGISTER BIT NAMES
BA.BAE::	.WORD	B.BIT	;POINTER TO DEFAULT REGISTER BIT NAMES
BA.CS3::	.WORD	B.BIT	;POINTER TO DEFAULT REGISTER BIT NAMES
BA.SIZ	==	.-BA.TBL	;TABLE SIZE



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 49  
GLOBAL DATA SECTION

```

1751
1752 ; REGISTER TEST SELECTION MASK STORAGE
1753
1754 002466 000000 R.MAX:: .WORD 0 ;MAXIMUM REGISTER INDEX VALUE
1755 002470 000000 R.ERR:: .WORD 0
1756
1757 002472 000000 R.SST:: .WORD 0 ;STATUS REGISTER SELECT
1758 002474 001777 R.SAD:: .WORD 1777 ;ADDRESS RESPONSE SELECT
1759 002476 001271 R.SIN:: .WORD 1271 ;INITIALIZATION SELECT
1760 002500 000027 R.SRH:: .WORD 27 ;CONTROLLER STATUS SELECT
1761 002502 001750 R.SDR:: .WORD 1750 ;INTERFACE STATUS SELECT
1762
1763 ; DATA PARAMETER STORAGE
1764
1765 002504 000000 D.FILPTR:: .WORD 0 ;POINTER TO FILE NAME
1766 002506 000000 D.BLOCK:: .WORD 0 ;TRANSFER BLOCK SIZE
1767 002510 000000 D.LPCNT:: .WORD 0 ;TRANSFER LOOP COUNTER
1768 002512 000000 D.MAX:: .WORD 0 ;DATA COMPARISON MAX INDEX
1769 002514 000000 D.WDP:: .WORD 0 ;USER WORD DATA PATTERN
1770 002516 000000 D.BDP:: .WORD 0 ;USER BYTE DATA PATTERN
1771
1772 ; REPORT SUMMARY TABLES
1773
1774 002520 RP.PASS:: .BLKW 32. ;PASS COUNT TABLE
1775
1776 000100 RP.SIZ == .-RP.PASS ;TABLE SIZE
1777
1778 002620 RP.ERROR:: .BLKW 32. ;ERROR COUNT TABLE
1779
1780 ; LOCAL P-TABLE VALUES
1781
1782 002720 000000 PT.CSR:: .WORD 0 ;CSR ADDRESS
1783 002722 000000 PT.VEC:: .WORD 0 ;VECTOR ADDRESS
1784 002724 000000 PT.PRI:: .WORD 0 ;BUS REQUEST PRIORITY
1785 002726 000000 PT.DRI:: .WORD 0 ;DRIVE SELECT

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 50  
 GLOBAL DATA SECTION

			FORMAT PARAMETER STORAGE		
1787					
1788			:		
1789					
1790	002730	000000	FP.NAM::	.WORD 0	:REGISTER NAME FORMAT ADDRESS
1791	002732	000000	FP.ADR::	.WORD 0	:ADDRESS PARAMETER
1792					
1793	002734	000000	FP.EXP::	.WORD 0	:EXPECTED VALUE
1794	002736	000000	FP.ACT::	.WORD 0	:ACTUAL VALUE
1795	002740	000000	FP.XOR::	.WORD 0	:XOR VALUE
1796	002742	000000	FP.NDX::	.WORD 0	:DATA INDEX VALUE
1797	002744	000000	FP.DPAT::	.WORD 0	:DATA PATTERN
1798					
1799	002746	000000	FP.TBL::	.WORD 0	:BIT EXPAND TABLE ADDRESS
1800	002750	005054	FP.BIT::	.WORD BFR	:REGISTER BITS PRINT BUFFER ADDRESS

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 51  
GLOBAL DATA SECTION

1802				
1803			:	REGISTER SAVE AREA
1804				
1805	002752	000000	REG0::	.WORD 0
1806	002754	000000	REG1::	.WORD 0
1807	002756	000000	REG2::	.WORD 0
1808	002760	000000	REG3::	.WORD 0
1809	002762	000000	REG4::	.WORD 0
1810	002764	000000	REG5::	.WORD 0
1811	002766	000000	REG6::	.WORD 0
1812	002770	000000	REG7::	.WORD 0



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 52  
GLOBAL DATA SECTION

```

1814
1815 ; MONITOR LOCATIONS
1816
1817 002772 000000 HRDTBL:: .WORD 0 ;P-TABLE ADDRESS
1818 002774 000000 LOGUNIT:: .WORD 0 ;LOGICAL UNIT NUMBER
1819 002776 000000 UNITPOS:: .WORD 0 ;UNIT BIT POSITION
1820 003000 000000 DRIVE:: .WORD 0 ;DRIVE SELECT
1821 003002 000000 ERRNDX:: .WORD 0 ;DATA ERROR INDEX
1822 003004 000000 ERRCNT:: .WORD 0 ;ERROR COUNTER
1823 003006 000000 BITCNT:: .WORD 0 ;BIT EXPAND COUNT
1824
1825 003010 000000 SELECT:: .WORD 0 ;OPTION SELECT WORD
1826 ;BIT7= REV 'A' BOARD
1827 ;BIT4= INPUT PARITY DISABLE
1828 ;BIT3= BYTE MODE TRANSFER
1829 ;BIT2= AT03 ABORT DISABLE
1830 ;BIT1= AT03 ATTN DISABLE
1831 ;BIT0= AT00 ATTN DISABLE
1832
1833 ; FLAG WORDS
1834
1835 003012 000000 CPUFLG:: .WORD 0 ;PDP-11/70 CPU FLAG
1836 003014 000000 INIFLG:: .WORD 0 ;DIAGNOSTIC INITIALIZE FLAG
1837 003016 000000 HLPFLG:: .WORD 0 ;HELP REQUEST PROMPT FLAG
1838 003020 000000 TABFLG:: .WORD 0 ;TABULAR COUNT
1839 003022 000000 INTFLG:: .WORD 0 ;INTERRUPT FLAG
1840 003024 000000 TRPFLG:: .WORD 0 ;ADDRESS TRAP FLAG
1841 003026 000000 ERRFLG:: .WORD 0 ;ERROR FLAG / COUNTER
1842 003030 000000 MBCFLG:: .WORD 0 ;MASSBUS CONTROLLER ERROR FLAG
1843 003032 000000 DRIFLG:: .WORD 0 ;INTERFACE ERROR FLAG
1844
1845 ; DELAY SUBROUTINE PARAMETERS
1846
1847 003034 000000 DLYCNT:: .WORD 0 ;SPARE DELAY COUNTER
1848 003036 000010 DMACNT:: .WORD 10 ;DMA DELAY COUNT: T = 96 USEC
1849 003040 000012 SILOCNT:: .WORD 12 ;SILO FILL DELAY COUNT: T = 16-128 USEC
1850
1851 ; MESSAGE PRINT FLAGS
1852
1853 003042 000000 CSRFLG:: .WORD 0 ;CSR ADDRESS MSG FLAG
1854 003044 000000 NEDFLG:: .WORD 0 ;DRIVE SELECT MSG FLAG
1855 003046 000000 PWRFLG:: .WORD 0 ;POWER ON MSG FLAG
1856 003050 000000 CBLFLG:: .WORD 0 ;CABLE MSG FLAG
1857 003052 000000 PERFLG:: .WORD 0 ;PARITY MSG FLAG
1858
1859 ; BUFFERS
1860
1861 003054 IBUF:: .BLKW 400 ;INPUT BUFFER (256 WORDS)
1862 004054 OBUF:: .BLKW 400 ;OUTPUT BUFFER (256 WORDS)
1863
1864 001000 BFRSIZ == . - OBUF ;BUFFER SIZE
1865
1866 005054 BFR:: .BLKW 44 ;TEXT BUFFER (72 BYTES)
1867 005164 000000 .WORD 0 ;EOB

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 53  
ERROR TABLE DEFINITION

1869  
1870  
1871 005166  
005166  
005166 000000  
005170 000000  
005172 000000  
005174 000000

.SBTTL ERROR TABLE DEFINITION

ERRTBL  
L\$ERRTBL::  
ERRTYP:: .WORD 0  
ERRNBR:: .WORD 0  
ERRMSG:: .WORD 0  
ERRBLK:: .WORD 0

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 54  
GLOBAL TEXT SECTION

1873  
1874 005176

.SBTTL GLOBAL TEXT SECTION  
STARS  
:\*\*\*\*\*

1875  
1876  
1877 005176

:  
: GLOBAL TEXT SECTION  
STARS  
:\*\*\*\*\*

1878  
1879  
1880  
1881

.NLIST BEX ;DON'T EXPAND STRINGS

1882  
1883 005176  
005176 104 122 067  
005176

: NAMES OF DEVICES SUPPORTED BY PROGRAM  
DEV TYP <DR70 MASSBUS INTERFACE>  
L\$DVTYP::  
.ASCIZ /DR70 MASSBUS INTERFACE/  
.EVEN

1884  
1885  
1886

: TEST DESCRIPTION

1887 005226  
005226 104 122 067  
005226

DESCRIPT <DR70 REPAIR DIAGNOSTIC>  
L\$DESC::  
.ASCIZ /DR70 REPAIR DIAGNOSTIC/  
.EVEN

1888  
1889  
1890

: HELP FILE PRINT BUFFER

1891 005256 045 101  
1892 005260  
1893 005350 000000

LINE:: .ASCII /%A/ ;ALPHA NUMERIC BUFFER FLAG  
LINBUF:: .BLKB 70 ;SEVENTY CHARACTER BUFFER  
EOL:: .WORD 0 ;END OF LINE



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 55  
GLOBAL TEXT SECTION

1895 005352

STARS  
:\*\*\*\*\*

1896

1897

1898

1899 005352

REGISTER NAME FORMAT STRINGS: (N.\*\*\*)  
STARS  
:\*\*\*\*\*

1900

1901

1902

1903 005352

; REGISTER NAMES  
N.TBL:: ;TABLE START ADDRESS

1904

1905 005352

122

110

056

N.CS1::

.ASCIZ

/RH.CS1/

1906

1907 005362

122

110

056

N.WC::

.ASCIZ

/RH.WC /

1908

1909 005372

122

110

056

N.BA::

.ASCIZ

/RH.BA /

1910

1911 005402

104

122

056

N.FS::

.ASCIZ

/DR.FS /

1912

1913 005412

122

110

056

N.CS2::

.ASCIZ

/RH.CS2/

1914

1915 005422

104

122

056

N.IS::

.ASCIZ

/DR.IS /

1916

1917 005432

104

122

056

N.IB::

.ASCIZ

/DR.IB /

1918

1919 005442

104

122

056

N.AS::

.ASCIZ

/DR.AS /

1920

1921 005452

104

122

056

N.OB::

.ASCIZ

/DR.OB /

1922

1923 005462

104

122

056

N.DT::

.ASCIZ

/DR.DT /

1924

1925 005472

122

110

056

N.BAE::

.ASCIZ

/RH.BAE/

1926

1927 005502

122

110

056

N.CS3::

.ASCIZ

/RH.CS3/

1928

1929

1930

000140

N.SIZ

==

.-N.TBL

;TABLE SIZE

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 56  
GLOBAL TEXT SECTION

1932 005512

STARS

\*\*\*\*\*

1933

1934

1935 005512

REGISTER BIT NAME DEFINITIONS (B.\*\*\*)

STARS

\*\*\*\*\*

1936

1937 005512

123

103

054

B.CS1:: .ASCIZ /SC,TRE,MCPE,,DVA,PSEL,A17,A16,RDY,IE,F4,F3,F2,F1,F0,GO/  
.EVEN

1938

1939 005602

106

122

067

B.FS:: .ASCII /FR7,FR6,FR5,FR4,FR3,FR2,FR1,FR0,/

1940 005642

104

123

067

.ASCIZ /DS7,DS6,DS5,DS4,DS3,DS2,DS1,DS0/  
.EVEN

1941

1942 005702

104

114

124

B.CS2:: .ASCIZ /DLT,WCE,UPE,NED,NEM,PGE,MXF,MDPE,OR,IR,CLR,PAT,BAI,U2,U1,U0/  
.EVEN

1943

1944 005776

101

124

101

B.IS:: .ASCIZ /ATA,ERR,,,XABT,ERO,ICP,IDP,IRY,,,CYC,AT3,AT2,AT1,AT0/  
.EVEN

1945

1946 006064

054

054

054

B.AS:: .ASCIZ /.....,AS7,AS6,AS5,AS4,AS3,AS2,AS1,AS0/  
.EVEN

1947

1948 006134

102

061

065

B.BIT:: .ASCII /B15,B14,B13,B12,B11,B10,B09,B08,/

1949 006174

102

060

067

.ASCIZ /B07,B06,B05,B04,B03,B02,B01,B00/  
.EVEN

1950





ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 58  
GLOBAL TEXT SECTION

2006							
2007	011034	111	116	124	M.IRY1::	.ASCIZ	"INTERFACE STATUS IRY NOT SET ON ERROR"
2008	011102	111	116	124	M.IRY2::	.ASCIZ	"INTERFACE STATUS IRY BIT RESET WHEN CYC BIT SET"
2009	011162	111	116	124	M.IRY3::	.ASCIZ	"INTERFACE STATUS IRY NOT RESET BY DATA TRANSFER CMD"
2010	011246	111	122	131	M.IRY4::	.ASCIZ	"IRY NOT SET BY WORD TRANSFER END OF BLOCK"
2011	011320	111	122	131	M.IRY5::	.ASCIZ	"IRY NOT SET BY WORD TRANSFER ABORT"
2012	011363	111	122	131	M.IRY6::	.ASCIZ	"IRY NOT SET BY INTERFACE CLEAR CMD"
2013	011426	111	122	131	M.IRY7::	.ASCIZ	"IRY NOT SET BY BYTE TRANSFER END OF BLOCK"
2014	011500	111	122	131	M.IRY8::	.ASCIZ	"IRY NOT SET BY BYTE TRANSFER ABORT"
2015							
2016	011543	111	116	124	M.ISR1::	.ASCIZ	"INTERFACE STATUS ERROR"
2017	011572	111	116	124	M.ISR2::	.ASCIZ	"INTERFACE STATUS ERROR ON INTERFACE CLEAR CMD"
2018							
2019	011650	103	117	116	M.MBC1::	.ASCIZ	"CONTROLLER NOT CLEARED BY MASSBUS INIT"
2020	011717	115	101	123	M.MBC2::	.ASCIZ	"MASSBUS CONTROLLER ERROR"
2021							
2022	011750	115	101	123	M.RDY1::	.ASCIZ	"MASSBUS CONTROLLER RDY BIT NOT RESET BY IRY"
2023	012024	115	101	123	M.RDY2::	.ASCIZ	"MASSBUS CONTROLLER RDY BIT NOT SET BY IRY"
2024							
2025	012076	122	105	107	M.REG1::	.ASCIZ	"REGISTER INITIALIZATION ERROR"
2026	012134	122	105	107	M.REG2::	.ASCIZ	"REGISTER ERROR"
2027							
2028	012153	123	127	064	M.SW4::	.ASCIZ	"SW4 DOES NOT DISABLE ATO INPUT TO INTERFACE ATA"
2029	012233	123	127	065	M.SW5::	.ASCIZ	"SW5 DOES NOT DISABLE AT3 INPUT TO INTERFACE ATA"
2030	012313	123	127	066	M.SW6::	.ASCIZ	"SW6 DOES NOT DISABLE AT3 TRANSFER ABORT LOGIC"
2031							
2032	012371	103	117	116	M.TRE1::	.ASCIZ	"CONTROLLER TRE BIT NOT SET BY TRANSFER ABORT LOGIC"
2033							
2034	012454	111	116	124	M.UAT1::	.ASCIZ	"INTERFACE STATUS USER ATTN BIT NOT SET/RESET"
2035	012531	111	116	124	M.UAT2::	.ASCIZ	"INTERFACE STATUS USER ATTENTION BIT NOT RESET"

2037 012607

STARS

:\*\*\*\*\*

2038

2039

2040 012607

STARS

:\*\*\*\*\*

ERROR FORMAT STRINGS: (F.\*\*\*)

2041

2042

2043

2044 012607

2045

2046 012616

2047

2048 012626

2049

2050 012650

2051

2052 012664

2053

2054 012716

2055

2056 012750

2057

2058 013020

2059

2060 013056

2061

2062 013132

2063

2064 013166

2065

2066 013244

2067

2068 013304

2069

2070 013340

2071

2072 013412

2073

2074 013464

2075

2076 013544

2077

2078 013624

2079

2080 013660

2081

2082 013732

2083

2084 014000

2085

2086 014036

2087

:

FORMAT STATEMENTS

F.NAM::

.ASCIZ '%T%S2'

.EVEN

F.VAL::

.ASCIZ '%06%S2'

.EVEN

F.ADR1::

.ASCIZ '%N1%AREG%S5%AADRS'

.EVEN

F.ADR2::

.ASCIZ '%N1%T%S2%06'

.EVEN

F.DMP1::

.ASCIZ '%N1%ACONTROLLER STATUS%N1'

.EVEN

F.DMP2::

.ASCIZ '%N1%AINTERFACE STATUS%N1'

.EVEN

F.DMP3::

.ASCIZ '%N1%06%S2%06%S2%06%S2%06%S2%06%S2%06%N1'

.EVEN

F.DMP4::

.ASCIZ '%N1%T%S2%A[%06%A]S2%06%S2%A;'

.EVEN

F.REG1::

.ASCIZ '%N1%AREG%S5%AACT%S5%AEXP%S5%AXOR%S5%ABIT(S)'

.EVEN

F.REG2::

.ASCIZ '%N1%T%S2%06%S2%06%S2%06%S2'

.EVEN

F.DAT1::

.ASCIZ '%N1%AADRS%S4%AWORD%S3%ARECVD%S3%AEXPTD%S3%AXOR'

.EVEN

F.DAT2::

.ASCIZ '%N1%06%S2%D3%S3%06%S2%06%S2%06'

.EVEN

F.ERCNT::

.ASCIZ '%N2%ATOTAL ERRORS: %D3%N1'

.EVEN

F.MODE::

.ASCIZ '/%N1%ACHECK SW1-7 SET TO 'OFF' POSITION%N1/'

.EVEN

F.PERR::

.ASCIZ '/%N1%ACHECK SW1-8 SET TO 'ON' POSITION%N1/'

.EVEN

F.CBL::

.ASCIZ '%N1%ACHECK M8432 TEST MODULE LOOP-BACK CABLE%N1'

.EVEN

F.BW::

.ASCIZ '%N1%ABANDWIDTH ADJUST: TYPE CNTRL/C TO EXIT%N1'

.EVEN

F.DPAT::

.ASCIZ '%N1%ADATA PATTERN: %06%N1'

.EVEN

F.CSR::

.ASCIZ '%N1%ACHECK MASSBUS CONTROLLER CSR ADDRESS'

.EVEN

F.NED::

.ASCIZ '%N1%ACHECK DRIVE SELECT SWITCHES 1-3'

.EVEN

F.PWR::

.ASCIZ '%N1%ACHECK UNIT FOR POWER ON'

.EVEN

F.UNIT::

.ASCIZ '%N1%AP-TABLE ERROR ON UNIT%D4'

.EVEN

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 60  
GLOBAL TEXT SECTION

2089							
2090	014074	045	116	061	F.RPT1::	.ASCII	"%N1%ADIAGNOSTIC SUMMARY:"
2091	014124	045	116	062		.ASCIZ	"%N2%ATEST%S4%APASSES%S2%AERRORS"
2092						.EVEN	
2093	014164	045	116	061	F.RPT2::	.ASCIZ	"%N1%D2%S6%D6%S2%D6"
2094						.EVEN	
2095	014210	045	124	000	F.BITS::	.ASCIZ	"%T"
2096						.EVEN	
2097	014214	045	116	000	F.CRLF::	.ASCIZ	"%N"
2098						.EVEN	
2099							
2100	014220	105	116	124	Q.WDP::	.ASCIZ	"ENTER TEST DATA WORD"
2101						.EVEN	
2102	014246	105	116	124	Q.BDP::	.ASCIZ	"ENTER TEST DATA BYTE"
2103						.EVEN	
2104	014274	127	117	122	Q.WBL::	.ASCIZ	"WORDS PER BLOCK"
2105						.EVEN	
2106	014314	102	131	124	Q.BBL::	.ASCIZ	"BYTES PER BLOCK"
2107						.EVEN	
2108							
2109					:		SUPERVISOR HELP FILE
2110	014334	120	122	111	Q.HLP1::	.ASCII	"PRINT SUPERVISOR HELP FILE: "
2111	014371	104	122	123	D.FIL1::	.ASCIZ	"DRS.HLP"
2112						.EVEN	
2113							
2114					:		DIAGNOSTIC HELP FILE
2115	014402	120	122	111	Q.HLP2::	.ASCII	"PRINT DIAGNOSTIC HELP FILE: "
2116	014437	132	104	122	D.FIL2::	.ASCIZ	"ZDRMA0.HLP"
2117						.EVEN	
2118							
2119						.LIST	BEX
2120						.ENABL	AMA

:EXPAND



ZDRMAO DR70 REPAIR DIAGNOSTIC  
DEVICE ADDRESS ERROR ROUTINE

MACRO M1200 23-MAY-83 15:51 PAGE 61

2122  
2123 014452

.SBTTL DEVICE ADDRESS ERROR ROUTINE

STARS

\*\*\*\*\*

2124  
2125  
2126  
2127  
2128  
2129  
2130  
2131  
2132 014452

REPORT ADDRESS ERROR (EXTENDED PRINT)

INPUT: A.TBL:: REGISTER ADDRESS POINTER TABLE  
R.ERR:: REGISTER ADDRESS ERROR MASK  
R.MAX:: MAXIMUM REGISTER TABLE INDEX

OUTPUT: ERRCNT:: INCREMENT

STARS

\*\*\*\*\*

2133  
2134 014452  
014452

BGNMSG ER.ADR  
ER.ADR::

2135  
2136 014452 010237 002756  
2137 014456 010437 002762  
2138  
2139 014462 005002  
2140 014464 012704 000001  
2141  
2142 014470  
014470 012746 012626  
014474 012746 000001  
014500 010600  
014502 104414  
014504 062706 000004

MOV R2,REG2 ;SAVE REGISTER 2  
MOV R4,REG4 ;SAVE REGISTER 4  
CLR R2 ;CLEAR REGISTER INDEX  
MOV #1,R4 ;INITIALIZE REGISTER TEST BIT  
PRINTB #F.ADR1 ;PRINT ADDRESS ERROR HEADER  
MOV #F.ADR1,-(SP)  
MOV #1,-(SP)  
MOV SP,R0  
TRAP C\$PNTB  
ADD #4,SP

2143  
2144 014510 030437 002470  
2145 014514 001424  
2146  
2147 014516 005237 003004  
2148 014522 016237 002406 002730  
2149 014530 016237 002276 002732  
2150

100\$: BIT R4,R.ERR ;TEST ERROR MASK  
BEQ 200\$ ;BRANCH IF BIT NOT SET  
INC ERRCNT ;BUMP ERROR COUNT  
MOV NA.TBL(R2),FP.NAM ;LOAD REGISTER NAME ADDRESS  
MOV A.TBL(R2),FP.ADR ;SAVE REGISTER ADDRESS

2151 014536  
014536 013746 002732  
014542 013746 002730  
014546 012746 012650  
014552 012746 000003  
014556 010600  
014560 104414  
014562 062706 000010

PRINTB #F.ADR2,FP.NAM,FP.ADR ;PRINT ADDRESS ERROR  
MOV FP.ADR,-(SP)  
MOV FP.NAM,-(SP)  
MOV #F.ADR2,-(SP)  
MOV #3,-(SP)  
MOV SP,R0  
TRAP C\$PNTB  
ADD #10,SP

2152  
2153 014566 006304  
2154 014570 062702 000002  
2155 014574 020237 002466  
2156 014600 002743  
2157

200\$: ASL R4 ;SHIFT TEST BIT TO NEXT REGISTER  
ADD #2,R2 ;BUMP INDEX COUNTER  
CMP R2,R.MAX ;AND COMPARE WITH MAX INDEX VALUE  
BLT 100\$ ;CONTINUE IF LESS THAN MAXIMUM

2158 014602  
014602 012746 014214  
014606 012746 000001  
014612 010600  
014614 104414  
014616 062706 000004

PRINTB #F.CRLF ;PRINT CARRAGE RETURN/LINE FEED  
MOV #F.CRLF,-(SP)  
MOV #1,-(SP)  
MOV SP,R0  
TRAP C\$PNTB  
ADD #4,SP

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 61-1  
DEVICE ADDRESS ERROR ROUTINE

```
2159  
2160 014622 013702 002756      MOV    REG2,R2      ;RESTORE REGISTER 2  
2161 014626 013704 002762      MOV    REG4,R4      ;RESTORE REGISTER 4  
2162  
2163 014632      EXIT    MSG  
      014632 000167      .WORD  JSJMP  
      014634 000000      .WORD  L10002-2-.  
2164  
2165 014636      ENDMSG  
      014636      L10002: TRAP    C$MSG  
      014636 104423
```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 62  
 REGISTER INITIALIZATION ERROR ROUTINE

2167  
 2168 014640  
 2169  
 2170  
 2171  
 2172  
 2173  
 2174  
 2175  
 2176  
 2177  
 2178 014640

```

.SBTTL REGISTER INITIALIZATION ERROR ROUTINE
STARS
*****
:
: REPORT REGISTER INITIALIZATION ERROR          (EXTENDED PRINT)
:
: INPUT:  A.TBL::          REGISTER ADDRESS POINTER TABLE
:         R.ERR::          REGISTER ADDRESS ERROR MASK
:
: OUTPUT: ERRCNT::        INCREMENT
:
: EXTERNALS:              DSPREG
STARS
*****
    
```

2179  
 2180 014640  
 014640

```

BGNMSG ER.INI
ER.INI::
    
```

2181  
 2182 014640 010237 002756  
 2183 014644 010437 002762  
 2184  
 2185 014650 005002  
 2186 014652 012704 000001  
 2187  
 2188 014656  
 014656 012746 013056  
 014662 012746 000001  
 014666 010600  
 014670 104415  
 014672 062706 000004

```

MOV R2,REG2 ;SAVE REGISTER 2
MOV R4,REG4 ;SAVE REGISTER 4
CLR R2 ;CLEAR REGISTER INDEX
MOV #1,R4 ;INITIALIZE REGISTER TEST BIT
PRINTX #F.REG1 ;PRINT REGISTER ERROR HEADER
MOV #F.REG1,-(SP)
MOV #1,-(SP)
MOV SP,R0
TRAP C$PNTX
ADD #4,SP
    
```

2189  
 2190 014676 030437 002470  
 2191 014702 001420

```

100$: BIT R4,R.ERR ;TEST ERROR MASK
      BEQ 200$ ;BRANCH IF BIT NOT SET
    
```

2192  
 2193 014704 005237 003004  
 2194 014710 016237 002406 002730  
 2195 014716 016237 002326 002736  
 2196 014724 016237 002356 002734  
 2197 014732 016237 002436 002746  
 2198

```

INC ERRCNT ;BUMP ERROR COUNT
MOV NA.TBL(R2),FP.NAM ;MOVE REGISTER NAME ADDRESS
MOV R.TBL(R2),FP.ACT ;MOVE ACTUAL VALUE
MOV IN.TBL(R2),FP.EXP ;MOVE EXPECTED VALUE
MOV BA.TBL(R2),FP.TBL ;PARAMETERS
    
```

2199 014740 004737 016054

```

JSR PC,DSPREG ;DISPLAY REGISTER CONTENTS
    
```

2200  
 2201 014744 006304  
 2202 014746 062702 000002  
 2203 014752 020237 002466  
 2204 014756 002747

```

200$: ASL R4 ;SHIFT TEST BIT TO NEXT REGISTER
      ADD #2,R2 ;BUMP INDEX COUNTER
      CMP R2,R.MAX ;AND COMPARE WITH MAX INDEX VALUE
      BLT 100$ ;CONTINUE IF LESS
    
```



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 63  
 REGISTER INITIALIZATION ERROR ROUTINE

```

2206
2207 014760          PRINTX  #F.CRLF ;PRINT CARRAGE RETURN/LINE FEED
      014760 012746 014214  MOV    #F.CRLF, -(SP)
      014764 012746 000001  MOV    #1, -(SP)
      014770 010600          MOV    SP, R0
      014772 104415          TRAP   C$PNTX
      014774 062706 000004  ADD    #4, SP
2208
2209 015000 013702 002756  MOV    REG2, R2          ;RESTORE REGISTER 2
2210 015004 013704 002762  MOV    REG4, R4          ;RESTORE REGISTER 4
2211
2212 015010          EXIT    MSG
      015010 000167      .WORD  J$JMP
      015012 000000      .WORD  L10003-2-.
2213
2214 015014          ENDMSG
      015014          L10003: TRAP   C$MSG
      015014 104423

```

ZDRMAO DR70 REPAIR DIAGNOSTIC REGISTER VALUE ERROR ROUTINE

MACRO M1200 23-MAY-83 15:51 PAGE 64

2216  
2217 015016

2218  
2219  
2220  
2221  
2222  
2223  
2224  
2225  
2226  
2227  
2228  
2229

2230 015016

2231

2232 015016  
015016

2233

2234 015016 012746 013056  
015016 012746 000001  
015022 012746 000001  
015026 010600  
015030 104415  
015032 062706 000004

2235

2236 015036 005237 003004  
2237 015042 004737 016054

2238

2239 015046 012746 014214  
015046 012746 000001  
015052 012746 000001  
015056 010600  
015060 104415  
015062 062706 000004

2240

2241 015066 000167  
015066 000000  
015070 000000

2242

2243 015072 104423  
015072  
015072

.SBTTL REGISTER VALUE ERROR ROUTINE

STARS

\*\*\*\*\*

REPORT REGISTER VALUE ERROR (EXTENDED PRINT)

INPUT: FP.NAM:: POINTER TO NAME FORMAT  
FP.EXP:: EXPECTED REGISTER CONTENTS  
FP.ACT:: ACTUAL REGISTER CONTENTS  
FP.TBL:: BIT EXPAND TABLE ADDRESS  
FP.BIT:: PRINT BUFFER ADDRESS

OUTPUT: ERRCNT:: INCREMENT

EXTERNALS: DSPREG

STARS

\*\*\*\*\*

BGNMSG ER.REG  
ER.REG::

PRINTX #F.REG1 ;PRINT REGISTER ERROR HEADER  
MOV #F.REG1,-(SP)  
MOV #1,-(SP)  
MOV SP,R0  
TRAP C\$PNTX  
ADD #4,SP

INC ERRCNT ;BUMP ERROR COUNT  
JSR PC,DSPREG ;DISPALY REGISTER CONTENTS

PRINTX #F.CRLF ;NEW LINE  
MOV #F.CRLF,-(SP)  
MOV #1,-(SP)  
MOV SP,R0  
TRAP C\$PNTX  
ADD #4,SP

EXIT MSG ;AND RETURN  
.WORD JSJMP  
.WORD L10004-2-

ENDMSG

L10004:  
TRAP C\$MSG

ZDRMAD DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 65  
REGISTER DUMP ROUTINE

2245  
2246 015074

2247  
2248  
2249  
2250  
2251  
2252  
2253  
2254  
2255

2256 015074

2257

2258 015074  
015074

2259

2260 015074  
015074 012746 012664  
015100 012746 000001  
015104 010600  
015106 104414  
015110 062706 000004

2261

2262 015114 005237 003004  
2263 015120 013737 002500 002472  
2264 015126 004737 016164

2265

2266 015132  
015132 012746 012716  
015136 012746 000001  
015142 010600  
015144 104414  
015146 062706 000004

2267

2268 015152 013737 002502 002472  
2269 015160 004737 016164

2270

2271 015164  
015164 000167  
015166 000000

2272

2273 015170  
015170  
015170 104423

.SBTTL REGISTER DUMP ROUTINE

STARS

\*\*\*\*\*

REGISTER DUMP ROUTINE (EXTENDED PRINT)

INPUT: R.SRH:: CONTROLLER REGISTER SELECT MASK  
R.SDR:: INTERFACE REGISTER SELECT MASK

OUTPUT: ERRCNT:: INCREMENT

EXTERNALS: DSPSTAT

STARS

\*\*\*\*\*

BGNMSG ER.DMP

ER.DMP::

100\$: PRINTB #F.DMP1 ;PRINT CONTROLLER HEADER

MOV #F.DMP1,-(SP)  
MOV #1,-(SP)  
MOV SP,R0  
TRAP C\$PNTB  
ADD #4,SP

INC ERRCNT ;BUMP ERROR COUNT  
MOV R.SRH,R.SST ;LOAD CONTROLLER REGISTER SELECT MASK  
JSR PC,DSPSTAT ;DISPLAY CONTROLLER REGISTERS

PRINTB #F.DMP2 ;PRINT INTERFACE HEADER

MOV #F.DMP2,-(SP)  
MOV #1,-(SP)  
MOV SP,R0  
TRAP C\$PNTB  
ADD #4,SP

MOV R.SDR,R.SST ;LOAD INTERFACE REGISTER SELECT MASK  
JSR PC,DSPSTAT ;DISPLAY INTERFACE REGISTERS

EXIT MSG ;AND RETURN

.WORD JSJMP  
.WORD L10005-2-

ENDMSG

L10005: TRAP C\$MSG



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 66  
DATA TRANSFER ERROR ROUTINE

2275  
2276 015172

.SBTTL DATA TRANSFER ERROR ROUTINE

STARS

\*\*\*\*\*

2277  
2278

REPORT DATA TRANSFER ERROR (EXTENDED PRINT)

2279  
2280

INPUT: NONE

2281  
2282  
2283 015172

OUTPUT: PRINTS HEADER ONLY

STARS

\*\*\*\*\*

2284

2285 015172  
015172

BGNMSG ER.DATA

ER.DATA::

2286

2287 015172  
015172 012746 013166  
015176 012746 000001  
015202 010600  
015204 104415  
015206 062706 000004

PRINTX #F.DAT1 ;PRINT DATA ERROR HEADER  
MOV #F.DAT1,-(SP)  
MOV #1,-(SP)  
MOV SP,R0  
TRAP C\$PNTX  
ADD #4,SP

2288

2289 015212  
015212 000167  
015214 000000

EXIT MSG ;AND RETURN  
.WORD JSJMP  
.WORD L10006-2-

2290

2291 015216  
015216  
015216 104423

ENDMSG

L10006:

TRAP C\$MSG

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 67  
GLOBAL SUBROUTINES SECTION

2293  
2294 015220

.SBTTL GLOBAL SUBROUTINES SECTION

STARS

\*\*\*\*\*

2295

2296

2297

2298

2299 015220

\*\*\*\*\*

ADDRESS TIME-OUT SERVICE ROUTINE

\*\*\*\*\*

OUTPUT: TRPFLG:: INCREMENT

STARS

\*\*\*\*\*

2300

2301 015220

015220

BGNSRV TRAP4

TRAP4::

2302

2303 015220 005237 003024

2304

2305 015224

015224

015224 000002

2306 015226

INC TRPFLG ;SET TRAP FLAG

ENDSRV ;RETURN FROM INTERRUPT

L10007:

RTI

STARS

\*\*\*\*\*

2307

2308

2309

2310

2311 015226

DEVICE INTERRUPT SERVICE ROUTINE

\*\*\*\*\*

OUTPUT: INTFLG:: INCREMENT

STARS

\*\*\*\*\*

2312

2313 015226

015226

BGNSRV INTSRV

INTSRV::

2314

2315 015226 005237 003022

2316

2317 015232

015232

015232 000002

INC INTFLG ;SET INTERRUPT FLAG

ENDSRV ;RETURN FROM INTERRUPT

L10010:

RTI

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 68  
SET/CLEAR TRAP VECTOR

2319  
2320 015234

.SBTTL SET/CLEAR TRAP VECTOR

STARS

\*\*\*\*\*

2321  
2322  
2323  
2324

DESCRIPTION: SET TRAP VECTOR

CALLING SEQUENCE: JSR PC,SETRAP

2325 015234

STARS

\*\*\*\*\*

2326

SETRAP::

2327 015234

2328

2329 015234

SETVEC #4,#TRAP4,#PRI07 ;SETUP VECTOR

015234 012746 000340

MOV #PRI07,-(SP)

015240 012746 015220

MOV #TRAP4,-(SP)

015244 012746 000004

MOV #4,-(SP)

015250 012746 000003

MOV #3,-(SP)

015254 104437

TRAP C\$SVEC

015256 062706 000010

ADD #10,SP

2330

RTS PC ;RETURN

2331 015262 000207

2332 015264

STARS

\*\*\*\*\*

2333

DESCRIPTION: CLEAR TRAP VECTOR

2334

CALLING SEQUENCE: JSR PC,CLRTRAP

2335

2336

2337 015264

STARS

\*\*\*\*\*

2338

CLRTRAP::

2339 015264

CLRVEC #4 ;CLEAR VECTOR

2340

2341 015264

MOV #4,R0

015264 012700 000004

TRAP C\$CVEC

015270 104436

2342

RTS PC ;RETURN

2343 015272 000207



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 69  
SET/CLEAR INTERRUPT SERVICE ROUTINE VECTOR

2345  
2346 015274

.SBTTL SET/CLEAR INTERRUPT SERVICE ROUTINE VECTOR

STARS

::\*\*\*\*\*

2347

2348

2349

2350

2351 015274

::: DESCRIPTION: SET INTERRUPT SERVICE ROUTINE VECTOR

::: CALLING SEQUENCE: JSR PC,SETISR

STARS

::\*\*\*\*\*

2352

2353 015274

2354

2355 015274

SETISR::

SETVEC PT.VEC,#INTSRV,PT.PRI ;SETUP VECTOR

MOV PT.PRI,-(SP)

MOV #INTSRV,-(SP)

MOV PT.VEC,-(SP)

MOV #3,-(SP)

TRAP C\$SVEC

ADD #10,SP

015274 013746 002724

015300 012746 015226

015304 013746 002722

015310 012746 000003

015314 104437

015316 062706 000010

2356

2357 015322 000207

2358 015324

RTS PC ;RETURN

STARS

::\*\*\*\*\*

2359

2360

2361

2362

2363 015324

::: DESCRIPTION: CLEAR INTERRUPT SERVICE ROUTINE VECTOR

::: CALLING SEQUENCE: JSR PC,CLRISR

STARS

::\*\*\*\*\*

2364

2365 015324

2366

2367 015324 112777 000000 164744

2368

2369 015332

015332 013700 002722

015336 104436

CLRISR::

MOVB #0,@A.CS1 ;CLEAR MBC INTERRUPT ENABLE

CLRVEC PT.VEC ;CLEAR VECTOR

MOV PT.VEC,R0

TRAP C\$CVEC

2370

2371 015340 000207

2372

RTS PC ;RETURN

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 70  
MASSBUS CONTROLLER CLEAR

2374  
2375 015342

.SBTTL MASSBUS CONTROLLER CLEAR

STARS

\*\*\*\*\*

2376  
2377  
2378  
2379  
2380  
2381  
2382  
2383  
2384  
2385  
2386  
2387

DESCRIPTION: CLEAR MASSBUS CONTROLLER AND TEST STATUS  
STEPS: SET CONTROLLER CLEAR BIT IN CS2 REGISTER  
RESET DRIVE SELECT IN CS2 REGISTER  
READ REGISTERS AND COMPARE CS1 REGISTER WITH EXP VALUE  
OUTPUT: MBCFLG:: INCREMENT IF UNEXPECTED STATUS (ERROR)  
CALLING SEQ: JSR PC,CLRMBC  
EXTERNALS: DLY,RDREG

2388 015342

STARS

\*\*\*\*\*

2389

2390 015342  
2391 015342 005037 003030  
2392 015346 012777 000040 164732  
2393 015354 013777 003000 164724  
2394  
2395 015362 004737 016042  
2396 015366 004737 015606  
2397  
2398 015372 022737 004200 002326  
2399 015400 001402  
2400  
2401 015402 005237 003030  
2402  
2403 015406 000207

CLRMBC::

CLR MBCFLG ;RESET ERROR FLAG  
MOV #CS2.CLR,@A.CS2 ;SET CONTROLLER CLEAR  
MOV DRIVE,@A.CS2 ;RESET UNIT SELECT  
JSR PC,DLY ;DELAY A FEW CYCLES  
JSR PC,RDREG ;READ REGISTERS  
CMP #4200,R.CS1 ;COMPARE EXPECTED STATUS WITH NEW  
BEQ 100\$ ;BRANCH IF IDENTICAL  
INC MBCFLG ;UNEXPECTED STATUS: INCR ERROR FLAG  
100\$: RTS PC ;AND RETURN

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 71  
TEST MASSBUS CONTROLLER STATUS

2405  
2406 015410

.SBTTL TEST MASSBUS CONTROLLER STATUS  
STARS

\*\*\*\*\*

2407  
2408  
2409  
2410  
2411  
2412  
2413  
2414  
2415  
2416  
2417  
2418  
2419  
2420  
2421 015410

DESCRIPTION: TEST MASSBUS CONTROLLER FOR READY AND NO ERRORS  
STEPS: CLEAR MBC ERROR FLAG AND READ REGISTERS  
TEST FOR CS1 REGISTER RDY BIT SET  
TEST FOR CS1 REGISTER SC STATUS BIT RESET  
INPUT: R.CS1: CONTENTS OF CS1 REGISTER  
OUTPUT: INCREMENT MBCFLG IF SC STATUS SET (ERROR)  
CALLING SEQ: JSR PC,TSTMBC  
EXTERNALS: RDREG

STARS

\*\*\*\*\*

2422  
2423 015410  
2424 015410 005037 003030  
2425 015414 004737 015606  
2426  
2427 015420 013700 002326  
2428 015424 042700 000076  
2429 015430 022700 004200  
2430 015434 001402  
2431  
2432 015436 005237 003030  
2433  
2434 015442 000207

TSTMBC::

CLR MBCFLG ;CLEAR ERROR FLAG  
JSR PC,RDREG ;READ REGISTERS  
MOV R.CS1,R0 ;RELOAD CS1 REGISTER  
BIC #76,R0 ;CLEAR FUNCTION BITS F4->F0  
CMP #4200,R0 ;EXPECTED: DVA & RDY  
BEQ 100\$ ;BRANCH IF IDENTICAL  
INC MBCFLG ;UNEXPECTED STATUS: INCR ERROR FLAG  
100\$: RTS PC ;AND RETURN



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 72  
TEST INTERRUPT RECEIVED

2436  
2437 015444

.SBITL TEST INTERRUPT RECEIVED

STARS

\*\*\*\*\*

2438  
2439  
2440  
2441  
2442  
2443  
2444  
2445  
2446  
2447  
2448  
2449  
2450  
2451

DESCRIPTION: TIME OUT ON TEST FOR INTERRUPT RECEIVED  
STEPS: LOAD TIME OUT VALUE  
REPEAT UNTIL TIME OUT:  
IF INTERRUPT RECEIVED: EXIT  
INPUT: INTFLG:: SET TO ZERO  
OUTPUT: NONE  
CALLING SEQ: JSR PC,TSTINT  
EXTERNALS: NONE

2452 015444

STARS

\*\*\*\*\*

2453  
2454 015444  
2455  
2456 015444 012700 002000  
2457  
2458 015450 005737 003022  
2459 015454 001002  
2460  
2461 015456 005300  
2462 015460 001373  
2463  
2464 015462 000207

TSTINT::

MOV #2000,R0 ;LOAD TIME-OUT VALUE  
100\$: TST INTFLG ;TEST INTERRUPT RECEIVED  
BNE 200\$ ;EXIT IF NOT ZERO  
DEC R0 ;DECREMENT COUNTER  
BNE 100\$ ;AND CONTINUE IF NOT ZERO  
200\$: RTS PC ;AND RETURN

2466  
2467 015464

.SBTTL DR70 INTERFACE CLEAR

STARS

\*\*\*\*\*

2468  
2469  
2470  
2471  
2472  
2473  
2474  
2475  
2476  
2477  
2478  
2479 015464

DESCRIPTION: CLEAR DR70 INTERFACE AND TEST IRY STATUS  
STEPS: ISSUE INTERFACE CLEAR COMMAND THROUGH CS1  
READ REGISTERS AND TEST INTERFACE STATUS  
OUTPUT: INCREMENT CLRDRI FLAG IF IRY NOT SET (ERROR)  
CALLING SEQ: JSR PC,CLRDRI  
EXTERNALS: DLY,RDREG

STARS

\*\*\*\*\*

2480

2481 015464  
2482 015464 005037 003032  
2483 015470 012777 000011 164600  
2484 015476 013777 003000 164602  
2485 015504 012777 000020 164576  
2486 015512 004737 016042  
2487 015516 004737 015606  
2488  
2489 015522 032737 000001 002326  
2490 015530 001004  
2491  
2492 015532 022737 000200 002340  
2493 015540 001402  
2494  
2495 015542 005237 003032 50\$:  
2496  
2497 015546 000207 100\$:

CLRDRI::

CLR DRIFLG ;CLEAR ERROR FLAG  
MOV #CLR.CMD,@A.CS1 ;ISSUE INTERFACE CLEAR COMMAND  
MOV DRIVE,@A.CS2 ;RESET UNIT SELECT  
MOV #IS.CYC,@A.IS ;AND SET CYCLE REQUEST  
JSR PC,DLY ;DELAY A FEW MICROSECONDS  
JSR PC,RDREG ;READ REGISTERS  
BIT #CS1.GO,R.CS1 ;TEST GO BIT RESET (REV 'A')  
BNE 50\$ ;ERROR IF GO NOT RESET  
CMP #IS.IRY,R.IS ;AND COMPARE WITH IRY  
BEQ 100\$ ;BRANCH IF INTERFACE STATUS GOOD  
50\$: INC DRIFLG ;ERROR: SET FLAG  
100\$: RTS PC ;AND RETURN

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 74  
CLEAR TEST ROUTINE

2499  
2500 015550

.SBTTL CLEAR TEST ROUTINE  
STARS  
\*\*\*\*\*

2501  
2502  
2503  
2504  
2505  
2506  
2507  
2508  
2509  
2510  
2511

.....  
CLEAR TEST ROUTINE  
INPUT L\$TEST:: CURRENT TEST NUMBER  
ERRCNT:: TEST ERROR COUNT  
OUTPUT RP.PASS:: INCREMENT  
RP.ERRCR:: SUMMED  
ERRCNT:: CLEARED  
CALLING SEQ: JSR PC,CLRTST

2512 015550

STARS  
\*\*\*\*\*

2513  
2514 015550

CLRTST::

2515  
2516  
2517 015550 013700 002114  
2518 015554 005300  
2519 015556 006300  
2520  
2521 015560 022700 000100  
2522 015564 003407  
2523

: COMPUTE TEST INDEX  
MOV L\$TEST,RO ;LOAD TEST NO.  
DEC RO ;SUBTRACT ONE  
ASL RO ;TIMES TWO FOR WORD INDEX

2524  
2525 015566 005260 002520  
2526 015572 063760 003004 002620  
2527 015600 005037 003004  
2528  
2529 015604 000207

CMP #RP.SIZ,RO ;QC TEST INDEX  
BLE 200\$ ;EXIT IF TOO LARGE

: UPDATE REPORT TABLES  
100\$: INC RP.PASS(RO) ;INCREMENT PASS COUNT  
ADD ERRCNT,RP.ERROR(RO) ;SUM TEST ERROR COUNT  
CLR ERRCNT ;CLEAR ERROR COUNT

200\$: RTS PC ;RETURN



ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 75  
READ REGISTER CONTENTS ROUTINE

2531  
2532 015606

.SBTTL READ REGISTER CONTENTS ROUTINE

STARS

\*\*\*\*\*

2533  
2534  
2535  
2536  
2537  
2538  
2539  
2540

DESCRIPTION: ROUTINE TO READ REGISTER CONTENTS

INPUT: R.MAX:: MAXIMUM REGISTER INDEX  
A.TBL:: REGISTER ADDRESS TABLE

OUTPUT: R.TBL:: TABLE OF REGISTER VALUES

2541  
2542 015606

CALLING SEQUENCE: JSR PC,RDREG

STARS

\*\*\*\*\*

2543

2544 015606  
2545 015606 010237 002756

RDREG::

MOV R2,REG2 ;SAVE REGISTER 2  
CLR R2 ;CLEAR INDEX REGISTER

2546 015612 005002  
2547

2548 015614 017262 002276 002326 100\$: MOV @A.TBL(R2),R.TBL(R2) ;READ REGISTER

2549 015622 062702 000002 ADD #2,R2 ;BUMP INDEX

2550 015626 020237 002466 CMP R2,R MAX ;AND COMPARE WITH MAX INDEX

2551 015632 002770 BLT 100\$ ;BRANCH IF LESS

2552

2553 015634 013702 002756 MOV REG2,R2 ;RESTORE REGISTER

2554 015640 000207 RTS PC ;RETURN

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 76  
BLOCK READ ROUTINE

2556  
2557 015642

.SBTTL BLOCK READ ROUTINE

STARS

\*\*\*\*\*

2558  
2559  
2560  
2561  
2562  
2563  
2564  
2565  
2566  
2567  
2568  
2569

DESCRIPTION: ROUTINE TO READ A 64 WORD BLOCK FROM THE INTERFACE  
STEPS: INITIALIZE FOR READ  
ISSUE READ W/INT ENABLED AND SET CYCLE REQUEST  
TEST FOR INTERRUPT RECEIVED OR TIME OUT  
OUTPUT: NONE  
EXTERNALS: RDINI,TSTINT  
CALLING SEQ: JSR PC,RDBLK

2570 015642

STARS

\*\*\*\*\*

2571  
2572 015642

RDBLK::

2573  
2574 015642 005037 003022  
2575 015646 004737 015726  
2576  
2577 015652 012777 000171 164416 100\$:  
2578 015660 012777 000020 164422  
2579  
2580 015666 004737 015444  
2581  
2582 015672 000207

CLR INTFLG ;CLEAR INTERRUPT FLAG  
JSR PC,RDINI ;INITIALIZE FOR READ  
MOV #RIE.CMD,@A.CS1 ;ISSUE INTERFACE READ  
MOV #IS.CYC,@A.IS ;AND SET CYCLE REQUEST  
JSR PC,TSTINT ;TEST INTERRUPT OR TIME OUT  
RTS PC ;RETURN

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 77  
BLOCK WRITE ROUTINE

2584  
2585 015674

.SBTTL BLOCK WRITE ROUTINE  
STARS

\*\*\*\*\*

2586  
2587  
2588  
2589  
2590  
2591  
2592  
2593  
2594  
2595  
2596  
2597

DESCRIPTION: ROUTINE TO WRITE ONE 64 WORD BLOCK FROM THE INTERFACE  
STEPS: INITIALIZE FOR WRITE  
ISSUE WRITE W/INT ENABLED AND SET CYCLE REQUEST  
TEST FOR INTERRUPT RECEIVED OR TIME OUT  
OUTPUT: NONE  
EXTERNALS: WRTINI,TSTINT  
CALLING SEQ: JSR PC,WRTBLK

2598 015674

STARS

\*\*\*\*\*

2599  
2600 015674

WRTBLK::

2601  
2602  
2603  
2604  
2605  
2606  
2607  
2608  
2609  
2610

015674 005037 003022  
015700 004737 015762  
015704 012777 000161 164364 100\$:  
015712 012777 000020 164370  
015720 004737 015444  
015724 000207

CLR INTFLG ;CLEAR INTERRUPT FLAG  
JSR PC,WRTINI ;INITIALIZE FOR WRITE  
MOV #WIE.CMD,@A.CS1 ;ISSUE INTERFACE WRITE  
MOV #IS.CYC,@A.IS ;AND SET CYCLE REQUEST  
JSR PC,TSTINT ;TEST INTERRUPT OR TIME OUT  
RTS PC ;RETURN



ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 78  
DR70 INTERFACE READ INITIALIZE

2612  
2613 015726

.SBTTL DR70 INTERFACE READ INITIALIZE

STARS

\*\*\*\*\*

2614  
2615  
2616  
2617  
2618  
2619  
2620  
2621  
2622  
2623  
2624

DESCRIPTION: ROUTINE TO INITIALIZE READ FROM DR70 INTERFACE  
STEPS: CLEAR INTERRUPT FLAG  
LOAD WORD COUNT REGISTER  
LOAD INPUT BUFFER ADDRESS INTO BUS ADDRESS REGISTER  
ZERO BUS ADDRESS EXTENTION REGISTER FOR 11/70 CPU'S  
INPUT: D.BLOCK:: TRANSFER BLOCK SIZE  
OUTPUT: NONE

2625 015726

STARS

\*\*\*\*\*

2626  
2627 015726  
2628 015726  
2629 015732  
2630 015736  
2631  
2632 015744  
2633 015750  
2634  
2635 015752  
2636  
2637 015760

015726 005037 003022  
015726 010077 164342  
015736 012777 003054 164336  
015744 005737 003012  
015750 001403  
015752 012777 000000 164342  
015760 000207

RDINI::

CLR INTFLG ;CLEAR INTERRUPT FLAG  
MOV RO,@A.WC ;INITIALIZE NUMBER WORDS TO READ  
MOV #IBUF,@A.BA ;LOAD INPUT BUFFER ADDRESS  
TST CPUFLG ;TEST FOR 11/70 CPU  
BEQ 100\$ ;NO: CONTINUE  
MOV #0,@A.BAE ;11/70: ZERO BUFFER ADDRESS EXTENTION  
100\$: RTS PC ;RETURN

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 79  
DR70 INTERFACE WRITE INITIALIZE

2639  
2640 015762

.SBTTL DR70 INTERFACE WRITE INITIALIZE

STARS

\*\*\*\*\*

2641  
2642  
2643  
2644  
2645  
2646  
2647  
2648  
2649  
2650  
2651

DESCRIPTION: ROUTINE TO INITIALIZE WRITE FROM DR70 INTERFACE  
STEPS: CLEAR INTERRUPT FLAG  
LOAD WORD COUNT REGISTER  
LOAD OUTPUT BUFFER ADDRESS INTO BUS ADDRESS REGISTER  
ZERO BUS ADDRESS EXTENTION REGISTER FOR 11/70 CPU'S  
INPUT: D.BLOCK:: TRANSFER BLOCK SIZE  
OUTPUT: NONE

2652 015762

STARS

\*\*\*\*\*

2653

2654 015762  
2655 015762 005037 003022  
2656 015766 010077 164306  
2657 015772 012777 004054 164302  
2658  
2659 016000 005737 003012  
2660 016004 001403  
2661  
2662 016006 012777 000000 164306  
2663  
2664 016014 000207

WRTINI::

CLR INTFLG ;CLEAR INTERRUPT FLAG  
MOV R0,@A.WC ;INITIALIZE NUMBER WORDS TO READ  
MOV #OBUF,@A.BA ;LOAD OUTPUT BUFFER ADDRESS  
TST CPUFLG ;TEST FOR 11/70 CPU  
BEQ 100\$ ;NO: CONTINUE  
MOV #0,@A.BAE ;11/70: ZERO BUFFER ADDRESS EXTENTION  
100\$: RTS PC ;RETURN

2666  
2667 016016

.SBTTL DELAY ROUTINES

STARS

\*\*\*\*\*

2668  
2669  
2670  
2671  
2672  
2673  
2674  
2675

DESCRIPTION: DMA TRANSFER DELAY ROUTINE  
CALLING SEQUENCE: JSR PC,DMADLY  
INPUT: DMACNT=DELAY COUNT FOR THIS CPU.  
OUTPUT: NONE  
REGISTER USAGE: RO=SCRATCH

2676 016016

STARS

\*\*\*\*\*

2677  
2678 016016

DMADLY::

2679  
2680 016016 013700 003036  
2681 016022  
2682 016022 005300  
2683 016024 001376  
2684  
2685 016026 000207  
2686

10\$: MOV DMACNT,RO ;INITIALIZE DELAY COUNT  
DEC RO ;DECREMENT COUNT REGISTER  
BNE 10\$ ;CONTINUE UNTIL ZERO  
RTS PC ;RETURN

2687 016030

STARS

\*\*\*\*\*

2688  
2689  
2690  
2691  
2692  
2693  
2694  
2695

DESCRIPTION: SILO FILL DELAY ROUTINE  
CALLING SEQUENCE: JSR PC,SILODLY  
INPUT: SILOCNT=DELAY COUNT FOR THIS RH ADAPTER.  
OUTPUT: NONE  
REGISTER USAGE: RO=SCRATCH

2696 016030

STARS

\*\*\*\*\*

2697  
2698 016030

SILODLY::

2699  
2700 016030 013700 003040  
2701 016034  
2702 016034 005300  
2703 016036 001376  
2704  
2705 016040 000207  
2706

10\$: MOV SILOCNT,RO ;INITIALIZE DELAY COUNT  
DEC RO ;DECREMENT COUNT REGISTER  
BNE 10\$ ;CONTINUE UNTIL ZERO  
RTS PC ;RETURN

2707 016042

STARS

\*\*\*\*\*

2708  
2709  
2710  
2711  
2712  
2713  
2714  
2715

DESCRIPTION: ROUTINE TO DELAY A FEW CYCLES  
CALLING SEQUENCE: JSR PC,DLY  
INPUT: NONE  
OUTPUT: NONE  
REGISTER USAGE: RO=SCRATCH

2716 016042

STARS

\*\*\*\*\*



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 80-1  
DELAY ROUTINES

2717						
2718	016042			DLY::		
2719	016042	012700	000004	MOV	#4,R0	;LOAD DELAY COUNT
2720	016046			10\$:		
2721	016046	005300		DEC	R0	;DECREMENT COUNT
2722	016050	001376		BNE	10\$	;CONTINUE UNTIL ZERO
2723						
2724	016052	000207		RTS	PC	;RETURN

2726  
2727 016054

.SBTTL REGISTER DISPLAY ROUTINE

STARS

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2728  
2729  
2730  
2731  
2732  
2733  
2734  
2735  
2736  
2737  
2738

DISPLAY REGISTER CONTENTS (EXTENDED PRINT)  
INPUT: FP.NAM:: REGISTER NAME PTR  
FP.ACT:: ACTUAL VALUE  
FP.EXP:: EXPECTED VALUE  
FP.BFR:: BIT EXPAND TABLE PTR  
OUTPUT: FP.XOR:: COMPUTED XOR VALUE  
EXTERNALS: DSPBITS

2739 016054

STARS

\*\*\*\*\*

2740  
2741 016054

DSPREG::

2742  
2743 016054 013700 002734  
2744 016060 013737 002736 002740  
2745 016066 074037 002740

MOV FP.EXP,R0 ;LOAD EXPECTED VALUE  
MOV FP.ACT,FP.XOR ;LOAD ACTUAL VALUE  
XOR R0,FP.XOR ;COMPUTE XOR VALUE

2746  
2747 016072  
016072 013746 002740  
016076 013746 002734  
016102 013746 002736  
016106 013746 002730  
016112 012746 013132  
016116 012746 000005  
016122 010600  
016124 104414  
016126 062706 000014

PRINTB #F.REG2,FP.NAM,FP.ACT,FP.EXP,FP.XOR ;PRINT VALUES  
MOV FP.XOR,-(SP)  
MOV FP.EXP,-(SP)  
MOV FP.ACT,-(SP)  
MOV FP.NAM,-(SP)  
MOV #F.REG2,-(SP)  
MOV #5,-(SP)  
MOV SP,R0  
TRAP C\$PNTB  
ADD #14,SP

2748  
2749 016132 004737 017006

JSR PC,DSPBITS ;EXPAND BITS

2750  
2751 016136  
016136 013746 002750  
016142 012746 014210  
016146 012746 000002  
016152 010600  
016154 104414  
016156 062706 000006

PRINTB #F.BITS,FP.BIT ;PRINT BITS  
MOV FP.BIT,-(SP)  
MOV #F.BITS,-(SP)  
MOV #2,-(SP)  
MOV SP,R0  
TRAP C\$PNTB  
ADD #6,SP

2752  
2753 016162 000207

RTS PC ;RETURN

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 82  
REGISTER STATUS DISPLAY ROUTINE

2755  
2756 016164

.SBTTL REGISTER STATUS DISPLAY ROUTINE

STARS

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2757

DISPLAY REGISTER STATUS

(EXTENDED PRINT)

2758

2759

2760

2761

2762

2763

2764

2765

2766

2767

2768 016164

INPUT: R.SST:: REGISTER SELECT MASK  
R.MAX:: MAX REGISTER TABLE INDEX  
R.TBL:: REGISTER VALUE TABLE  
NA.TBL:: REGISTER NAME TABLE  
A.TBL:: REGISTER ADDRESS TABLE  
BA.TBL:: BIT DEFINITION TABLE

CALLING SEQ: JSR PC,DSPSTAT

STARS

\*\*\*\*\*

2769

2770 016164

DSPSTAT::

2771

2772 016164 010237 002756

MOV R2,REG2 ;SAVE  
MOV R4,REG4 ;REGISTERS

2773 016170 010437 002762

2774

2775

2776

2777 016174 005002

; PRINT REGISTER NAMES

2778 016176 012704 000001

100\$: CLR R2 ;CLEAR TABLE INDEX  
MOV #1,R4 ;INITIALIZE SELECT BIT

2779

2780 016202 030437 002472

2781 016206 001447

125\$: BIT R4,R.SST ;TEST SELECT MASK  
BEQ 150\$ ;BRANCH IF BIT RESET

2782

2783 016210

PRINTB #F.DMP4,NA.TBL(R2),A.TBL(R2),R.TBL(R2) ;PRINT NAME,ADDR,VALUE

016210 016246 002326

016214 016246 002276

016220 016246 002406

016224 012746 013020

016230 012746 000004

016234 010600

016236 104414

016240 062706 000012

MOV R.TBL(R2),-(SP)  
MOV A.TBL(R2),-(SP)  
MOV NA.TBL(R2),-(SP)  
MOV #F.DMP4, -(SP)  
MOV #4, -(SP)  
MOV SP,R0  
TRAP C\$PNTB  
ADD #12,SP

2784

2785 016244 005762 002326

TST R.TBL(R2) ;TEST VALUE  
BEQ 150\$ ;SKIP BITS IF ZERO

2786 016250 001426

2787

2788 016252 022762 006134 002436

CMP #B.BIT,BA.TBL(R2) ;TEST FOR NULL BIT DEFS  
BEQ 150\$ ;IF NULL SKIP DISPLAY

2789 016260 001422

2790

2791 016262 016237 002326 002740

MOV R.TBL(R2),FP.XOR ;LOAD VALUE  
MOV BA.TBL(R2),FP.TBL ;LOAD TABLE ADDRESS

2792 016270 016237 002436 002746

2793 016276 004737 017006

JSR PC,DSPBITS ;FORMAT BITS  
PRINTB #F.BITS,FP.BIT ;PRINT BITS

2794

016302 013746 002750

016306 012746 014210

016312 012746 000002

016316 010600

016320 104414

016322 062706 000006

MOV FP.BIT, -(SP)  
MOV #F.BITS, -(SP)  
MOV #2, -(SP)  
MOV SP,R0  
TRAP C\$PNTB  
ADD #6,SP

2795



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 82-1  
 REGISTER STATUS DISPLAY ROUTINE

2796	016326	006304		150\$:	ASL	R4		:SHIFT SELECT
2797	016330	062702	000002		ADD	#2,R2		:INCREMENT INDEX
2798	016334	020237	002466		CMP	R2,R.MAX		:COMPARE WITH MAX
2799	016340	002720			BLT	125\$		:CONTINUE IF LESS THAN MAX
2800								
2801	016342				PRINTB	#F.CRLF		:NEW LINE
	016342	012746	014214		MOV	#F.CRLF,-(SP)		
	016346	012746	000001		MOV	#1,-(SP)		
	016352	010600			MOV	SP,R0		
	016354	104414			TRAP	C\$PNTB		
	016356	062706	000004		ADD	#4,SP		
2802								
2803	016362	013702	002756	300\$:	MOV	REG2,R2		:RESTORE
2804	016366	013704	002762		MOV	REG4,R4		:REGISTERS
2805								
2806	016372	000207			RTS	PC		:RETURN

2808  
2809 016374

.SBTTL DATA TRANSFER ERROR ROUTINE

STARS

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2810  
2811  
2812  
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2814  
2815  
2816  
2817  
2818  
2819  
2820

DISPLAY DATA TRANSFER ERROR (EXTENDED PRINT)  
INPUT: FP.NDX:: BUFFER INDEX  
FP.EXP:: EXPECTED (SENT) DATA VALUE  
FP.ACT:: ACTUAL (RECEIVED) DATA VALUE  
OUTPUT: FP.ADR:: DATA ADDRESS  
FP.NDX:: WORD NUMBER  
FP.XOR:: EXCLUSIVE OR VALUE

2821  
2822 016374

CALLING SEQ: JSR PC,DSPDATA

STARS

\*\*\*\*\*

2823

2824 016374  
2825 016374 013700 002734  
2826 016400 013737 002736 002740  
2827 016406 074037 002740  
2828  
2829 016412 012737 003054 002732  
2830 016420 063737 002742 002732  
2831  
2832 016426 013700 002742  
2833 016432 006200  
2834 016434 005200  
2835 016436 010037 002742  
2836  
2837 016442  
016442 013746 002740  
016446 013746 002734  
016452 013746 002736  
016456 013746 002742  
016462 013746 002732  
016466 012746 013244  
016472 012746 000006  
016476 010600  
016500 104415  
016502 062706 000016

DSPDATA::

MOV FP.EXP,RO ;LOAD EXPECTED VALUE  
MOV FP.ACT,FP.XOR ;LOAD ACTUAL VALUE  
XOR RO,FP.XOR ;COMPUTE EXCLUSIVE OR  
MOV #IBUF,FP.ADR ;LOAD BUFFER START ADDRESS  
ADD FP.NDX,FP.ADR ;ADD INDEX  
MOV FP.NDX,RO ;LOAD INDEX  
ASR RO ;DIVIDE BY TWO  
INC RO ;RELATIVE TO ONE  
MOV RO,FP.NDX ;SAVE AS WORD NUMBER

2838

2839 016506 000207

PRINTX #F.DAT2,FP.ADR,FP.NDX,FP.ACT,FP.EXP,FP.XOR  
MOV FP.XOR,-(SP)  
MOV FP.EXP,-(SP)  
MOV FP.ACT,-(SP)  
MOV FP.NDX,-(SP)  
MOV FP.ADR,-(SP)  
MOV #F.DAT2,-(SP)  
MOV #6,-(SP)  
MOV SP,RO  
TRAP C\$PNTX  
ADD #16,SP

RTS PC

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 84  
DATA TRANSFER ERROR ROUTINE

2841  
2842 016510

.SBTTL DATA TRANSFER ERROR ROUTINE

STARS

\*\*\*\*\*

2843  
2844  
2845  
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2847  
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2849  
2850  
2851

DISPLAY DATA TRANSFER ERROR (EXTENDED PRINT)  
INPUT: FP.DPAT:: DATA PATTERN  
F.DPAT:: DISPLAY FORMAT ADDRESS  
OUTPUT: DATA PATTERN DISPLAYED  
CALLING SEQ: JSR PC,DSPDPAT

2852 016510

STARS

\*\*\*\*\*

2853  
2854 016510

DSPDPAT::

2855  
2856 016510 013746 002744  
016510 012746 013624  
016520 012746 000002  
016524 010600  
016526 104414  
016530 062706 000006

PRINTB #F.DPAT,FP.DPAT ;DISPLAY DATA  
MOV FP.DPAT,-(SP)  
MOV #F.DPAT,-(SP)  
MOV #2,-(SP)  
MOV SP,R0  
TRAP C\$PNTB  
ADD #6,SP

2857  
2858 016534 000207

RTS PC



ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 85  
HELP FILE DUMP ROUTINE

2860  
2861 016536

.SBTTL HELP FILE DUMP ROUTINE

STARS

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2862  
2863  
2864  
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2866  
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2875  
2876  
2877  
2878  
2879  
2880  
2881 016536

SUBROUTINE TO DUMP DOS HELP FILE TO CONSOLE

INPUT: D.FILPTR: POINTER TO 'FILNAM.EXT'

OUTPUT: PRINTS 72 CHARACTER BUFFER TO CONSOLE

REGISTER USAGE: R1 = POINTER TO LINE TEXT BUFFER  
R2 = TAB POSITION COUNTER  
R4 = CHARACTER FROM FILE

CALLING SEQ: MOV #FILNAM,D.FILPTR  
JSR PC,DPSFILE

FUNCTION: DPSFILE WILL OPEN, READ AND CLOSE THE SELETED FILE  
USING THE DIAG SUPERVISOR MACROS. CHARACTERS  
ARE READ ONE AT A TIME AND TRANSFERRED TO THE  
LINE BUFFER, WHICH IS DUMPED TO THE CONSOLE  
WHEN FULL.

STARS

\*\*\*\*\*

2882  
2883 000040  
2884 000015  
2885 000012  
2886 000011

BLK = 40 ;BLANK CHAR  
CR = 15 ;CARRAGE RETURN CHAR  
LF = 12 ;LINE FEED CHAR  
TAB = 11 ;TAB CHAR

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 86  
 HELP FILE DUMP ROUTINE

```

2888 016536          DSPFILE::
2889
2890 016536 010137 002754      MOV      R1,REG1          ;SAVE
2891 016542 010237 002756      MOV      R2,REG2          ;REGISTERS
2892 016546 010437 002762      MOV      R4,REG4
2893 016552 005037 003020      CLR      TABFLG          ;CLEAR TAB ACTIVE FLAG
2894
2895          ;          OPEN FILE AND PRINT NULL LINE
2896
2897 016556          100$:      OPEN      D.FILPTR          ;OPEN FILE
      016556 013700 002504      MOV      D.FILPTR,R0
      016562 104434          TRAP     C$OPEN
2898 016564 012701 005260      MOV      #LINBUF,R1      ;AND LOAD POINTER TO BUFFER
2899 016570 112721 000015      MOV      #CR,(R1)+       ;MOVE CARRAGE RETURN
2900 016574 112721 000012      MOV      #LF,(R1)+       ;AND LINE FEED TO BUFFER
2901 016600 112704 000000      MOV      #0,R4           ;FOLLOWED BY NULL
2902 016604 004737 016714      JSR      PC,600$         ;PRINT BUFFER, RESET R1
2903
2904          ;          GET NEXT CHARACTER FROM SUPERVISOR, AND TEST FOR END OF FILE
2905
2906 016610          200$:      GETBYTE  R4           ;GET NEXT CHAR IN R4
      016610 104426          TRAP     C$GETB
      016612 110004          MOV      R0,R4
2907 016614          BNCOMPL 400$         ;EOF IF INCOMPLETE
      016614 103013          BCC     400$
2908 016616 001414          BEQ     425$         ;OR IF CHARACTER = ZERO
2909
2910          ;          TEST AND PROCESS TAB CHARACTER
2911
2912 016620 122704 000011          300$:      CMPB     #TAB,R4          ;COMPARE WITH TAB
2913 016624 001004          BNE     350$          ;NO: CONTINUE
2914 016626 112704 000040          MOV      #BLK,R4          ;YES: LOAD R4 WITH A BLANK
2915 016632 005237 003020          INC     TABFLG          ;AND SET TAB ACTIVE
2916
2917 016636 004737 016714          350$:      JSR      PC,600$         ;PRINT SPACES FOR TAB
2918 016642 000762          BR      200$          ;AND RETRIEVE NEXT CHARACTER
2919
2920          ;          LAST CHAR OR END OF FILE
2921
2922 016644 112704 000000          400$:      MOV      #0,R4           ;INSURE NULL CHAR
2923
2924 016650 004737 016714          425$:      JSR      PC,600$         ;EMPTY BUFFER
2925 016654 112721 000015      MOV      #CR,(R1)+       ;OUTPUT CARRAGE RETURN
2926 016660 112721 000012      MOV      #LF,(R1)+       ;AND LINE FEED
2927 016664 112704 000000      MOV      #0,R4           ;FOLLOWED BY NULL
2928 016670 004737 016714      JSR      PC,600$         ;PRINT
2929
2930          ;          CLOSE FILE AND RETURN TO MAIN
2931
2932 016674          500$:      CLOSE     ;CLOSE FILE
      016674 104435          TRAP     C$CLOS
2933 016676 013701 002754      MOV      REG1,R1          ;RESTORE
2934 016702 013702 002756      MOV      REG2,R2          ;REGISTERS
2935 016706 013704 002762      MOV      REG4,R4
2936 016712 000207          RTS     PC              ;AND RETURN

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 87  
 HELP FILE DUMP ROUTINE

2938 016714  
 2939  
 2940  
 2941  
 2942 016714  
 2943  
 2944  
 2945  
 2946 016714 110421  
 2947 016716 001403  
 2948 016720 022701 005350  
 2949 016724 001012  
 2950  
 2951  
 2952  
 2953 016726  
 016726 012746 005256  
 016732 012746 000001  
 016736 010600  
 016740 104414  
 016742 062706 000004  
 2954 016746 012701 005260  
 2955  
 2956  
 2957  
 2958 016752 120427 000040  
 2959 016756 100406  
 2960  
 2961 016760 005302  
 2962 016762 001404  
 2963 016764 005737 003020  
 2964 016770 001351  
 2965 016772 000207  
 2966  
 2967  
 2968  
 2969 016774 012702 000010  
 2970 017000 005037 003020  
 2971 017004 000207

```

STARS
:*****
:
:      SUBROUTINE TO TRANSFER CHARACTERS TO PRINT BUFFER AND DUMP
:      BUFFER WHEN FULL.
STARS
:*****
:
:      MOVE CHAR TO BUFFER, TEST FOR NULL CHAR OR END OF BUFFER
600$:  MOV      R4,(R1)+          ;MOVE CHAR TO BUFFER
      BEQ      700$             ;PRINT BUFFER IF NULL
      CMP      #EOL,R1         ;TEST FOR END OF BUFFER
      BNE      800$             ;NO: CONTINUE

:      PRINT BUFFER AND RESET POINTER
700$:  PRINTB  #LINE             ;PRINT LINE AT CONSOLE
      MOV      #LINE,-(SP)
      MOV      #1,-(SP)
      MOV      SP,R0
      TRAP    C$PNTB
      ADD      #4,SP
      MOV      #LINBUF,R1      ;AND RESET POINTER

:      TEST FOR CONTROL CHARS, TAB ACTIVE OR RETURN
800$:  CMPB    R4,#BLK          ;COMPARE CHAR WITH BLANK
      BMI      850$            ;BRANCH IF CONTROL CHAR

      DEC      R2              ;DEC TAB COUNTER
      BEQ      850$            ;BRANCH TO RESET
      TST     TABFLG           ;NOW TEST TAB FLAG
      BNE      600$            ;ACTIVE: MOVE ANOTHER BLANK
      RTS     PC               ;NO: JUST RETURN

:      RESET TAB COUNTER, TAB ACTIVE FLAG AND RETURN
850$:  MOV      #8.,R2          ;RESET TAB
      CLR     TABFLG           ;CLEAR TAB ACTIVE FLAG
      RTS     PC               ;AND RETURN
    
```





ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 89  
EXPAND BIT NAMES

```

3006
3007           ;      SHIFT BIT SELECT AND TEST
3008
3009 017060 000241      100$:  CLC           ;CLEAR CARRY BEFORE SHIFT
3010 017062 006004      ROR          R4           ;SHIFT SELECT TO NEXT BIT
3011 017064 001432      BEQ          450$        ;BRANCH IF SELECT REGISTER ZERO
3012
3013 017066 030437 002740 150$:  BIT          R4,FP.XOR      ;TEST FOR SELECT BIT SET
3014 017072 001006      BNE          300$        ;BRANCH IF BIT SET
3015
3016           ;      ADVANCE TABLE POINTER PAST NEXT DELIMETER
3017
3018 017074 112100      200$:  MOVB        (R1)+,R0      ;READ CHAR FROM TABLE & BUMP PTR
3019 017076 001425      BEQ          450$        ;BRANCH IF NULL CHARACTER
3020
3021 017100 120027 000054 210$:  CMPB        R0,#54          ;COMPARE WITH DELIMETER
3022 017104 001373      BNE          200$        ;BRANCH BACK IF NOT DELIMETER
3023 017106 000764      BR           100$        ;CONTINUE WITH NEXT BIT
3024
3025           ;      MOVE EXPANDED NAME TO PRINT BUFFER AND ADVANCE TABLE PTR
3026
3027 017110 112100      300$:  MOVB        (R1)+,R0      ;READ CHAR FROM TABLE & BUMP PTR
3028 017112 001417      BEQ          450$        ;BRANCH IF NULL CHARACTER
3029
3030 017114 120027 000054 310$:  CMPB        R0,#54          ;COMPARE WITH DELIMETER
3031 017120 001405      BEQ          350$        ;BRANCH IF DELIMETER
3032
3033 017122 110022      325$:  MOVB        R0,(R2)+        ;MOVE CHAR TO BUFFER & BUMP PTR
3034 017124 005337 003006  DEC          BITCNT      ;DECREMENT CHARACTER COUNT
3035 017130 001367      BNE          300$        ;MOVE NEXT CHAR IF COUNT NOT ZERO
3036 017132 000405      BR           400$        ;COUNT EXPIRED:  ADD PROMPT CHAR
3037
3038 017134 112722 000040 350$:  MOVB        #40,(R2)+      ;MOVE BLANK CHAR TO BUFFER & BUMP PTR
3039 017140 005337 003006  DEC          BITCNT      ;DECREMENT CHARACTER COUNT
3040 017144 001345      BNE          100$        ;TEST NEXT BIT IF COUNT NOT ZERO
3041
3042           ;      CHARACTER COUNT EXPIRED:  MOVE PROMPT CHAR TO BUFFER
3043
3044 017146 112722 000077 400$:  MOVB        #77,(R2)+      ;MOVE PROMPT & BUMP PTR

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 90  
EXPAND BIT NAMES

```
3046
3047 ; LAST CHARACTER TO MOVE: NULL
3048
3049 017152 110012 450$: MOVB R0,(R2) ;MOVE NULL INTO BUFFER
3050
3051 ; RESTORE REGISTERS R1,R2 & R4
3052
3053 017154 013701 002754 500$: MOV REG1,R1 ;RESTORE
3054 017160 013702 002756 MOV REG2,R2 ;REGISTERS
3055 017164 013704 002762 MOV REG4,R4
3056
3057 017170 000207 RTS PC ;AND RETURN
3058
3059 017172 ENDMOD
3060
3061 .SBTTL
```



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 91  
REPORT CODING SECTION

3074  
3102  
3103 017172  
3104  
3105  
3106 017172

.SBTTL REPORT CODING SECTION

BGNMOD

.SBTTL REPORT CODING SECTION

STARS

\*\*\*\*\*

REPORT SECTION GENERATES SUMMARY  
AND CLEARS TABLES FOR EACH TEST EXECUTED.

INPUT RP.SIZ MAX NUMBER OF TESTS  
RP.PASS:: PASS COUNT TABLE  
RP.ERROR:: ERROR COUNT TABLE

OUTPUT TEST NO., PASS COUNT & ERROR COUNT

STARS

\*\*\*\*\*

3107  
3108  
3109  
3110  
3111  
3112  
3113  
3114  
3115  
3116 017172

3117  
3118 017172  
017172

BGNRPT

LSRPT::

3119  
3120 017172  
017172 012746 014074  
017176 012746 000001  
017202 010600  
017204 104416  
017206 062706 000004

PRINTS #F.RPT1 ;PRINT REPORT HEADER  
MOV #F.RPT1,-(SP)  
MOV #1,-(SP)  
MOV SP,R0  
TRAP C\$PNTS  
ADD #4,SP

3121  
3122 017212 012701 000001  
3123 017216 012702 000000

MOV #1,R1 ;INITIALIZE TEST NUMBER  
MOV #0,R2 ;INITIALIZE TEST INDEX

3124  
3125 017222 005762 002520  
3126 017226 001415

100\$: TST RP.PASS(R2) ;TEST FOR MORE THAN ONE PASS  
BEQ 200\$ ;CONTINUE IF NO PASS

3127  
3128 017230  
017230 016246 002620  
017234 016246 002520  
017240 010146  
017242 012746 014164  
017246 012746 000004  
017252 010600  
017254 104416  
017256 062706 000012

PRINTS #F.RPT2,R1,RP.PASS(R2),RP.ERROR(R2)  
MOV RP.ERROR(R2),-(SP)  
MOV RP.PASS(R2),-(SP)  
MOV R1,-(SP)  
MOV #F.RPT2,-(SP)  
MOV #4,-(SP)  
MOV SP,R0  
TRAP C\$PNTS  
ADD #12,SP

3129  
3130 017262 005062 002520  
3131 017266 005062 002620

200\$: CLR RP.PASS(R2) ;CLEAR PASS COUNT  
CLR RP.ERROR(R2) ;CLEAR ERROR COUNT

3132  
3133 017272 005201  
3134 017274 062702 000002  
3135 017300 022701 000033  
3136 017304 100346

INC R1 ;INCREMENT TEST NO.  
ADD #2,R2 ;BUMP INDEX  
CMP #MAXTST,R1 ;COMPARE WITH LAST TEST NO  
BPL 100\$ ;AND CONTINUE UNTIL DONE

3137  
3138 017306  
017306 000167  
017310 000000

EXIT RPT  
.WORD JSJMP  
.WORD L10011-2-

3139

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 91-1  
REPORT CODING SECTION

3140  
3141  
3142 017312  
017312  
017312 104425

.EVEN  
ENDRPT  
L10011: TRAP CSRPT

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 92  
PROTECTION TABLE

3144  
3145  
3146  
3147  
3148  
3149  
3150  
3151  
3152  
3153  
3154  
3155  
3156

017314  
017314  
017314 177777  
017316 177777  
017320 177777  
017322

.SBTTL PROTECTION TABLE  
:++  
: THIS TABLE IS USED BY THE RUNTIME SERVICES  
: TO PROTECT THE LOAD MEDIA.  
:--

BGNPROT  
L\$PROT::

-1 ;OFFSET INTO P-TABLE FOR CSR ADDRESS  
-1 ;OFFSET INTO P-TABLE FOR MASSBUS ADDRESS  
-1 ;OFFSET INTO P-TABLE FOR DRIVE NUMBER  
ENDPROT



ZDRMAO DR70 REPAIR DIAGNOSTIC PROGRAM INITIALIZATION SECTION

MACRO M1200 23-MAY-83 15:51 PAGE 93

3158  
3159 017322

.SBTTL PROGRAM INITIALIZATION SECTION

STARS

\*\*\*\*\*

INITIALIZATION SECTION:

```

STEPS:      IF NOT INIFLG THEN:
              ASK FOR & PRINT SUPERVISOR HELP FILE
              ASK FOR & PRINT DIAGNOSTIC HELP FILE

              RETRIEVE P-TABLE ADDRESS & SAVE DATA LOCALLY

              IF PROGRAM START THEN:
                RESET UNIBUS
                CLEAR PRINT MSG FLAGS AND REPORT TABLES
                DETERMINE CPU TYPE & GENERATE REGISTER SELECT MASKS
                INITIALIZE REGISTER ADDRESS TABLE
                PROCESS INTERFACE DRIVE NO. & COMPUTE ATTN BIT POSITION

              DETERMINE BOARD REV & INITIALIZE DRIVE TYPE
              BUILD TEST SELECT MASK FROM SOFTWARE QUESTION DATA
              ENABLE INTERRUPTS AND BEGIN TESTING

```

3160  
3161  
3162  
3163  
3164  
3165  
3166  
3167  
3168  
3169  
3170  
3171  
3172  
3173  
3174  
3175  
3176  
3177  
3178  
3179 017322

STARS

\*\*\*\*\*

3180  
3181 017322  
017322

BGNINIT

L\$INIT::

; PROCESS PROGRAM INITIALIZATION

3182  
3183  
3184  
3185 017322 005737 003014  
3186 017326 001042  
3187  
3188 017330 005237 003014  
3189 017334 005037 003016  
3190 017340  
017340 104443  
017342 000404  
017344 003016  
017346 000130  
017350 014334  
017352 000001  
017354

```

100$:  TST      INIFLG      ;TEST FOR PROGRAM INITIALIZATION
       BNE      200$      ;INITIALIZED: CONTINUE

120$:  INC      INIFLG      ;SET INITIALIZATION FLAG
       CLR      HLPFLG     ;CLEAR OPERATOR HELP FLAG
       GMANIL   Q.HLP1,HLPFLG,1,YES ;ASK OPERATOR FOR SUPERVISOR HELP
       TRAP    C$GMAN
       BR      10000$
       .WORD   HLPFLG
       .WORD   T$CODE
       .WORD   Q.HLP1
       .WORD   1

```

3191 017354 005737 003016  
3192 017360 001405

```

10000$: TST      HLPFLG     ;TEST RESPONSE
        BEQ      150$     ;NO: CONTINUE

```

3193  
3194 017362 012737 014371 002504  
3195 017370 004737 016536

```

MOV     #D.FIL1,D.FILPTR ;LOAD FILE NAME PTR
JSR     PC,DSPFILE       ;DISPLAY FILE

```

3196  
3197 017374 005037 003016  
3198 017400  
017400 104443  
017402 000404  
017404 003016  
017406 000130  
017410 014402  
017412 000001

```

150$:  CLR      HLPFLG     ;CLEAR FLAG
       GMANIL   Q.HLP2,HLPFLG,1,YES ;ASK OPERATOR FOR DIAGNOSTIC HELP
       TRAP    C$GMAN
       BR      10001$
       .WORD   HLPFLG
       .WORD   T$CODE
       .WORD   Q.HLP2
       .WORD   1

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 93-1  
PROGRAM INITIALIZATION SECTION

	017414				10001\$:				
3199	017414	005737	003016		TST	HLPFLG			;TEST RESPONSE
3200	017420	001405			BEQ	200\$			;NO: CONTINUE
3201									
3202	017422	012737	014437	002504	MOV	#D.FIL2,D.FILPTR			;LOAD FILE NAME PTR
3203	017430	004737	016536		JSR	PC,DSPFILE			;DISPLAY FILE

ZDRMAO DR70 REPAIR DIAGNOSTIC PROGRAM INITIALIZATION SECTION

MACRO M1200 23-MAY-83 15:51 PAGE 94

3205 017434

STARS

::\*\*\*\*\*

3206

3207

3208 017434

STARS

::\*\*\*\*\*

RETRIEVE P-TABLE ADDRESS FOR EACH NEW PASS

3209

3210 017434

017434 013700 002774

017440 104442

017442 010037 002772

200\$: GPHARD LOGUNIT,HRDTBL ;RETRIEVE P-TABLE ADDRESS

MOV LOGUNIT,R0

TRAP C\$GPHRD

MOV R0,HRDTBL

3211

3212 017446

017446 103413

BCOMplete 220\$ ;CONTINUE IF SUCCESSFUL

BCS 220\$

3213

3214 017450

017450 013746 002774

017454 012746 014036

017460 012746 000002

017464 010600

017466 104417

017470 062706 000006

PRINTF #F.UNIT,LOGUNIT ;REPORT P-TABLE ERROR

MOV LOGUNIT,-(SP)

MOV #F.UNIT,-(SP)

MOV #2,-(SP)

MOV SP,R0

TRAP C\$PNTF

ADD #6,SP

3215

3216 017474

017474 104444

DOCLN ;ABORT THIS PASS

TRAP C\$DCLN

3217

3218 017476

017502 012137 002720

3219 017506

017512 012137 002724

3220 017516

012137 002726

220\$: MOV HRDTBL,R1 ;LOAD TABLE ADDRESS

MOV (R1)+,PT.CSR ;AND MOVE

MOV (R1)+,PT.VEC ;PARAMETERS

MOV (R1)+,PT.PRI ;TO LOCAL

MOV (R1)+,PT.DRI ;STORAGE



ZDRMAO DR70 REPAIR DIAGNOSTIC PROGRAM INITIALIZATION SECTION

MACRO M1200 23-MAY-83 15:51 PAGE 95

3224 017522

STARS  
:\*\*\*\*\*

3225

3226

3227 017522

TEST AND PROCESS START CONDITION

STARS  
:\*\*\*\*\*

3228

3229 017522 012700 000040  
017522 104447  
017526

300\$: READEF #EF.START ;TEST FOR OPERATOR START  
MOV #EF.START,R0  
TRAP C\$REFG

3230

3231 017530 103150  
017530

BNCOMPLETE 400\$ ;CONTINUE IF NOT  
BCC 400\$

3232

3233 017532 104433  
017532

BRESET ;BUS RESET  
TRAP C\$RESET

3234

3235

3236

3237 017534 005037 003042  
3238 017540 005037 003044  
3239 017544 005037 003046  
3240 017550 005037 003050  
3241 017554 005037 003052

; CLEAR PRINT FLAGS  
CLR CSRFLG ;ENABLE CSR ADDRESS MSG  
CLR NEDFLG ;ENABLE DRIVE SELECT MSG  
CLR PWRFLG ;ENABLE POWER ON MSG  
CLR CBLFLG ;ENABLE CABLE MSG  
CLR PERFLG ;ENABLE PARITY MSG

3242

3243

3244

3245 017560 005000

; INITIALIZE REPORT TABLES  
CLR R0 ;CLEAR INDEX REGISTER

3246

3247 017562 005060 002520  
3248 017566 005060 002620  
3249 017572 062700 000002  
3250 017576 022700 000100  
3251 017602 003367

310\$: CLR RP.PASS(R0) ;CLEAR PASS COUNT  
CLR RP.ERROR(R0) ;CLEAR ERROR COUNT  
ADD #2,R0 ;BUMP INDEX  
CMP #RP.SIZ,R0 ;COMPARE WITH MAX TEST INDEX  
BGT 310\$ ;CONTINUE UNTIL TABLES CLEAR

3252

3253

3254

3255 017604 012746 000340  
017604 012746 015220  
017610 012746 000004  
017614 012746 000003  
017620 104437  
017624 062706 000010

; DETERMINE PROCESSOR & MASSBUS CONTROLLER TYPE  
320\$: SETVEC #4,#TRAP4,#PRI07 ;SETUP ADDRESS TRAP SERVICE  
MOV #PRI07,-(SP)  
MOV #TRAP4,-(SP)  
MOV #4,-(SP)  
MOV #3,-(SP)  
TRAP C\$SVEC  
ADD #10,SP

3256

3257 017632 005037 003024  
3258 017636 013700 177764  
3259 017642 005737 003024  
3260 017646 001002

CLR TRPFLG ;CLEAR TRAP FLAG  
MOV CPUID,R0 ;TEST PDP-11/70 LOCATION  
TST TRPFLG ;TEST FOR ADDRESS TRAP  
BNE 340\$ ;NO TRAP: CONTINUE

3261

3262 017650 005237 003012

INC CPUFLG ;SET PDP-11/70 FLAG

3263

3264 017654 012700 000004  
017654 104436  
017660

340\$: CLRVEC #4 ;CLEAR TRAP SERVICE  
MOV #4,R0  
TRAP C\$CVEC

3265

3266

; GENERATE REGISTER SELECTION MASKS

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 95-1  
PROGRAM INITIALIZATION SECTION

```

3267
3268 017662 012737 000024 002466 350$: MOV #24,R.MAX ;INITIALIZE MAX REGISTER INDEX
3269 017670 012737 001777 002474 MOV #1777,R.SAD ;INITIALIZE REGISTER ADDRESS SELECT
3270 017676 012737 001271 002476 MOV #1271,R.SIN ;INITIALIZE INITIAL VALUE SELECT
3271 017704 012737 000027 002500 MOV #27,R.SRH ;INITIALIZE CONTROLLER REG SELECT
3272 017712 012737 001750 002502 MOV #1750,R.SDR ;INITIALIZE INTERFACE REG SELECT
3273
3274 017720 005737 003012 TST CPUFLG ;TEST FOR PDP-11/70 CPU
3275 017724 001411 BEQ 360$ ;NO: CONTINUE
3276
3277 017726 012737 000030 002466 MOV #30,R.MAX ;ADD TWO REGISTERS TO MAX INDEX
3278 017734 012737 007777 002474 MOV #7777,R.SAD ;ADD TWO REGISTERS TO ADDRESS SELECT
3279 017742 012737 006027 002500 MOV #6027,R.SRH ;ADD TWO REGISTERS TO CNTRLR SELECT
3280
3281 ; INITIALIZE REGISTER ADDRESS TABLE
3282
3283 017750 013701 002720 360$: MOV PT.CSR,R1 ;LOAD UNIBUS BASE ADDRESS
3284 017754 005002 CLR R2 ;AND CLEAR INDEX REGISTER
3285
3286 017756 010104 370$: MOV R1,R4 ;LOAD BASE ADDRESS
3287 017760 066204 002246 ADD D.TBL(R2),R4 ;ADD OFFSET FROM TABLE
3288 017764 010462 002276 MOV R4,A.TBL(R2) ;AND STORE INTO TABLE
3289 017770 062702 000002 ADD #2,R2 ;BUMP REGISTER INDEX
3290 017774 020237 002466 CMP R2,R.MAX ;COMPARE WITH MAX INDEX
3291 020000 002766 BLT 370$ ;AND CONTINUE IF LESS THAN MAX
3292
3293 ; PROCESS INTERFACE DRIVE NO. & COMPUTE ATTN BIT POSITION
3294
3295 020002 013701 002726 380$: MOV PT.DRI,R1 ;LOAD DRIVE SELECT NUMBER
3296 020006 042737 000007 002366 BIC #7,IN.CS2 ;CLEAR DRIVE SELECT IN CS2 INITIAL VAL
3297 020014 050137 002366 BIS R1,IN.CS2 ;SET DRIVE SELECT BITS ONLY
3298 020020 010137 003000 MOV R1,DRIVE ;SAVE DRIVE SELECT
3299
3300 020024 012737 000001 002776 MOV #BIT00,UNITPOS ;INITIALIZE ATTN BIT POSITION
3301 020032 013701 003000 MOV DRIVE,R1 ;RELOAD DRIVE NO.
3302 020036 001423 BEQ 420$ ;STOP N^V IF DRIVE ZERO
3303
3304 020040 006337 002776 390$: ASL UNITPOS ;SHIFT TO NEXT POSITION
3305 020044 005301 DEC R1 ;DECREMENT UNIT NUMBER
3306 020046 001374 BNE 390$ ;CONTINUE UNTIL ZERO
3307 020050 000416 BR 420$ ;PROCESS RESTART

```

3309 020052

STARS  
:\*\*\*\*\*

3310

3311

3312 020052

COMMON INITIALIZATION SECTIONS  
STARS

3313

3314

3315

3316 020052 012700 000037  
020052 104447  
020056 104447

:\*\*\*\*\*

: INITIALIZE REPORT TABLES

400\$: READEF #EF.RESTART ;TEST FOR OPERATOR RESTART  
MOV #EF.RESTART,R0  
TRAP C\$REFG

3317

3318 020060 103022  
020060 103022

BNCOMPLETE 440\$ ;CONTINUE IF NOT  
BCC 440\$

3319

3320 020062 005000

CLR R0 ;CLEAR INDEX REGISTER

3321

3322 020064 005060 002520  
3323 020070 005060 002620  
3324 020074 062700 000002  
3325 020100 022700 000100  
3326 020104 003367

410\$: CLR RP.PASS(R0) ;CLEAR PASS COUNT  
CLR RP.ERROR(R0) ;CLEAR ERROR COUNT  
ADD #2,R0 ;BUMP INDEX  
CMP #RP.SIZ,R0 ;COMPARE WITH MAX TEST INDEX  
BGT 410\$ ;CONTINUE UNTIL TABLES CLEAR

3327

3328

3329

3330 020106 012737 000005 002400  
3331 020114 005737 002226  
3332 020120 001402  
3333 020122 005337 002400

: PROCESS BOARD REVISION LEVEL

420\$: MOV #5,IN.DT ;REV B DRIVE TYPE  
TST REVFLG ;TEST FOR REV A BOARD  
BEQ 440\$ ;NO: CONTINUE  
DEC IN.DT ;DECREMENT DRIVE TYPE FOR REV A

3334

3335

3336

3337

3338

3339 020126 005001  
3340 020130 053701 002226  
3341 020134 006301  
3342 020136 006301  
3343 020140 006301

: BUILD TEST SELECT WORD: BITS 0-7

: : REVA : NU : NU : UPAR : BYTE : ABOR : AT03 : AT00 :

3344 020142 053701 002240  
3345 020146 006301  
3346 020150 053701 002236  
3347 020154 006301

440\$: CLR R1 ;CLEAR SELECT  
BIS REVFLG,R1 ;SET/RESET REV "A" BIT  
ASL R1 ;SHIFT PAST  
ASL R1 ;UNUSED BIT POSITIONS  
ASL R1 ;AND SHIFT SELECT  
BIS PARFLG,R1 ;SET/RESET PARITY ERROR BIT  
ASL R1 ;AND SHIFT SELECT  
BIS BYTFLG,R1 ;SET/RESET BYTE MODE XFER BIT  
ASL R1 ;AND SHIFT SELECT  
BIS ABOFLG,R1 ;SET/RESET XFER ABORT BIT  
ASL R1 ;AND SHIFT SELECT  
BIS AT3FLG,R1 ;SET/RESET AT3 ATTN BIT  
ASL R1 ;AND SHIFT SELECT  
BIS AT0FLG,R1 ;SET/RESET AT0 ATTN BIT  
MOV R1,SELECT ;AND SAVE SELECT

3348 020156 053701 002234  
3349 020162 006301  
3350 020164 053701 002232  
3351 020170 006301

3352 020172 053701 002230  
3353 020176 010137 003010  
3354  
3355

: ENABLE INTERRUPTS AND BEGIN TESTING

3356

3357 020202  
020202 013700 000000  
020206 104441

500\$: SETPRI PRI00 ;ENABLE INTERRUPTS  
MOV PRI00,R0  
TRAP C\$SPRI

3358



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 96-1  
PROGRAM INITIALIZATION SECTION

3359 020210  
020210  
020210 104411

L10013: ENDINIT  
TRAP CSINIT

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 97  
AUTODROP SECTION

3361  
3362  
3363  
3364  
3365  
3366  
3367  
3368  
3369 020212  
020212  
3370  
3371 020212  
020212  
020212 104461

```
.SBTTL AUTODROP SECTION
:++
: THIS CODE IS EXECUTED IMMEDIATELY AFTER THE INITIALIZE CODE IF
: THE "ADR" FLAG WAS SET. THE UNIT(S) UNDER TEST ARE CHECKED TO
: SEE IF THEY WILL RESPOND. THOSE THAT DON'T ARE IMMEDIATELY
: DROPPED FROM TESTING.
:--

          BGNAUTO
L$AUTO::

          ENDAUTO
L10014:   TRAP   C$AUTO
```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 98  
CLEANUP CODING SECTION100

3373  
3374 020214

.SBTTL CLEANUP CODING SECTION100  
STARS

\*\*\*\*\*

3375  
3376  
3377

CLEANUP CODING SECTION:

- (1) DISABLE INTERRUPTS
- (2) RESTORE DEVICE INTERRUPT SERVICE VECTOR

3378  
3379  
3380 020214

STARS

\*\*\*\*\*

3381  
3382 020214  
020214

BGNCLN

L\$CLEAN::

3383  
3384 020214 013700 000340  
020214 104441  
020220

SETPRI PRI07 ;DISABLE INTERRUPTS  
MOV PRI07,R0  
TRAP C\$SPRI

3385  
3386 020222 104432  
020222 000002  
020224

EXIT CLN  
TRAP C\$EXIT  
.WORD L10015-

3387  
3388  
3389

.EVEN

3390 020226  
020226 104412  
020226

ENDCLN

L10015:  
TRAP C\$CLEAN



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 99  
DROP UNIT SECTION

3392  
3393  
3394  
3395  
3396  
3397

.SBTTL DROP UNIT SECTION  
:++  
: THE DROP-UNIT SECTION CONTAINS THE CODING THAT CAUSES A DEVICE  
: TO NO LONGER BE TESTED.  
:--

3398 020230  
020230  
3399  
3400 020230 000240  
3401  
3402 020232  
020232  
020232 104453

LSDU:: BGNDU  
NCP ;DROP UNIT NOT IMPLEMENTED  
L10016: ENDDU  
TRAP C\$DU

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 100  
 ADD UNIT SECTION

3404  
 3405  
 3406  
 3407  
 3408  
 3409  
 3410  
 3411 020234  
 020234  
 3412  
 3413 020234 000240  
 3414  
 3415 020236  
 020236  
 020236 104452  
 3416  
 3417 020240  
 3418  
 3419

.SBTTL ADD UNIT SECTION

:++  
 : THE ADD-UNIT SECTION CONTAINS ANY CODE THE PROGRAMMER WISHES  
 : TO BE EXECUTED IN CONJUNCTION WITH THE ADDING OF A UNIT BACK  
 : TO THE TEST CYCLE.  
 :--

LSAU:: BGNAU

NOB

;ADD UNIT NOT IMPLEMENTED

L10017: ENDAU

TRAP CSAU

ENDMOD

.SBTTL

3460 020240

BGNMOD



ZDRMAO DR70 REPAIR DIAGNOSTIC  
TEST 1: REGISTER ADDRESSING

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3462  
3463 020240

3464  
3465  
3466  
3467  
3468  
3469  
3470  
3471  
3472  
3473  
3474  
3475  
3476 020240

3477  
3478 020240  
020240

.SBTTL TEST 1: REGISTER ADDRESSING

STARS

\*\*\*\*\*

TEST DESCRIPTION:

CHECK DEVICE REGISTER ADDRESSING

TEST STEPS:

EXECUTE SUBTEST 1-2

ERROR CONDITIONS:

MEMORY ADDRESS TRAP ON REGISTER ACCESS

STARS

\*\*\*\*\*

BGNTST

;REGISTER ADDRESSING

T1::

ZDRMAO DR70 REPAIR DIAGNOSTIC  
TEST 1: REGISTER ADDRESSING

MACRO M1200 23-MAY-83 15:51 PAGE 103

3480 020240

3481  
3482  
3483  
3484  
3485  
3486  
3487  
3488 020240

```

STARS
:*****
:
:   SUBTEST 1:
:
:   SET UP BUS ADDRESS TRAP SERVICE
:   READ REGISTER AND TEST FOR UNIBUS TRAP
:   CLEAR BUS ADDRESS TRAP VECTOR
:   PROCESS ANY ADDRESS ERROR
:
STARS
:*****
    
```

3489

3490 020240  
020240  
020240 104402

3491

3492 020242 004737 015234

3493

3494 020246 005037 003024

3495 020252 005002

3496 020254 005037 002470

3497 020260 012704 000001

3498

3499 020264 030437 002474

3500 020270 001411

3501

3502 020272 005772 002276

3503 020276 005737 003024

3504 020302 001404

3505

3506 020304 005037 003024

3507 020310 050437 002470

3508

3509 020314 006304

3510 020316 062702 000002

3511 020322 020237 002466

3512 020326 002756

3513

3514 020330 004737 015264

3515 020334 005737 002470

3516 020340 001422

3517

3518 020342

020342 104455

020344 000001

020346 006234

020350 014452

3519

3520 020352 005737 003042

3521 020356 001012

3522

3523 020360

020360 012746 013660

020364 012746 000001

020370 010600

020372 104417

020374 062706 000004

```

T1.1:  BGNSUB                ;UNIBUS ADDRESS TRAP
        TRAP  CSBSUB
        JSR   PC,SETRAP      ;SETUP ADDRESS TRAP SERVICE
100$:  CLR   TRPFLG          ;CLEAR TRAP FLAG
        CLR   R2             ;CLEAR TABLE INDEX
        CLR   R.ERR         ;CLEAR ERROR FLAG
        MOV   #1,R4         ;LOAD REGISTER ADDR SELECT BIT
200$:  BIT   R4,R.SAD       ;TEST THIS REGISTER?
        BEQ   300$         ;NO: MOVE TO NEXT
        TST   @A.TBL(R2)    ;ADDRESS REGISTER
        TST   TRPFLG        ;TEST FOR TIME-OUT
        BEQ   300$         ;NO: CONTINUE
300$:  CLR   TRPFLG         ;YES: CLEAR FLAG
        BIS   R4,R.ERR      ;SET REGISTER ADDR ERROR BIT
        ASL   R4            ;ADJUST SELECT BIT
        ADD   #2,R2         ;BUMP INDEX REGISTER
        CMP   R2,R.MAX      ;COMPARE INDEX TO TABLE SIZE
        BLT   200$         ;AND CONTINUE IF NOT DONE
400$:  JSR   PC,CLRTRAP     ;CLEAR TRAP VECTOR
        TST   R.ERR         ;TEST FOR ERRORS
        BEQ   500$         ;FLAG ZERO: CONTINUE
        ERRDF 1,M.ADR1,ER.ADR ;'DEVICE ADDRESS ERROR'
        TRAP  C$ERDF
        .WORD 1
        .WORD M.ADR1
        .WORD ER.ADR
        TST   CSRFLG        ;TEST PRINT FLAG
        BNE   450$         ;CONTINUE IF SET
        PRINTF #F.CSR      ;PRINT CSR ADDRESS MSG
        MOV   #F.CSR,-(SP)
        MOV   #1,-(SP)
        MOV   SP,R0
        TRAP  C$PNTF
        ADD   #4,SP
    
```

ZDRMAO DR70 REPAIR DIAGNOSTIC  
TEST 1: REGISTER ADDRESSING

MACRO M1200 23-MAY-83 15:51 PAGE 103-1

3524 020400 005237 003042

INC CSRFLG

;SET FLAG

3525

3526 020404  
020404 104444

450\$: DOCLN  
TRAP CSDCLN

;CLEAN UP AND EXIT

3527

3528 020406  
020406  
020406 104403

500\$: ENDSUB  
L10021: TRAP C\$ESUB

;UNIBUS ADDRESS TRAP



ZDRMAO DR70 REPAIR DIAGNOSTIC  
TEST 1: REGISTER ADDRESSING

MACRO M1200 23-MAY-83 15:51 PAGE 104

3530 020410

STARS

:\*\*\*\*\*

3531

3532

3533

3534

3535

3536

3537

3538

3539 020410

STARS

:\*\*\*\*\*

SUBTEST 2:

READ INTERFACE REGISTER  
TEST FOR NON-EXISTENT DRIVE STATUS  
PROCESS ANY ADDRESS ERROR(S)

ISSUE MASSBUS CONTROLLER CLEAR AND TEST FOR ERROR

3540

3541 020410

020410

020410

104402

T1.2: BGNSUB

TRAP C\$BSUB

3542

3543 020412

005002

100\$:

CLR R2

:CLEAR TABLE INDEX

3544 020414

005037

002470

CLR R.ERR

:CLEAR ERROR FLAG

3545 020420

005037

003026

CLR ERRFLG

:CLEAR FLAG

3546 020424

012704

000001

MOV #1,R4

:LOAD REGISTER ADDR SELECT BIT

3547

3548 020430

030437

002502

200\$:

BIT R4,R.SDR

:TEST THIS REGISTER?

3549 020434

001412

BEQ 300\$

:NO: MOVE TO NEXT

3550

3551 020436

004737

015342

JSR PC,CLRMBC

:CLEAR THE MASSBUS CONTROLLER

3552

3553 020442

005772

002276

161632

TST @A.TBL(R2)

:ADDRESS REGISTER

3554 020446

032777

010000

BIT #CS2.NED,@A.CS2

:TEST FOR NON-EXISTENT DEVICE

3555 020454

001402

BEQ 300\$

:NO: CONTINUE

3556

3557 020456

050437

002470

BIS R4,R.ERR

:SET REGISTER ADDR ERROR BIT

3558

3559 020462

006304

300\$:

ASL R4

:ADJUST SELECT BIT

3560 020464

062702

000002

ADD #2,R2

:BUMP INDEX REGISTER

3561 020470

020237

002466

CMP R2,R.MAX

:COMPARE INDEX TO TABLE SIZE

3562 020474

002755

BLT 200\$

:AND CONTINUE IF NOT DONE

3563

3564 020476

005737

002470

400\$:

TST R.ERR

:TEST FOR ERRORS

3565 020502

001421

BEQ 600\$

:FLAG ZERO: CONTINUE

3566

3567 020504

005237

003026

INC ERRFLG

:SET FLAG FOR LATER

3568 020510

104455

ERRDF 2,M.ADR2,ER.ADR

:NON-EXISTENT DEVICE STATUS''

3569 020510

000002

TRAP C\$ERDF

3570 020512

000002

.WORD 2

020514

006263

.WORD M.ADR2

020516

014452

.WORD ER.ADR

PRINTX #F.NED

:CHECK DRIVE SELECT SWITCHES 1-3

020520

012746

013732

MOV #F.NED,-(SP)

020524

012746

000001

MOV #1,-(SP)

020530

010600

MOV SP,R0

020532

104415

TRAP C\$PNTX

020534

062706

000004

ADD #4,SP

:SET FLAG

3571 020540

005237

003044

INC NEDFLG

3572

3573 020544

500\$: DOCLN

:CLEAN UP AND EXIT

ZDRMAO DR70 REPAIR DIAGNOSTIC  
TEST 1: REGISTER ADDRESSING

MACRO M1200 23-MAY-83 15:51 PAGE 104-1

3574 020544 104444

TRAP CSDCLN

3575 020546  
020546

600\$: ENDSUB  
L10022:

;NON-EXISTENT DEVICE

020546 104403

TRAP CSESUB

3576  
3577 020550 004737 015550

JSR PC,CLRTST

;AND CLEAR TEST DATA

3578  
3579 020554

ENDTST

020554 104401  
020554

L10020:  
TRAP CSETST

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 105  
 TEST 2: REGISTER INITIALIZATION

3581  
 3582 020556  
 3583  
 3584  
 3585  
 3586  
 3587  
 3588  
 3589  
 3590  
 3591  
 3592  
 3593  
 3594  
 3595  
 3596  
 3597 020556

```
.SBTTL TEST 2: REGISTER INITIALIZATION
STARS
:*****
:
: TEST DESCRIPTION:
:
: TEST REGISTER INITIALIZATION
:
: TEST STEPS:
:
: INITIALIZE THE MASSBUS CONTROLLER
: READ REGISTER AND TEST FOR EXPECTED VALUE
: PROCESS ANY INITIAL VALUE ERRORS
:
: ERROR CONDITIONS:
:
: UNEXPECTED/IMPROPER REGISTER VALUE
STARS
:*****
```

3598  
 3599 020556  
 020556  
 3600  
 3601 020556 004737 015342  
 3602 020562 005737 003030  
 3603 020566 001405  
 3604  
 3605 020570  
 020570 104455  
 020572 000001  
 020574 011650  
 020576 015074  
 3606 020600  
 020600 104444  
 3607  
 3608 020602 004737 015606  
 3609 020606 005002  
 3610 020610 005037 002470  
 3611 020614 012704 000001  
 3612  
 3613 020620 030437 002476  
 3614 020624 001406  
 3615  
 3616 020626 026262 002326 002356  
 3617 020634 001402  
 3618  
 3619 020636 050437 002470  
 3620  
 3621 020642 006304  
 3622 020644 062702 000002  
 3623 020650 020237 002466  
 3624 020654 002761

```
T2:: BGNTST ;REGISTER INITIALIZATION

JSR PC,CLRMBC ;CLEAR THE MASSBUS CONTROLLER
TST MBCFLG ;TEST CLEAR FLAG
BEQ 100$ ;CONTINUE IF ZERO

ERRDF 1,M.MBC1,ER.DMP ;'MASSBUS CONTROLLER CLEAR ERROR'
TRAP C$ERDF
.WORD 1
.WORD M.MBC1
.WORD ER.DMP

DOCLN ;CLEAN UP AND EXIT
TRAP C$DCLN

100$: JSR PC,RDREG ;READ REGISTERS INTO R.TBL
CLR R2 ;CLEAR TABLE INDEX
CLR R.ERR ;CLEAR ERROR FLAG
MOV #1,R4 ;LOAD REGISTER INIT SELECT BIT

200$: BIT R4,R.SIN ;TEST SELECTION BIT
BEQ 300$ ;NO: MOVE TO NEXT REGISTER

CMP R.TBL(R2),IN.TBL(R2) ;COMPARE WITH EXPECTED INIT VALUE
BEQ 300$ ;SAME: CONTINUE

BIS R4,R.ERR ;SET CORRESPONDING REGISTER ERROR BIT

300$: ASL R4 ;SHIFT REGISTER SELECT BIT
ADD #2,R2 ;BUMP TABLE INDEX
CMP R2,R.MAX ;COMPARE WITH MAXIMUM REGISTER INDEX
BLT 200$ ;NO: CONTINUE
```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 106  
 TEST 2: REGISTER INITIALIZATION

3626	020656	005737	002470	400\$:	TST	R.ERR		:TEST ERROR FLAG
3627	020662	001404			BEQ	500\$		:BRANCH IF NO ERRORS
3628								
3629	020664				ERRHRD	2,M.REG1,ER.INI		: 'REGISTER INITIALIZATION ERROR'
	020664	104456			TRAP	C\$ERHRD		
	020666	000002			.WORD	2		
	020670	012076			.WORD	M.REG1		
	020672	014640			.WORD	ER.INI		
3630								
3631	020674	004737	015550	500\$:	JSR	PC,CLRTST		:AND CLEAR TEST DATA
3632								
3633	020700				ENDTST			:REGISTER INITIALIZATION
	020700			L10023:				
	020700	104401			TRAP	C\$ETST		



ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 107  
TEST 3: CHECK CONTROL/STATUS 1 FUNCTION BITS

3635  
3636 020702

3637  
3638  
3639  
3640  
3641  
3642  
3643  
3644  
3645  
3646  
3647  
3648  
3649  
3650  
3651

3652 020702

3653 020702  
020702

3654

3655 020702 004737 015342  
3656 020706 005737 003030  
3657 020712 001405

3658

3659 020714  
020714 104455  
020716 000001  
020720 011650  
020722 015074

3660 020724  
020724 104444

3661

3662 020726 013737 002406 002730 100\$:  
3663 020734 013737 002436 002746

3664

.SBTTL TEST 3: CHECK CONTROL/STATUS 1 FUNCTION BITS

STARS

\*\*\*\*\*

TEST DESCRIPTION:

TEST CS1 REGISTER FOR FUNCTION BITS F4->F1  
STUCK AT ONE, ZERO OR STUCK TOGETHER

TEST STEPS:

CLEAR THE MASSBUS CONTROLLER AND CHECK FOR ERROR STATUS  
EXECUTE SUB TESTS 1-4

ERROR CONDITIONS:

MASSBUS CONTROLLER CLEAR ERROR  
CS1 REGISTER BITS STUCK

STARS

\*\*\*\*\*

BGNTST

T3::

JSR PC,CLRMBC ;CLEAR THE MASSBUS CONTROLLER  
TST MBCFLG ;TEST CLEAR FLAG  
BEQ 100\$ ;CONTINUE IF ZERO  
  
ERRDF 1,M.MBC1,ER.DMP ;'MASSBUS CONTROLLER CLEAR ERROR'  
TRAP C\$ERDF  
.WORD 1  
.WORD M.MBC1  
.WORD ER.DMP  
DOCLN ;CLEAN UP AND EXIT  
TRAP C\$DCLN  
  
MOV NA.CS1,FP.NAM ;LOAD REGISTER NAME ADDRESS  
MOV BA.CS1,FP.TBL ;LOAD REGISTER EXPAND TABLE ADDRESS  
;EXECUTE SUB TESTS

ZDRMAD DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 108  
TEST 3: CHECK CONTROL/STATUS 1 FUNCTION BITS

3666 020742

STARS  
:\*\*\*\*\*

3667  
3668  
3669  
3670  
3671

SUBTEST 1:  
LOAD CS1 REGISTER FUNCTION BITS F4->F1 WITH ONE'S  
READ REGISTER AND TEST FOR BITS STUCK AT ZERO

3672 020742

STARS  
:\*\*\*\*\*

3673 020742  
020742  
020742 104402

BGNSUB ;LOAD ALL ONE'S  
T3.1: TRAP CSBSUB

3674

3675 020744 112777 000076 161324  
3676 020752 012737 004276 002734  
3677 020760 017737 161312 002736  
3678 020756 023737 002736 002734  
3679 020774 001404

100\$: MOV #76,@A.CS1 ;SET ALL FUNCTION BITS  
MOV #4276,FP.EXP ;LOAD INIT EXPECTED CONTENTS  
MOV @A.CS1,FP.ACT ;READ CS1 REGISTER  
CMP FP.ACT,FP.EXP ;AND COMPARE WITH EXPECTED VALUE  
BEQ 400\$ ;IDENTICAL: CONTINUE

3680

3681 020776  
020776 104456  
021000 000002  
021002 007210  
021004 015016

ERRHRD 2,M.CSR1,ER.REG ;'CS1 FUNCTION BIT ERROR'  
TRAP C\$ERHRD  
.WORD 2  
.WORD M.CSR1  
.WORD ER.REG

3682

3683 021006  
021006  
021006 104403

400\$: ENDSUB ;ALL ONE'S  
L10025: TRAP C\$ESUB

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 109  
TEST 3: CHECK CONTROL/STATUS 1 FUNCTION BITS

3685 021010

STARS

\*\*\*\*\*

3686

3687

3688

3689

3690

3691 021010

STARS

\*\*\*\*\*

SUBTEST 2:

LOAD CS1 REGISTER FUNCTION BITS F4->F1 WITH ZERO'S  
READ REGISTER AND TEST FOR BITS STUCK AT ONE

3692 021010

T3.2:

BGNSUB

;LOAD ALL ZERO'S

021010

021010 104402

TRAP C\$BSUB

3693

3694 021012

112777

000000

161256

100\$:

MOVB #0,@A.CS1

;WRITE TO CS1 REGISTER LSB

3695 021020

012737

004200

002734

MOV #4200,FP.EXP

;LOAD INIT EXPECTED VAL

3696 021026

017737

161244

002736

MOV @A.CS1,FP.ACT

;READ CS1 REGISTER

3697 021034

023737

002736

002734

CMP FP.ACT,FP.EXP

;AND COMPARE WITH EXPECTED VALUE

3698 021042

001404

BEQ 400\$

;IDENTICAL: CONTINUE

3699

3700 021044

021044

104456

ERRHRD 3,M.CSR1,ER.REG

; 'CS1 FUNCTION BIT ERROR'

021046

000003

TRAP C\$ERHRD

021050

007210

.WORD 3

021052

015016

.WORD M.CSR1

.WORD ER.REG

3701

3702 021054

021054

104403

400\$:

ENDSUB

;LOAD ZERO'S

L10026:

TRAP C\$ESUB

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 110  
TEST 3: CHECK CONTROL/STATUS 1 FUNCTION BITS

3704 021056

STARS

\*\*\*\*\*

3705

3706

3707

3708

3709

3710 021056

STARS

\*\*\*\*\*

SUBTEST 3:

LOAD CS1 REGISTER FUNCTION BITS WITH MOVING ONE BIT  
READ REGISTER AND TEST FOR BITS STUCK AT ZERO

3711 021056

021056

021056 104402

T3.3:

BGNSUB

;LOAD MOVING ONE

3712

3713 021060

005037 002470

100\$:

CLR

R.ERR

;CLEAR ERROR FLAG

3714 021064

012702 000002

MOV

#CS1.F0,R2

;INITIALIZE CS1 BIT F0

3715 021070

012705 000005

MOV

#5,R5

;INITIALIZE BIT COUNTER

3716

3717 021074

110277 161176

200\$:

MOVB

R2,@A.CS1

;WRITE TO CS1 REGISTER LSB

3718 021100

012737 004200

002734

MOV

#4200,FP.EXP

;LOAD CS1 INIT EXPECTED CONTENTS

3719 021106

060237 002734

ADD

R2,FP.EXP

;SET FUNCTION BIT

3720 021112

017737 161160

002736

250\$:

MOV

@A.CS1,FP.ACT

;READ REGISTER

3721 021120

023737 002736

002734

CMP

FP.ACT,FP.EXP

;AND COMPARE BIT PATTERNS

3722 021126

001423

BEQ

400\$

;IDENTICAL: CONTINUE

3723

3724 021130

005737 002470

TST

R.ERR

;TEST ERROR FLAG

3725 021134

001016

BNE

300\$

;BRANCH IF NOT ZERO

3726

3727 021136

005237 002470

INC

R.ERR

;INCREMENT ERROR FLAG

3728 021142

021142 104456

ERRHRD

4,M.CSR1

; "CS1 FUNCTION BIT ERROR"

3729 021152

021152 012746

013056

TRAP

C\$ERHRD

;PRINT REGISTER HEADER

021156

012746 000001

.WORD

4

021162

010600

.WORD

M.CSR1

021164

104415

.WORD

0

021166

062706 000004

PRINTX

#F.REG1

;PRINT REGISTER HEADER

3730

3731 021172

004737 016054

300\$:

JSR

PC,DSPREG

;DISPLAY REGISTER CONTENTS

3732

3733 021176

006302

400\$:

ASL

R2

;AND SHIFT TO NEXT POSITION

3734 021200

005305

DEC

R5

;DECREMENT COUNTER

3735 021202

001334

BNE

200\$

;CONTINUE WITH NEXT BIT POSITION

3736

3737 021204

005737 002470

500\$:

TST

R.ERR

;TEST FOR ANY ERRORS

3738 021210

001410

BEQ

600\$

;NO: EXIT TEST

3739 021212

012746 014214

PRINTX

#F.CRLF

;NEW LINE

021216

012746 000001

MOV

#F.CRLF, -(SP)

021222

010600

MOV

#1, -(SP)

021224

104415

MOV

SP,R0

021226

062706 000004

TRAP

C\$PNTX

3740

3741 021232

021232

600\$:

ENDSUB

L10027:



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 110-1  
TEST 3: CHECK CONTROL/STATUS 1 FUNCTION BITS

021232 104403

TRAP C\$ESUB

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 111  
 TEST 3: CHECK CONTROL/STATUS 1 FUNCTION BITS

```

3743 021234 STARS
:*****
3744
3745 SUBTEST 4:
3746
3747 LOAD CS1 REGISTER FUNCTION BITS WITH MOVING ZERO BIT
3748 READ REGISTER AND TEST FOR BITS STUCK AT ONE
3749 021234 STARS
:*****
3750 021234 BGNSUB ;MOVING ZERO
021234
021234 104402 T3.4:
3751 TRAP CSBSUB
3752 021236 005037 002470 100$: CLR R.ERR ;CLEAR ERROR FLAG
3753 021242 012702 000074 MOV #74,R2 ;INITIALIZE CS1 BITS F4->F1
3754 021246 012705 000005 MOV #5,R5 ;INITIALIZE BIT COUNTER
3755
3756 021252 110277 161020 200$: MOVB R2,@A.CS1 ;WRITE TO CS1 REGISTER LSB
3757 021256 012737 004200 002734 MOV #4200,FP.EXP ;LOAD CS1 INIT EXPECTED CONTENTS
3758 021264 060237 002734 ADD R2,FP.EXP ;SET/RESET FUNCTION BITS
3759 021270 017737 161002 002736 250$: MOV @A.CS1,FP.ACT ;READ REGISTER
3760 021276 023737 002736 002734 CMP FP.ACT,FP.EXP ;AND COMPARE BIT PATTERNS
3761 021304 001423 BEQ 400$ ;IDENTICAL: CONTINUE
3762
3763 021306 005737 002470 TST R.ERR ;TEST ERROR FLAG
3764 021312 001016 BNE 300$ ;BRANCH IF NOT ZERO
3765
3766 021314 005237 002470 INC R.ERR ;INCREMENT ERROR FLAG
3767 021320 ERRHRD 5,M.CSR1 ;"CS1 FUNCTION BIT ERROR"
021320 104456 TRAP C$ERHRD
021322 000005 .WORD 5
021324 007210 .WORD M.CSR1
021326 000000 .WORD 0
3768 021330 PRINTX #F.REG1 ;PRINT REGISTER HEADER
021330 012746 013056 MOV #F.REG1,-(SP)
021334 012746 000001 MOV #1,-(SP)
021340 010600 MOV SP,R0
021342 104415 TRAP C$PNTX
021344 062706 000004 ADD #4,SP
3769
3770 021350 004737 016054 300$: JSR PC,DSPREG ;DISPLAY REGISTER CONTENTS
3771
3772 021354 006302 400$: ASL R2 ;MOVE ZERO BIT TO NEXT POSITION
3773 021356 042702 000100 BIC #CS1.IE,R2 ;CLEAR HIGH ORDER BIT
3774 021362 052702 000002 BIS #CS1.F0,R2 ;AND SET INCOMING FUNCTION BIT
3775
3776 021366 005305 DEC R5 ;DECREMENT COUNTER
3777 021370 001330 BNE 200$ ;CONTINUE WITH NEXT BIT POSITION
3778
3779 021372 005737 002470 500$: TST R.ERR ;TEST FOR ANY ERRORS
3780 021376 001410 BEQ 600$ ;NO: EXIT TEST
3781 021400 PRINTX #F.CRLF ;NEW LINE
021400 012746 014214 MOV #F.CRLF,-(SP)
021404 012746 000001 MOV #1,-(SP)
021410 010600 MOV SP,R0
021412 104415 TRAP C$PNTX
021414 062706 000004 ADD #4,SP

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 111-1  
TEST 3: CHECK CONTROL/STATUS 1 FUNCTION BITS

3782

3783 021420

021420

021420 104403

3784

3785 021422 004737 015550

3786

3787 021426

021426

021426 104401

600\$: ENDSUB

L10030:

TRAP C\$ESUB

JSR PC,CLRTST

;AND CLEAR TEST DATA

ENDTST

L10024:

TRAP C\$ETST

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 112  
TEST 4: CHECK INTERFACE FUNCTION/STATUS BITS

3789  
3790 021430

.SBTTL TEST 4: CHECK INTERFACE FUNCTION/STATUS BITS  
STARS

3791  
3792  
3793  
3794  
3795  
3796  
3797  
3798  
3799  
3800  
3801  
3802  
3803  
3804

\*\*\*\*\*  
TEST DESCRIPTION:  
CHECK FS REGISTER FOR FUNCTION BITS F7->F0  
STUCK AT ONE, ZERO OR STUCK TOGETHER  
TEST STEPS:  
EXECUTE SUB TESTS 1-4  
ERROR CONDITIONS:  
FUNCTION/STATUS BITS STUCK  
LOOP-BACK CABLE NOT INSTALLED

3805 021430

STARS  
\*\*\*\*\*

3806 021430  
021430

BGNTST  
T4::

3807  
3808 021430 004737 015342  
3809 021434 005737 003030  
3810 021440 001405

JSR PC,CLRMBC ;CLEAR THE MASSBUS CONTROLLER  
TST MBCFLG ;TEST CLEAR FLAG  
BEQ 100\$ ;CONTINUE IF ZERO

3811  
3812 021442  
021442 104455  
021444 000001  
021446 011650  
021450 015074

ERRDF 1,M.MBC1,ER.DMP ;'MASSBUS CONTROLLER CLEAR ERROR'  
TRAP C\$ERDF  
.WORD 1  
.WORD M.MBC1  
.WORD ER.DMP

3813 021452  
021452 104444

DOCLN ;CLEAN UP AND EXIT  
TRAP C\$DCLN

3814  
3815 021454 013737 002414 002730 100\$:  
3816 021462 013737 002444 002746  
3817

MOV NA.FS,FP.NAM ;LOAD FS REGISTER NAME ADDRESS  
MOV BA.FS,FP.TBL ;LOAD REGISTER EXPAND TABLE ADDRESS  
;EXECUTE SUBTEST



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 113  
TEST 4: CHECK INTERFACE FUNCTION/STATUS BITS

```

3819 021470 STARS
:*****
3820
3821
3822 SUBTEST 1:
3823 LOAD FS REGISTER BITS F7-F0 WITH ONE'S.
3824 READ REGISTER CONTENTS AND CHECK FOR
3825 FUNCTION/STATUS BITS STUCK AT ZERO.
3826 021470 STARS
:*****
3827 021470 BGNSUB ;LOAD ONE'S
021470
021470 104402 T4.1: TRAP C$BSUB
3828
3829 021472 012777 177400 160604 100$: MOV #177400,@A.FS ;SET FUNCTION STATUS BITS F7->F0
3830 021500 012737 177777 002734 MOV #-1,FP.EXP ;INITIALIZE EXPECTED CONTENTS
3831 021506 017737 160572 002736 MOV @A.FS,FP.ACT ;READ REGISTER
3832 021514 023737 002736 002734 CMP FP.ACT,FP.EXP ;COMPARE WITH EXPECTED VALUE
3833 021522 001424 BEQ 500$ ;IDENTICAL: CONTINUE
3834
3835 021524 300$: ERRHRD 2,M.FSR1,ER.REG ;'FUNCTION/STATUS BIT ERROR'
021524 104456 TRAP C$ERHRD
021526 000002 .WORD 2
021530 010163 .WORD M.FSR1
021532 015016 .WORD ER.REG
3836
3837 021534 105737 002736 TSTB FP.ACT ;TEST STATUS BITS ONLY
3838 021540 001015 BNE 500$ ;AT LEAST ONE SET: CONTINUE
3839 021542 STARS
:*****
3840
3841 ALL STATUS BITS LOW. PROMPT OPERATOR TO CHECK
3842 THAT THE LOOP-BACK CABLE IS IN PLACE ON THE 8432 MODULE,
3843 021542 STARS
:*****
3844
3845 021542 005737 003050 TST CBLFLG ;TEST MESSAGE FLAG
3846 021546 001012 BNE 500$ ;SKIP PRINT IF NOT FIRST TIME
3847
3848 021550 005237 003050 INC CBLFLG ;BUMP FLAG
3849 021554 PRINTF #F.CBL ;'CHECK 8432 MODULE LOOP-BACK CABLE'
021554 012746 013464 MOV #F.CBL,-(SP)
021560 012746 000001 MOV #1,-(SP)
021564 010600 MOV SP,R0
021566 104417 TRAP C$PNTF
021570 062706 000004 ADD #4,SP
3850
3851 021574 500$: ENDSUB ;ALL ONE'S
021574
021574 104403 L10032: TRAP C$ESUB

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 114  
TEST 4: CHECK INTERFACE FUNCTION/STATUS BITS

3853 021576

STARS

\*\*\*\*\*

3854  
3855  
3856  
3857  
3858  
3859

SUBTEST 2:

LOAD FS REGISTER BITS F7-F0 WITH ZERO'S.  
READ REGISTER CONTENTS AND CHECK FOR  
FUNCTION/STATUS BITS STUCK AT ONE.

3860 021576

STARS

\*\*\*\*\*

3861 021576  
021576  
021576 104402

T4.2: BGNSUB ;LOAD ALL ZERO'S

TRAP C\$BSUB

3862

3863 021600 012777 000000 160476 100\$:  
3864 021606 012737 000000 002734  
3865 021614 017737 160464 002736  
3866 021622 023737 002736 002734  
3867 021630 001404

MOV #0,@A.FS ;CLEAR FUNCTION BITS F7->F0  
MOV #0,FP.EXP ;INITIALIZE EXPECTED VALUE  
MOV @A.FS,FP.ACT ;READ FS REGISTER  
CMP FP.ACT,FP.EXP ;AND COMPARE VALUES  
BEQ 400\$ ;IDENTICAL: CONTINUE

3868

3869 021632  
021632 104456  
021634 000003  
021636 010163  
021640 015016

ERRHRD 3,M.FSR1,ER.REG ;'FUNCTION/STATUS BIT ERROR'  
TRAP C\$ERHRD  
.WORD 3  
.WORD M.FSR1  
.WORD ER.REG

3870

3871 021642  
021642  
021642 104403

400\$: ENDSUB ;ALL ZERO'S

L10033: TRAP C\$ESUB

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 115  
TEST 4: CHECK INTERFACE FUNCTION/STATUS BITS

3873 021644

STARS  
:\*\*\*\*\*

3874  
3875  
3876  
3877  
3878  
3879

SUBTEST 3:

LOAD FS REGISTER BITS F7-F0 WITH MOVING ONE.  
READ REGISTER CONTENTS AND CHECK FOR  
FUNCTION/STATUS BITS STUCK AT ZERO.

3880 021644

STARS  
:\*\*\*\*\*

3881 021644  
021644  
021644 104402

BGNSUB ;MOVING ONE BIT

T4.3: TRAP CSBSUB

3882  
3883 021646 005037 002470  
3884 021652 012702 000400  
3885 021656 012704 000401  
3886 021662 012705 000010

50\$: CLR R.ERR ;CLEAR ERROR FLAG  
MOV #FS.F0,R2 ;INIT FUNCTION BIT F0  
MOV #401,R4 ;INIT EXPECTED BITS F0 & STO  
MOV #8.,R5 ;AND BIT COUNTER

3887  
3888 021666 010277 160412  
3889 021672 010437 002734  
3890 021676 017737 160402 002736  
3891 021704 023737 002736 002734  
3892 021712 001423

100\$: MOV R2,@A.FS ;LOAD FS FUNCTION BIT  
MOV R4,FP.EXP ;LOAD EXPECTED CONTENTS  
MOV @A.FS,FP.ACT ;READ REGISTER  
CMP FP.ACT,FP.EXP ;AND COMPARE VALUES  
BEQ 200\$ ;IDENTICAL: CONTINUE

3893  
3894 021714 005737 002470  
3895 021720 001016

TST R.ERR ;TEST ERROR FLAG  
BNE 150\$ ;BRANCH IF NOT ZERO

3896  
3897 021722 005237 002470  
3898 021726

INC R.ERR ;INCREMENT ERROR FLAG  
ERRHRD 4,M.FSR1 ;'FUNCTION/STATUS BIT ERROR'

021726 104456  
021730 000004  
021732 010163  
021734 000000

TRAP C\$ERHRD  
.WORD 4  
.WORD M.FSR1  
.WORD 0

3899 021736  
021736 012746 013056  
021742 012746 000001  
021746 010600  
021750 104415  
021752 062706 000004

PRINTX #F.REG1 ;PRINT REGISTER HEADER  
MOV #F.REG1,-(SP)  
MOV #1,-(SP)  
MOV SP,R0  
TRAP C\$PNTX  
ADD #4,SP

3900  
3901 021756 004737 016054

150\$: JSR PC,DSPREG ;DISPLAY REGISTER CONTENTS

3902  
3903 021762 006302  
3904 021764 006304  
3905 021766 005305  
3906 021770 001336

200\$: ASL R2 ;SHIFT TO NEXT TEST PATTERN  
ASL R4 ;SHIFT TO NEXT EXPECTED POSITION  
DEC R5 ;DECREMENT COUNTER  
BNE 100\$ ;AND CONTINUE UNTIL ZERO

3907  
3908 021772 005737 002470  
3909 021776 001410

400\$: TST R.ERR ;TEST FOR ANY ERRORS  
BEQ 600\$ ;NO: EXIT TEST

3910 022000  
022000 012746 014214  
022004 012746 000001  
022010 010600  
022012 104415  
022014 062706 000004

PRINTX #F.CRLF,-(SP) ;NEW LINE  
MOV #1,-(SP)  
MOV SP,R0  
TRAP C\$PNTX  
ADD #4,SP

3911

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 115-1  
TEST 4: CHECK INTERFACE FUNCTION/STATUS BITS

3912 022020  
022020  
022020 104403

600\$: ENDSUB  
L10034: TRAP C\$ESUB

:MOVING ONE



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 116  
 TEST 4: CHECK INTERFACE FUNCTION/STATUS BITS

```

3914 022022          STARS
                    ::*****
3915
3916
3917
3918
3919
3920
3921 022022          STARS
                    ::*****
                    SUBTEST 4:
                    LOAD FS REGISTER BITS F7-F0 WITH MOVING ZERO.
                    READ REGISTER CONTENTS AND CHECK FOR
                    FUNCTION/STATUS BITS STUCK AT ZERO.
                    STARS
                    ::*****
3922 022022          BGNSUB                                ;LOAD MOVING ZERO
                    022022
                    022022 104402          T4.4:          TRAP      C$BSUB
3923
3924 022024 005037 002470          50$:      CLR      R.ERR          ;CLEAR ERROR FLAG
3925 022030 012702 177000          MOV      #177000,R2      ;INIT TEST BITS F7->F1
3926 022034 012704 177376          MOV      #177376,R4      ;INIT EXPECTED BITS F7->F1 & ST7->ST1
3927 022040 012705 000010          MOV      #8.,R5         ;LOAD BIT COUNTER
3928
3929 022044 010277 160234          100$:     MOV      R2,@A.FS      ;WRITE TO FS REGISTER
3930 022050 010437 002734          MOV      R4,FP.EXP      ;LOAD EXPECTED CONTENTS
3931 022054 017737 160224 002736  MOV      @A.FS,FP.ACT    ;READ REGISTER
3932 022062 023737 002736 002734  CMP      FP.ACT,FP.EXP   ;AND COMPARE VALUES
3933 022070 001423          BEQ      200$           ;IDENTICAL: CONTINUE
3934
3935 022072 005737 002470          TST      R.ERR          ;TEST ERROR FLAG
3936 022076 001016          BNE      150$          ;BRANCH IF NOT ZERO
3937
3938 022100 005237 002470          INC      R.ERR          ;INCREMENT ERROR FLAG
3939 022104          ERRHRD 5,M.FSR1      ;'FUNCTION/STATUS BIT ERROR'
                    TRAP      C$ERHRD
                    .WORD    5
                    .WORD    M.FSR1
                    .WORD    0
3940 022114          PRINTX #F.REG1          ;PRINT REGISTER HEADER
                    MOV      #F.REG1,-(SP)
                    MOV      #1,-(SP)
                    MOV      SP,R0
                    TRAP      C$PNTX
                    ADD      #4,SP
3941
3942 022134 004737 016054          150$:     JSR      PC,DSPREG ;DISPLAY REGISTER CONTENTS
3943
3944 022140 006302          200$:     ASL      R2              ;SHIFT TO NEXT TEST POSITION
3945 022142 052702 000400          BIS      #FS.F0,R2      ;SET INCOMING BIT F0
3946 022146 006304          ASL      R4              ;SHIFT TO NEXT EXPECTED POSITION
3947 022150 052704 000001          BIS      #FS.ST0,R4     ;SET INCOMING BIT ST0
3948 022154 005305          DEC      R5              ;DECREMENT COUNTER
3949 022156 001332          BNE      100$          ;AND CONTINUE UNTIL ZERO
3950
3951 022160 005737 002470          400$:     TST      R.ERR          ;TEST FOR ANY ERRORS
3952 022164 001410          BEQ      600$          ;NO: EXIT TEST
3953 022166          PRINTX #F.CRLF          ;NEW LINE
                    MOV      #F.CRLF,-(SP)
                    MOV      #1,-(SP)
                    MOV      SP,R0
                    TRAP      C$PNTX
                    022166 012746 014214
                    022172 012746 000001
                    022176 010600
                    022200 104415
    
```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 116-1  
TEST 4: CHECK INTERFACE FUNCTION/STATUS BITS

3954	022202	062706	000004	ADD	#4,SP	
3955	022206			600\$: ENDSUB		:MOVING ZERO
	022206			L10035:		
	022206	104403		TRAP	C\$ESUB	
3956						
3957	022210	004737	015550	JSR	PC,CLRTST	:AND CLEAR TEST DATA
3958						
3959	022214			ENDTST		
	022214			L10031:		
	022214	104401		TRAP	C\$ETST	

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TEST 5: CHECK INTERFACE STATUS ATTN BIT

3961  
3962 022216

3963  
3964  
3965  
3966  
3967  
3968  
3969  
3970  
3971  
3972  
3973  
3974  
3975  
3976  
3977

3978 022216

3979 022216  
022216

3980  
3981

000234

3982  
3983

022216 013700 003010

3984

022222 042700 000234

3985  
3986

022226 001402

3987

022230

022230 104432

022232 000552

3988  
3989

022234 004737 015342

3990

022240 005737 003030

3991  
3992

022244 001405

3993

022246

022246 104455

022250 000001

022252 011650

022254 015074

3994

022256

022256 104444

3995  
3996

022260 013737 002420 002730

3997  
3998

022266 013737 002450 002746

.SBTTL TEST 5: CHECK INTERFACE STATUS ATTN BIT

STARS

\*\*\*\*\*

TEST DESCRIPTION:

CHECK IS REGISTER USER ATTN BITS FOR BITS  
STUCK AT ONE, ZERO OR STUCK TOGETHER

TEST STEPS:

IF ATO & AT3 ATTN NOT DISABLED THEN:  
CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR  
EXECUTE SUB TESTS 1-4

ERROR CONDITIONS:

INTERFACE STATUS REGISTER BITS STUCK

STARS

\*\*\*\*\*

BGNTST ;ATTN LOOP-BACK

T5::

SELMASK = B.REVA + B.UPAR + B.BYTE + B.ABORT

MOV SELECT,R0 ;READ SELECT WORD  
BIC #SELMASK,R0 ;CLEAR DON'T CARE SELECT BITS  
BEQ 50\$ ;BRANCH IF B.ATO AND B.AT3 NOT SET

EXIT TST ;ATO OR AT3 DISABLED: EXIT TEST  
TRAP C\$EXIT  
.WORD L10036-

50\$: JSR PC,CLRMBC ;CLEAR THE MASSBUS CONTROLLER  
TST MBCFLG ;TEST CLEAR FLAG  
BEQ 100\$ ;CONTINUE IF ZERO

ERRDF 1,M.MBC1,ER.DMP ;'MASSBUS CONTROLLER CLEAR ERROR'

TRAP C\$ERDF  
.WORD 1  
.WORD M.MBC1  
.WORD ER.DMP

DOCLN ;CLEAN UP AND EXIT  
TRAP C\$DCLN

100\$: MOV NA.IS,FP.NAM ;LOAD IS REGISTER NAME ADDRESS  
MOV BA.IS,FP.TBL ;LOAD BIT EXPAND TABLE  
;EXECUTE SUBTEST

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 118  
TEST 5: CHECK INTERFACE STATUS ATTN BIT

4000 022274

STARS

\*\*\*\*\*

4001

4002

4003

4004

4005

4006 022274

STARS

\*\*\*\*\*

4007 022274

022274

022274 104402

T5.1:

BGNSUB

;LOAD ONE'S

TRAP C\$BSUB

4008

4009 022276

012777

007400

160000

100\$:

MOV #7400,@A.FS

;INITIALIZE FUNCTION BITS F3->F0

4010 022304

017737

160000

002736

MOV @A.IS,FP.ACT

;READ IS REGISTER

4011 022312

012737

142217

002734

MOV #142217,FP.EXP

;EXPECTED: ATA,ERR,ERO,IRY & AT3->AT0

4012 022320

123737

002736

002734

CMPB FP.ACT,FP.EXP

;AND COMPARE LSB VALUES

4013 022326

001404

BEQ 200\$

;IDENTICAL: CONTINUE

4014

4015 022330

022330

104456

ERRHRD 2,M.UAT1,ER.REG

;'ISR USER ATTN BIT NOT SET/RESET'

022332

000002

TRAP C\$ERHRD

022334

012454

.WORD 2

022336

015016

.WORD M.UAT1

.WORD ER.REG

4016

4017 022340

022340

104403

200\$:

ENDSUB

;ALL ONE'S

L10037:

TRAP C\$ESUB



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 119  
TEST 5: CHECK INTERFACE STATUS ATTN BIT

4019 022342

STARS

\*\*\*\*\*

4020

4021

4022

4023

4024

4025 022342

STARS

\*\*\*\*\*

SUBTEST 2:

LOAD FS REGISTER FUNCTION BITS F3->F0 WITH ZERO'S.  
READ AND CHECK IS REGISTER USER ATTN BITS AT3->A0.

4026 022342

022342

022342 104402

T5.2:

BGNSUB ;ALL ZERO'S

TRAP C\$BSUB

4027

4028 022344 012777 000000 157732 100\$:

MOV #0,@A.FS ;INITIALIZE BITS F7->F0 TO ZERO

4029 022352 017737 157732 002736

MOV @A.IS,FP.ACT ;READ IS REGISTER

4030 022360 012737 142200 002734

MOV #142200,FP.EXP ;EXPECTED: ATA,ERR,ERO & IRY

4031 022366 123737 002736 002734

CMPB FP.ACT,FP.EXP ;AND COMPARE LSB VALUES

4032 022374 001404

BEQ 200\$ ;IDENTICAL: CONTINUE

4033

4034 022376

022376 104456

022400 000003

022402 012454

022404 015016

ERRHRD 3,M.UAT1,ER.REG ;'ISR USER ATTN BIT NOT SET/RESET'

TRAP C\$ERHRD

.WORD 3

.WORD M.UAT1

.WORD ER.REG

4035

4036 022406

022406

022406 104403

200\$:

ENDSUB ;ALL ZERO'S

L10040:

TRAP C\$ESUB

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 120  
 TEST 5: CHECK INTERFACE STATUS ATTN BIT

```

4038 022410 STARS
:*****
4039
4040 SUBTEST 3:
4041
4042 LOAD FS REGISTER BITS F3->F0 WITH MOVING ONE BIT.
4043 READ AND CHECK IS REGISTER USER ATTN BITS AT3->AT0.
4044 022410 STARS
:*****
4045 022410 BGNSUB ;MOVING ONE BIT
022410
022410 104402 T5.3: TRAP CSBSUB
4046
4047 022412 005037 002470 50$: CLR R.ERR ;CLEAR ERROR FLAG
4048 022416 012701 000400 MOV #FS.F0,R1 ;INITIALIZE BIT F0 TO ONE
4049 022422 012702 000001 MOV #IS.AT0,R2 ;AND EXPECTED ATTN BIT AT0 TO ONE
4050 022426 012705 000004 MOV #4,R5 ;INITIALIZE BIT COUNTER
4051
4052 022432 010177 157646 100$: MOV R1,@A.FS ;WRITE TO FS REGISTER
4053 022436 017737 157646 002736 MOV @A.IS,FP.ACT ;READ IS REGISTER
4054 022444 012737 142200 002734 MOV #142200,FP.EXP ;EXPECTED: ATA,ERR,ERO & IRY
4055 022452 050237 002734 BIS R2,FP.EXP ;AND SET EXPECTED ATTN BIT
4056 022456 123737 002736 002734 CMPB FP.ACT,FP.EXP ;AND COMPARE LSB VALUES
4057 022464 001423 BEQ 200$ ;IDENTICAL: CONTINUE
4058
4059 022466 005737 002470 TST R.ERR ;TEST ERROR FLAG
4060 022472 001016 BNE 150$ ;BRANCH IF NOT ZERO
4061
4062 022474 005237 002470 INC R.ERR ;INCREMENT ERROR FLAG
4063 022500 ERRHRD 4,M.UAT1 ;"ISR USER ATTN BIT NOT SET/RESET"
022500 104456 TRAP CSERHRD
022502 000004 .WORD 4
022504 012454 .WORD M.UAT1
022506 000000 .WORD 0
4064 022510 PRINTX #F.REG1 ;PRINT REGISTER HEADER
022510 012746 013056 MOV #F.REG1,-(SP)
022514 012746 000001 MOV #1,-(SP)
022520 010600 MOV SP,R0
022522 104415 TRAP CSPNTX
022524 062706 000004 ADD #4,SP
4065
4066 022530 004737 016054 150$: JSR PC,DSPREG ;DISPLAY REGISTER CONTENTS
4067
4068 022534 006301 200$: ASL R1 ;SHIFT TO NEXT FUNCTION BIT
4069 022536 006302 ASL R2 ;SHIFT TO NEXT EXPECTED ATTN BIT
4070 022540 005305 DEC R5 ;DECREMENT COUNTER
4071 022542 001333 BNE 100$ ;AND CONTINUE UNTIL ZERO
4072
4073 022544 005737 002470 400$: TST R.ERR ;TEST FOR ANY ERRORS
4074 022550 001410 BEQ 600$ ;NO: EXIT TEST
4075 022552 PRINTX #F.CRLF ;NEW LINE
022552 012746 014214 MOV #F.CRLF,-(SP)
022556 012746 000001 MOV #1,-(SP)
022562 010600 MOV SP,R0
022564 104415 TRAP CSPNTX
022566 062706 000004 ADD #4,SP
4076
    
```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 120-1  
TEST 5: CHECK INTERFACE STATUS ATTN BIT

4077 022572  
022572  
022572 104403

600\$: ENDSUB  
L10041: TRAP C\$ESUB

;MOVING ONE BIT

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 121  
TEST 5: CHECK INTERFACE STATUS ATTN BIT

4079 022574

STARS

\*\*\*\*\*

4080

4081

4082

4083

4084

4085 022574

STARS

\*\*\*\*\*

SUBTEST 4:

LOAD FS REGISTER BITS F3->F0 WITH MOVING ZERO BIT.  
READ AND CHECK IS REGISTER USER ATTN BITS AT3->AT0.

4086 022574

T5.4:

BGNSUB

:MOVING ZERO BIT

022574

104402

4087

4088 022576

005037

002470

50\$:

CLR

R.ERR

:CLEAR ERROR FLAG

4089 022602

012701

007000

MOV

#7000,R1

:INITIALIZE BITS F3-F1 TO ONE

4090 022606

012702

000016

MOV

#16,R2

:INITIALIZE EXPECTED ATTN BITS AT3->AT1

4091 022612

012705

000004

MOV

#4,R5

:AND BIT COUNTER

4092

4093 022616

010177

157462

100\$:

MOV

R1,@A.FS

:WRITE TO FS REGISTER

4094 022622

017737

157462

002736

MOV

@A.IS,FP.ACT

:READ IS REGISTER

4095 022630

012737

142200

002734

MOV

#142200,FP.EXP

:EXPECTED: ATA,ERR,ERO & IRY

4096 022636

060237

002734

ADD

R2,FP.EXP

:SET EXPECTED AT3->AT0

4097 022642

123737

002736

002734

CMPB

FP.ACT,FP.EXP

:AND COMPARE LSB VALUES

4098 022650

001423

BEQ

200\$

:IDENTICAL: CONTINUE

4099

4100 022652

005737

002470

TST

R.ERR

:TEST ERROR FLAG

4101 022656

001016

BNE

150\$

:BRANCH IF NOT ZERO

4102

4103 022660

005237

002470

INC

R.ERR

:INCREMENT ERROR FLAG

4104 022664

104456

ERRHRD

5,M.UAT1

: "ISR USER ATTN BIT NOT SET/RESET"

022664

000005

TRAP

C\$ERHRD

022666

000005

.WORD

5

022670

012454

.WORD

M.UAT1

022672

000000

.WORD

0

4105 022674

012746

013056

PRINTX

#F.REG1

:PRINT REGISTER HEADER

022674

012746

000001

MOV

#F.REG1,-(SP)

022700

010600

MOV

#1,-(SP)

022704

104415

MOV

SP,R0

022706

062706

000004

TRAP

C\$PNTX

4106 022710

004737

016054

150\$:

JSR

PC,DSPREG

:DISPLAY REGISTER CONTENTS

4107 022720

006301

200\$:

ASL

R1

:SHIFT TO NEXT FUNCTION BIT

4108 022722

042701

010000

BIC

#FS.F4,R1

:CLEAR SHIFT BIT

4109 022726

052701

000400

BIS

#FS.F0,R1

:AND SET INCOMING FUNCTION BIT

4110 022732

006302

ASL

R2

:SHIFT TO NEXT ATTN BIT

4111 022734

042702

000020

BIC

#IS.CYC,R2

:CLEAR SHIFT BIT

4112 022740

052702

000001

BIS

#IS.AT0,R2

:AND SET INCOMING ATTN BIT

4113 022744

005305

DEC

R5

:DECREMENT COUNTER

4114 022746

001323

BNE

100\$

:AND CONTINUE UNTIL ZERO

4115

4118 022750

005737

002470

400\$:

TST

R.ERR

:TEST FOR ANY ERRORS

4119 022754

001410

BEQ

600\$

:NO: EXIT TEST

022756

012746

014214

PRINTX

#F.CRLF

:NEW LINE

022762

012746

000001

MOV

#F.CRLF,-(SP)

022762

012746

000001

MOV

#1,-(SP)



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 121-1  
 TEST 5: CHECK INTERFACE STATUS ATTN BIT

	022766	010600		MOV	SP,R0	
	022770	104415		TRAP	C\$PNTX	
	022772	062706	000004	ADD	#4,SP	
4121						
4122	022776			600\$: ENDSUB		:MOVING ZERO BIT
	022776			L10042:		
	022776	104403		TRAP	C\$ESUB	
4123						
4124	023000	004737	015550	JSR	PC,CLRTST	:AND CLEAR TEST DATA
4125						
4126	023004			ENDTST		
	023004			L10036:		
	023004	104401		TRAP	C\$ETST	

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 122  
TEST 6: CHECK INTERFACE STATUS USER ATTN BITS

4128  
4129 023006

..SBTTL TEST 6: CHECK INTERFACE STATUS USER ATTN BITS

STARS

\*\*\*\*\*

4130  
4131  
4132  
4133  
4134  
4135  
4136  
4137  
4138  
4139  
4140  
4141  
4142  
4143  
4144

TEST DESCRIPTION:

CHECK THAT USER ATTN BITS AT3->ATO SET ATA  
CHECK THAT MASSBUS CONTROLLER CLEAR RESETS ATA

TEST STEPS:

IF ATO & AT3 NOT DISABLED THEN:  
FOR EACH USER ATTN BIT: EXECUTE SUBTEST 1-2

ERROR CONDITIONS:

USER ATTN BIT DOES NOT SET ATA  
INTERFACE CLEAR COMMAND DOES NOT RESET ATA

4145 023006

STARS

\*\*\*\*\*

4146 023006  
023006

BGNTST

T6::

4147  
4148 000234  
4149  
4150 023006 013700 003010  
4151 023012 042700 000234  
4152 023016 001402  
4153  
4154 023020  
023020 104432  
023022 000302

SELMASK = B.REVA + B.UPAR + B.BYTE + B.ABORT

MOV SELECT,R0 ;READ SELECT WORD  
BIC #SELMASK,R0 ;CLEAR DON'T CARE SELECT BITS  
BEQ 50\$ ;BRANCH IF NOT SET

EXIT TST ;ATO OR AT3 DISABLED: EXIT TEST  
TRAP C\$EXIT  
.WORD L10043-

4155  
4156 023024 012701 000400  
4157 023030 012702 000001  
4158 023034 012705 000004

50\$: MOV #FS.F0,R1 ;INIT FS REGISTER TEST BIT F0  
MOV #IS.AT0,R2 ;INIT IS EXPECTED BIT ATO  
MOV #4,R5 ;LOAD BIT COUNTER

4159  
4160 023040 013737 002420 002730  
4161 023046 013737 002450 002746

100\$: MOV NA.IS,FP.NAM ;LOAD IS REGISTER NAME POINTER  
MOV BA.IS,FP.TBL ;LOAD REGISTER EXPAND TABLE ADDRESS  
;EXECUTE SUBTEST

4162  
4163  
4164 023054

LP.UAT: ;USER ATTN LOOP LABEL

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 123  
 TEST 6: CHECK INTERFACE STATUS USER ATTN BITS

```

4166 023054          STARS
                     :*****
4167                :
4168                :
4169                :
4170                :
4171                :
4172                :
4173                :
4174 023054          STARS
                     :*****
4175 023054          BGNSUB                                ;SET ATTENTION
023054              T6.1:
023054 104402        TRAP      C$BSUB
4176                :
4177 023056 004737 015342 100$: JSR      PC,CLRMBC          ;CLEAR THE MASSBUS CONTROLLER
4178 023062 005737 003030      TST      MBCFLG          ;TEST FOR CONTROLLER ERROR
4179 023066 001405      BEQ      200$                    ;CONTINUE IF MASSBUS CONTROLLER CLEARED
4180                :
4181 023070          ERRDF 1,M.MBC1,ER.DMP                ;'MASSBUS CONTROLLER CLEAR ERROR'
023070 104455        TRAP      C$ERDF
023072 000001        .WORD    1
023074 011650        .WORD    M.MBC1
023076 015074        .WORD    ER.DMP
4182 023100          DOCLN
023100 104444        TRAP      C$DCLN                    ;CLEAN UP AND EXIT
4183                :
4184 023102 010177 157176 200$: MOV      R1,@A.FS          ;WRITE USER FUNCTION BIT IN FS REGISTER
4185 023106 017737 157176 002736 MOV      @A.IS,FP.ACT      ;READ IS REGISTER
4186 023114 012737 100200 002734 MOV      #100200,FP.EXP    ;EXPECTED: ATA & IRY
4187 023122 050237 002734      BIS      R2,FP.EXP          ;SET CORRESPONDING USER ATTN BIT
4188 023126 123737 002736 002734 CMPB    FP.ACT,FP.EXP      ;COMPARE LSB VALUES ONLY
4189 023134 001405      BEQ      300$                    ;IDENTICAL: CONTINUE
4190                :
4191 023136          ERRHRD 2,M.UAT1,ER.REG              ;'IS REGISTER USER ATTN BIT NOT SET'
023136 104456        TRAP      C$ERHRD
023140 000002        .WORD    2
023142 012454        .WORD    M.UAT1
023144 015016        .WORD    ER.REG
4192 023146 000410      BR       400$                    ;EXIT SUBTEST
4193                :
4194 023150 023737 002736 002734 300$: CMP      FP.ACT,FP.EXP      ;USER ATTN OK: TEST ATA
4195 023156 001404      BEQ      400$                    ;ATA OK IF SET
4196                :
4197 023160          ERRHRD 3,M.ISR1,ER.REG              ;'INTERFACE STATUS ERROR'
023160 104456        TRAP      C$ERHRD
023162 000003        .WORD    3
023164 011543        .WORD    M.ISR1
023166 015016        .WORD    ER.REG
4198                :
4199 023170          400$: ENDSUB                            ;SET ATTENTION
023170          L10044: TRAP      C$ESUB
023170 104403
    
```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 124  
 TEST 6: CHECK INTERFACE STATUS USER ATTN BITS

```

4201 023172          STARS
:*****
4202
4203
4204
4205
4206
4207
4208 023172          STARS
:*****
4209
4210 023172          500$:  BGNSUB                ;RESET ATTENTION
      023172          T6.2:
      023172 104402          TRAP      C$BSUB
4211
4212 023174 005737 002226          TST      REVFLG                ;TEST FOR REVA
4213 023200 001012          BNE      550$                ;BRANCH IF REVA
4214
4215          ;          REVISION 'B'                ;ISSUE CLEAR DRIVE AND CONTINUE
4216
4217 023202 004737 015464          525$:  JSR      PC,CLRDRI                ;ISSUE DRIVE CLEAR AND TEST ERROR
4218 023206 005737 003032          TST      DRIFLG                ;INTERFACE CLEAR ERROR
4219 023212 001417          BEQ      600$                ;CONTINUE IF NO ERROR
4220
4221 023214          ERRHRD  4,M.ISR2,ER.DMP                ;"INTERFACE STATUS ERROR ON CLEAR CMD"
      023214 104456          TRAP      C$ERHRD
      023216 000004          .WORD   4
      023220 011572          .WORD   M.ISR2
      023222 015074          .WORD   ER.DMP
4222 023224 000430          BR      700$                ;EXIT TEST
4223
4224          ;          REVISION 'A'                ;CLEAR MASSBUS CONTROLLER AND CONTINUE
4225
4226 023226 004737 015342          550$:  JSR      PC,CLRMBC                ;CLEAR THE MASSBUS CONTROLLER
4227 023232 005737 003030          TST      MBCFLG                ;TEST FOR CONTROLLER ERROR
4228 023236 001405          BEQ      600$                ;CONTINUE IF MASSBUS CONTROLLER CLEARED
4229
4230 023240          ERRDF  5,M.MBC1,ER.DMP                ;"MASSBUS CONTROLLER CLEAR ERROR"
      023240 104455          TRAP      C$ERDF
      023242 000005          .WORD   5
      023244 011650          .WORD   M.MBC1
      023246 015074          .WORD   ER.DMP
4231 023250          DOCLN
      023250 104444          TRAP      C$DCLN                ;CLEAN UP AND EXIT
4232
4233 023252 017737 157032 002736 600$:  MOV      @A.IS,FP.ACT                ;READ IS REGISTER
4234 023260 012737 000200 002734          MOV      #IS.IRY,FP.EXP                ;LOAD EXPECTED CONTENTS
4235 023266 023737 002736 002734          CMP      FP.ACT,FP.EXP                ;COMPARE VALUES
4236 023274 001404          BEQ      700$                ;CONTINUE IF ATA RESET
4237
4238 023276          ERRHRD  6,M.ATA3,ER.REG                ;"ATA NOT RESET BY MBC CLEAR CMD"
      023276 104456          TRAP      C$ERHRD
      023300 000006          .WORD   6
      023302 006740          .WORD   M.ATA3
      023304 015016          .WORD   ER.REG
4239
4240 023306          700$:  ENDSUB                ;RESET ATTENTION

```



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TEST 6: CHECK INTERFACE STATUS USER ATTN BITS

023306  
023306 104403  
4241  
4242 023310 006301  
4243 023312 006302  
4244 023314 005305  
4245 023316 001256  
4246  
4247 023320 004737 015550  
4248  
4249 023324  
023324  
023324 104401

L10045:  
TRAP C\$ESUB  
ASL R1  
ASL R2  
DEC R5  
BNE LP.UAT  
800\$: JSR PC,CLRTST  
ENDTST  
L10043:  
TRAP C\$ETST

:SHIFT TO NEXT TEST POSITION  
:SHIFT TO NEXT EXPECTED POSITION  
:DECREMENT COUNTER  
:CONTINUE LOOP UNTIL ZERO  
:AND CLEAR TEST DATA

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 125  
TEST 7: CHECK INTERFACE STATUS ERR BIT

4251  
4252 023326

.SBTTL TEST 7: CHECK INTERFACE STATUS ERR BIT

STARS

\*\*\*\*\*

4253  
4254  
4255  
4256  
4257  
4258  
4259  
4260  
4261  
4262  
4263  
4264  
4265  
4266  
4267  
4268  
4269  
4270 023326

TEST DESCRIPTION:

CHECK PROPER FUNCTION OF ERR BIT

TEST STEPS:

CLEAR MASSBUS CONTROLLER AND TEST FOR ERROR  
EXECUTE SUBTEST 1-4

ERROR CONDITIONS:

MASSBUS CONTROLLER ERROR STATUS  
INTERFACE STATUS ERROR ON DRIVE CLEAR  
ERO NOT SET THROUGH M8432 /NOT RESET BY INTERFACE CLEAR  
ERR NOT BY ERO /NOT RESET BY INTERFACE CLEAR CMD  
ATA NOT SET BY ERR /NOT RESET BY INTERFACE CLEAR CMD

STARS

\*\*\*\*\*

4271 023326  
023326

BGNTST

T7::

4272  
4273 023326 004737 015342  
4274 023332 005737 003030  
4275 023336 001405  
4276  
4277 023340  
023340 104455  
023342 000001  
023344 011650  
023346 015074  
4278 023350  
023350 104444  
4279  
4280 023352 013737 002420 002730  
4281 023360 013737 002450 002746  
4282

50\$: JSR PC,CLRMBC ;CLEAR THE MASSBUS CONTROLLER  
TST MBCFLG ;TEST FOR CONTROLLER ERROR  
BEQ 100\$ ;CONTINUE IF MASSBUS CONTROLLER CLEARED  
  
ERRDF 1,M.MBC1,ER.DMP ;'MASSBUS CONTROLLER CLEAR ERROR'  
TRAP C\$ERDF  
.WORD 1  
.WORD M.MBC1  
.WORD ER.DMP  
  
DOCLN ;CLEAN UP AND EXIT  
TRAP C\$DCLN  
  
100\$: MOV NA.IS,FP.NAM ;LOAD IS REGISTER NAME POINTER  
MOV BA.IS,FP.TBL ;LOAD REGISTER EXPAND TABLE ADDRESS  
;EXECUTE SUBTEST

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 126  
TEST 7: CHECK INTERFACE STATUS ERR BIT

```

4284 023366          STARS
:*****
4285
4286          :
4287          :   SUBTEST 1:
4288          :
4289          :   SET BIT F5 OF FS REGISTER
4290          :   CHECK IS REGISTER ERO BIT SET (8432 LOOP-BACK)
4291          :   CHECK IS REGISTER ERR BIT SET (ERO)
4292 023366          :   CHECK IS REGISTER ATA BIT SET (ERR)
:*****
4293 023366          :*****
:*****          BGNSUB          ;SET ERROR
023366          T7.1:
023366 104402          TRAP      C$BSUB
4294
4295 023370 012777 020000 156706 100$: MOV      #FS.F5,@A.FS          ;SET FS REGISTER BIT F5
4296 023376 017737 156706 002736      MOV      @A.IS,FP.ACT          ;READ IS REGISTER
4297 023404 012737 142200 002734      MOV      #142200,FP.EXP          ;LOAD EXPECTED CONTENTS
4298 023412 012777 000000 156664      MOV      #0,@A.FS          ;CLEAR FUNCTION / STATUS BITS
4299
4300 023420 032737 002000 002736 200$: BIT      #IS.ERO,FP.ACT          ;TEST FOR ERO BIT SET
4301 023426 001005          BNE      250$          ;YES: CONTINUE
4302
4303 023430          ERRHRD  2,M.ERO1,ER.REG          ;'ERO NOT SET WHEN FS BIT13 SET'
023430 104456          TRAP      C$ERHRD
023432 000002          .WORD    2
023434 007751          .WORD    M.ERO1
023436 015016          .WORD    ER.REG
4304 023440 000421          BR      400$          ;CONTINUE
4305
4306 023442 032737 040000 002736 250$: BIT      #IS.ERR,FP.ACT          ;TEST FOR ERR BIT SET
4307 023450 001005          BNE      350$          ;YES: CONTINUE
4308
4309 023452          ERRHRD  3,M.ERR1,ER.REG          ;'ERR NOT SET ON ERO ACTIVE'
023452 104456          TRAP      C$ERHRD
023454 000003          .WORD    3
023456 010064          .WORD    M.ERR1
023460 015016          .WORD    ER.REG
4310 023462 000410          BR      400$          ;CONTINUE
4311
4312 023464 032737 100000 002736 350$: BIT      #IS.ATA,FP.ACT          ;TEST ATA BIT SET
4313 023472 001004          BNE      400$          ;YES: WRAP IT UP
4314
4315 023474          ERRHRD  4,M.ATA2,ER.REG          ;'ATA NOT SET ON ERR ACTIVE'
023474 104456          TRAP      C$ERHRD
023476 000004          .WORD    4
023500 006706          .WORD    M.ATA2
023502 015016          .WORD    ER.REG
4316
4317 023504          400$: ENDSUB          ;SET ERROR
023504          L10047:
023504 104403          TRAP      C$ESUB

```



ZDRMAD DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 127  
TEST 7: CHECK INTERFACE STATUS ERR BIT

```

4319 023506 STARS
:*****
4320
4321 SUBTEST 2:
4322
4323 IF NOT REVA THEN: ISSUE INTERFACE CLEAR COMMAND
4324 ELSE: CLEAR MASSBUS CONTROLLER
4325
4326 CHECK IS REGISTER ERO BIT RESET
4327 CHECK IS REGISTER ERR BIT RESET
4328 CHECK IS REGISTER ATA BIT RESET
4329 023506 STARS
:*****
4330 023506 BGNSUB ;INTERFACE CLEAR ERROR
023506
023506 104402 T7.2: TRAP C$BSUB
4331
4332 023510 005737 002226 50$: TST REVFLG ;TEST FOR REVA
4333 023514 001012 BNE 80$ ;BRANCH IF REVA
4334
4335 023516 004737 015464 JSR PC,CLRDRI ;ISSUE DRIVE CLEAR AND CHECK ERROR
4336 023522 005737 003032 TST DRIFLG ;TEST ERROR FLAG
4337 023526 001417 BEQ 100$ ;CONTINUE IF NO ERROR
4338
4339 023530 ERRHRD 5,M.ISR2,ER.DMP ;"INTERFACE STATUS ERROR ON CLEAR"
023530 104456 TRAP C$ERHRD
023532 000005 .WORD 5
023534 011572 .WORD M.ISR2
023536 015074 .WORD ER.DMP
4340 023540 000452 BR 400$ ;EXIT TEST ON ERROR
4341
4342 023542 004737 015342 80$: JSR PC,CLRMBC ;CLEAR THE MASSBUS CONTROLLER
4343 023546 005737 003030 TST MBCFLG ;TEST FOR CONTROLLER ERROR
4344 023552 001405 BEQ 100$ ;CONTINUE IF MASSBUS CONTROLLER CLEARED
4345
4346 023554 ERRDF 6,M.MBC1,ER.DMP ;"MASSBUS CONTROLLER CLEAR ERROR"
023554 104455 TRAP C$ERDF
023556 000006 .WORD 6
023560 011650 .WORD M.MBC1
023562 015074 .WORD ER.DMP
4347 023564 DOCLN ;CLEAN UP AND EXIT
023564 104444 TRAP C$DCLN
4348
4349 023566 017737 156516 002736 100$: MOV @A.IS,FP.ACT ;READ IS REGISTER
4350 023574 012737 000200 002734 MOV #IS.IRY,FP.EXP ;LOAD EXPECTED CONTENTS
4351
4352 023602 032737 002000 002736 200$: BIT #IS.ERO,FP.ACT ;TEST ERO BIT RESET
4353 023610 001405 BEQ 250$ ;BRANCH IF ERO RESET
4354
4355 023612 ERRHRD 7,M.ERO2,ER.REG ;"ERO NOT RESET ON INTERFACE CLEAR CMD"
023612 104456 TRAP C$ERHRD
023614 000007 .WORD 7
023616 010017 .WORD M.ERO2
023620 015016 .WORD ER.REG
4356 023622 000421 BR 400$ ;CONTINUE
4357
4358 023624 032737 040000 002736 250$: BIT #IS.ERR,FP.ACT ;TEST FOR ERR BIT RESET

```



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 127-1  
 TEST 7: CHECK INTERFACE STATUS ERR BIT

```

4359 023632 001405          BEQ      300$          ;BRANCH IF ERR RESET
4360
4361 023634          ERRHRD  8,M.ERR2,ER.REG  ;'ERR NOT RESET ON INTERFACE CLEAR CMD''
      023634 104456      TRAP    C$ERHRD
      023636 000010      .WORD   8
      023640 010116      .WORD   M.ERR2
      023642 015016      .WORD   ER.REG
4362 023644 000410      BR      400$          ;CONTINUE
4363
4364 023646 032737 100000 002736 300$: BIT    #IS.ATA,FP.ACT  ;TEST FOR ATA BIT RESET
4365 023654 001404          BEQ      400$          ;BRANCH IF RESET
4366
4367 023656          ERRHRD  9,M.ATA3,ER.REG  ;'ATA NOT RESET ON INTERFACE CLEAR CMD''
      023656 104456      TRAP    C$ERHRD
      023660 000011      .WORD   9
      023662 006740      .WORD   M.ATA3
      023664 015016      .WORD   ER.REG
4368
4369 023666          400$:  ENDSUB          ;INTERFACE CLEAR ERROR
      023666          L10050:
      023666 104403      TRAP    C$ESUB
4370
4371 023670 004737 015550      JSR    PC,CLRTST      ;AND CLEAR TEST DATA
4372
4373 023674          L10046:  ENDTST
      023674          TRAP    C$ETST
      023674 104401

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 128  
TEST 8: CHECK INTERFACE STATUS IRY BIT ON ERROR

4375  
4376 023676

.SBTTL TEST 8: CHECK INTERFACE STATUS IRY BIT ON ERROR  
STARS

4377  
4378  
4379  
4380  
4381  
4382  
4383  
4384  
4385  
4386  
4387  
4388  
4389  
4390

\*\*\*\*\*  
TEST DESCRIPTION:  
CHECK PROPER FUNCTION OF IRY BIT  
TEST STEPS:  
CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR  
EXECUTE SUBTEST 1-2  
ERROR CONDITIONS:  
IRY NOT RESET BY VALID DATA TRANSFER CMD  
IRY NOT SET BY ERR STATUS

4391 023676

STARS  
\*\*\*\*\*

4392 023676  
023676

BGNTST  
T8::

4393  
4394 023676 004737 015342  
4395 023702 005737 003030  
4396 023706 001405

50\$: JSR PC,CLRMBC ;AND CLEAR MASSBUS CONTROLLER  
TST MBCFLG ;TEST FOR ERROR  
BEQ 100\$ ;BRANCH IF ZERO

4397  
4398 023710  
023710 104455  
023712 000001  
023714 011650  
023716 015074

ERRDF 1,M,MBC1,ER.DMP ;'MASSBUS CONTROLLER CLEAR ERROR'  
TRAP C\$ERDF  
.WORD 1  
.WORD M.MBC1  
.WORD ER.DMP

4399 023720  
023720 104444

DOCLN ;CLEAN UP AND EXIT  
TRAP C\$DCLN

4400  
4401 023722 013737 002420 002730 100\$:  
4402 023730 013737 002450 002746  
4403  
4404

MOV NA.IS,FP.NAM ;LOAD IS REGISTER NAME POINTER  
MOV BA.IS,FP.TBL ;LOAD REGISTER EXPAND TABLE ADDRESS  
;EXECUTE SUBTEST

ZDRMAD DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 129  
TEST 8: CHECK INTERFACE STATUS IRY BIT ON ERROR

4406 023736

STARS

\*\*\*\*\*

4407

4408

4409

4410

4411

4412 023736

STARS

\*\*\*\*\*

4413 023736

023736

023736 104402

T8.1:

BGNSUB ; IRY RESET

4414

4415 023740 012777 000061 156330

4416 023746 004737 016042

4417

4418 023752 004737 015606 002340

4419 023756 032737 000200

4420 023764 001404

4421

4422 023766

023766 104456

023770 000002

023772 011162

023774 015074

TRAP C\$BSUB

MOV #WR.CMD,@A.CS1 ;ISSUE WRITE CMD TO INTERFACE

JSR PC,DLY ;DELAY A COUPLE OF MEMORY CYCLES

JSR PC,RDREG ;READ REGISTERS

BIT #IS.IRY,R.IS ;TEST FOR IRY BIT RESET

BEQ 200\$ ;RESET: CONTINUE

ERRHRD 2,M.IRY3,ER.DMP ;'IRY NOT RESET BY DATA TRANSFER CMD'

TRAP C\$ERHRD

.WORD 2

.WORD M.IRY3

.WORD ER.DMP

4423

4424 023776

023776

023776 104403

200\$: ENDSUB

; IRY FESET

L10052:

TRAP C\$ESUB

ZDRMAC DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 130  
TEST 8: CHECK INTERFACE STATUS IRY BIT ON ERROR

4426 024000

STARS  
:\*\*\*\*\*

4427

4428

4429

4430

4431

4432 024000

.....  
SUBTEST 2:  
SET ERO THROUGH LOOP-BACK CABLE  
READ IS REGISTER AND CHECK IRY SET

STARS  
:\*\*\*\*\*

4433 024000

024000

024000 104402

BGNSUB ; IRY SET

4434

4435 024002

012777 020000 156274

T8.2: TRAP CSBSUB

4436 024010

004737 015606

100\$: MOV #FS.F5, @A.FS ;SET FUNCTION BIT 5 IN FS REGISTER

4437 024014

012777 000000 156262

JSR PC, RDREG ;READ REGISTERS

4438

4439 024022

032737 000200 002340

MOV #0, @A.FS ;CLEAR FUNCTION / STATUS BITS

4440 024030

001004

BIT #IS.IRY, R.IS ;AND TEST FOR IRY SET

4441

4442 024032

024032 104456

024034 000003

024036 011034

024040 015074

BNE 200\$ ;CONTINUE IF SET

ERRHRD 3, M.IRY1, ER.DMP ;"IRY NOT SET ON ERROR"

TRAP CSERHRD

.WORD 3

.WORD M.IRY1

.WORD ER.DMP

4443

4444 024042

024042

024042 104403

200\$: ENDSUB

L10053:

TRAP CSesub

4445

4446 024044

004737 015550

JSR PC, CLRTST ;AND CLEAR TEST DATA

4447

4448 024050

024050

024050 104401

ENDTST

L10051:

TRAP CSETST



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 131  
TEST 9: ADVANCED ATA BIT FUNCTIONAL CHECKS

4450  
4451 024052

.SBTTL TEST 9: ADVANCED ATA BIT FUNCTIONAL CHECKS  
STARS

4452  
4453  
4454  
4455  
4456  
4457  
4458  
4459  
4460  
4461  
4462  
4463  
4464  
4465  
4466  
4467  
4468  
4469 024052

\*\*\*\*\*

TEST DESCRIPTION:

VERIFY ATA BIT WILL CAUSE INTERRUPT WHEN INTERRUPTS ENABLED,  
THAT ATA BIT IS SET/ RESET WITH ATTENTION SUMMARY REGISTER,  
AND THAT ATA BIT CLEARS WITH VALID DATA TRANSFER COMMAND.

TEST STEPS:

EXECUTE SUBTEST 1-4

ERROR CONDITIONS:

MASSBUS CONTROLLER ERROR STATUS  
NO INTERRUPT ON ATA SET  
AS REGISTER ATTN SUMMARY BIT NOT SET  
AS REGISTER ATA NOT SET/RESET BY AS BIT

STARS

\*\*\*\*\*

BGNTST

4470 024052  
024052  
4471  
4472 024052

T9::

100\$:

;EXECUTE SUBTEST

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 132  
TEST 9: ADVANCED ATA BIT FUNCTIONAL CHECKS

```

4474 024052          STARS
:*****
4475
4476
4477          SUBTEST 1:
4478          SETUP INTERRUPT SERVICE VECTOR
4479          SET FS REGISTER BIT F5 TO SET ERO, ERR & ATA
4480          DELAY AND READ REGISTERS
4481          TEST FOR INTERRUPT AND CLEAR SERVICE VECTOR
4482 024052          STARS
:*****
4483 024052          BGNSUB                                ;CHECK INTERRUPT
024052
024052 104402          T9.1: TRAP C$BSUB
4484
4485 024054 004737 015342          50$: JSR PC,CLRMBC          ;CLEAR MASSBUS CONTROLLER
4486 024060 005737 003030          TST MBCFLG          ;TEST FOR ERROR
4487 024064 001405          BEQ 100$          ;CONTROLLER CLEAR: CONTINUE
4488
4489 024066          ERRDF 1,M.MBC1,ER.DMP          ;'MASSBUS CONTROLLER CLEAR ERROR'
024066 104455          TRAP C$ERDF
024070 000001          .WORD 1
024072 011650          .WORD M.MBC1
024074 015074          .WORD ER.DMP
4490 024076          DOCLN                                ;CLEAN UP AND EXIT
024076 104444          TRAP C$DCLN
4491
4492 024100 005037 003022          100$: CLR INTFLG          ;CLEAR INTERRUPT FLAG
4493 024104 004737 015274          JSR PC,SETISR          ;SET INTERRUPT SERVICE VECTOR
4494
4495 024110 012777 000100 156160          MOV #CS1.IE,@A.CS1          ;WRITE INTERRUPT ENABLE TO CS1
4496 024116 012777 020000 156160          MOV #FS.F5,@A.FS          ;SET FUNCTION BIT F5 IN FS REGISTER
4497 024124 004737 016042          JSR PC,DLY          ;DELAY A FEW CYCLES
4498 024130 004737 015606          JSR PC,RDREG          ;AND READ REGISTERS
4499
4500 024134 012777 000000 156142          MOV #0,@A.FS          ;CLEAR FUNCTION / STATUS BITS
4501
4502 024142 005737 003022          TST INTFLG          ;TEST INTERRUPT FLAG
4503 024146 001004          BNE 200$          ;CONTINUE IF SET
4504
4505 024150          ERRHRD 2,M.ATA4,ER.DMP          ;'NO INTERRUPT ON ATA'
024150 104456          TRAP C$ERHRD
024152 000002          .WORD 2
024154 007005          .WORD M.ATA4
024156 015074          .WORD ER.DMP
4506
4507 024160 004737 015324          200$: JSR PC,CLRISR          ;CLEAR INTERRUPT SERVICE VECTOR
4508
4509 024164          ENDSUB                                ;CHECK INTERRUPTS
024164
024164 104403          L10055: TRAP C$ESUB

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 133  
TEST 9: ADVANCED ATA BIT FUNCTIONAL CHECKS

```

4511 024166          STARS
:*****
4512          :
4513          :
4514          :
4515          :
4516          :
4517 024166          STARS
:*****
4518 024166          BGNSUB                      ;ATTENTION SUMMARY BITS
024166          T9.2:
024166 104402          TRAP      C$BSUB
4519          :
4520 024170 013737 002776 002734 100$:  MOV      UNITPOS,FP.EXP      ;LOAD EXPECTED AS REGISTER BIT
4521 024176 017737 156112 002736      MOV      @A.AS,FP.ACT      ;READ AS REGISTER CONTENTS
4522 024204 023737 002736 002734      CMP      FP.ACT,FP.EXP    ;AND COMPARE VALUES
4523 024212 001412          BEQ      200$              ;IDENTICAL: CONTINUE
4524          :
4525 024214 013737 002424 002730      MOV      NA.AS,FP.NAM    ;LOAD REGISTER NAME ADDRESS
4526 024222 013737 002454 002746      MOV      BA.AS,FP.TBL   ;LOAD REGISTER EXPAND TABLE ADDRESS
4527 024230          ERRHRD 3,M.ASB1,ER.REG ;'AS BIT NOT SET'
024230 104456          TRAP      C$ERHRD
024232 000003          .WORD   3
024234 006314          .WORD   M.ASB1
024236 015016          .WORD   ER.REG
4528          :
4529 024240          200$:  ENDSUB                      ;AS BIT SET
024240          L10056:
024240 104403          TRAP      C$ESUB

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 134  
TEST 9: ADVANCED ATA BIT FUNCTIONAL CHECKS

```

4531 024242 STARS
:*****
4532
4533 SUBTEST 3:
4534
4535 WRITE TO ATTENTION SUMMARY BIT IN AS REGISTER
4536 READ IS REGISTER CONTENTS, CHECK FOR ATA BIT RESET
4537 AND CHECK FOR ERR BIT SET
4538 024242 STARS
:*****
4539 024242 BGNSUB ;ATA BIT RESET
024242
024242 104402 T9.3: TRAP C$BSUB
4540
4541 024244 013777 002776 156042 100$: MOV UNITPOS,@A,AS ;WRITE TO ATTN SUMMARY BIT
4542 024252 017737 156032 002736 MOV @A,IS,FP.ACT ;READ IS REGISTER CONTENTS
4543 024260 012737 042200 002734 MOV #42200,FP.EXP ;EXPECTED VALUE: (ERR,ERO & IRY)
4544 024266 005737 002226 TST REVFLG ;TEST FOR REV "A"
4545 024272 001403 BEQ 150$ ;CONTINUE IF NOT
4546 024274 012737 040200 002734 MOV #40200,FP.EXP ;RESET ERO IN EXPECTED VALUE
4547
4548 024302 032737 100000 002736 150$: BIT #IS.ATA,FP.ACT ;TEST FOR ATA RESET
4549 024310 001405 BEQ 200$ ;CONTINUE IF ZERO
4550
4551 024312 ERRHRD 4,M.ATA5 ;"ATA NOT RESET BY WRITING AS BIT"
024312 104456 TRAP C$ERHRD
024314 000004 .WORD 4
024316 007060 .WORD M.ATA5
024320 000000 .WORD 0
4552 024322 000404 BR 250$ ;DISPLAY INTERFACE STATUS
4553
4554 024324 023737 002736 002734 200$: CMP FP.ACT,FP.EXP ;COMPARE VALUES
4555 024332 001412 BEQ 400$ ;BRANCH IF IDENTICAL
4556
4557 024334 013737 002420 002730 250$: MOV NA.IS,FP.NAM ;LOAD REGISTER NAME ADDRESS
4558 024342 013737 002450 002746 MOV BA.IS,FP.TBL ;LOAD REGISTER EXPAND TABLE ADDRESS
4559 024350 ERRHRD 5,M.ISR1,ER.REG ;"INTERFACE STATUS ERROR"
024350 104456 TRAP C$ERHRD
024352 000005 .WORD 5
024354 011543 .WORD M.ISR1
024356 015016 .WORD ER.REG
4560
4561 024360 400$: ENDSUB ;ATA BIT RESET
024360 L10057:
024360 104403 TRAP C$ESUB

```



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 135  
TEST 9: ADVANCED ATA BIT FUNCTIONAL CHECKS

4563 024362

STARS

\*\*\*\*\*

4564

4565

4566

4567

4568

4569

4570 024362

STARS

\*\*\*\*\*

4571 024362

024362

024362 104402

4572

4573 024364

004737

015342

4574 024370

005737

003030

4575 024374

001405

4576

4577 024376

024376

104455

024400

000006

024402

011650

024404

015074

4578 024406

024406

104444

4579

4580 024410

012777

000001

155672

100\$:

MOV

#IS.ATO,@A.IS

:SET ATA BIT IN IS REGISTER

4581

4582 024416

012777

000061

155652

MOV

#WR.CMD,@A.CS1

:ISSUE WRITE COMMAND TO CS1

4583 024424

012777

000000

155644

MOV

#0,@A.CS1

:CANCEL WRITE COMMAND

4584 024432

017737

155652

002736

MOV

@A.IS,FP.ACT

:READ IS REGISTER CONTENTS

4585 024440

012737

000200

002734

MOV

#200,FP.EXP

:LOAD EXPECTED VALUE: IRY

4586

4587 024446

032737

100000

002736

BIT

#IS.ATA,FP.ACT

:TEST FOR ATA RESET

4588 024454

001405

BEQ

200\$

:CONTINUE IF ZERO

4589

4590

4591 024456

024456

104456

024460

000007

024462

007135

024464

015074

4592 024466

000410

ERRHRD

7,M.ATA6,ER.DMP

: "ATA NOT RESET BY LOADING -

4593

4594 024470

023737

002736

002734

200\$:

CMP

FP.ACT,FP.EXP

:COMPARE STATUS REGISTER VALUES

4595 024476

001404

BEQ

400\$

:BRANCH IF IDENTICAL

4596

4597 024500

024500

104456

024502

000010

024504

011543

024506

015074

ERRHRD

8,M.ISR1,ER.DMP

: "INTERFACE STATUS ERROR"

4598

4599 024510

024510

104403

400\$:

ENDSUB

L10060:

TRAP

C\$ESUB

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 135-1  
TEST 9: ADVANCED ATA BIT FUNCTIONAL CHECKS

4601 024512 004737 015550

JSR PC,CLRTST

;AND CLEAR TEST DATA

4602

4603 024516

ENDTST

L10054:

024516

024516 104401

TRAP CSETST

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 136  
 TEST 10: CHECK WORD TRANSFER LOGIC

4605  
 4606 024520  
 4607  
 4608  
 4609  
 4610  
 4611  
 4612  
 4613  
 4614  
 4615  
 4616  
 4617  
 4618  
 4619  
 4620  
 4621  
 4622  
 4623  
 4624  
 4625 024520  
 4626 024520  
 024520  
 4627  
 4628 000010  
 4629  
 4630 024520 013700 003010  
 4631 024524 032700 000010  
 4632 024530 001402  
 4633  
 4634 024532  
 024532 104432  
 024534 000302  
 4635  
 4636 024536 004737 015342  
 4637 024542 005737 003030  
 4638 024546 001405  
 4639  
 4640 024550  
 024550 104455  
 024552 000001  
 024554 011650  
 024556 015074  
 4641 024560  
 024560 104444  
 4642  
 4643 024562 004737 015274  
 4644

```

.SBTTL TEST 10: CHECK WORD TRANSFER LOGIC
STARS
*****
TEST DESCRIPTION:
CHECK IRY AND CYC BITS FOR PROPER FUNCTION
AROUND DATA TRANSFER COMMANDS
TEST STEPS:
IF NOT BYTE MODE THEN:
SETUP INTERRUPT SERVICE ROUTINE VECTOR
CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR STATUS
EXECUTE SUBTEST 1-3 AND CLEAR VECTOR
ERROR CONDITIONS:
MASSBUS CONTROLLER ERROR STATUS
INTERFACE STATUS IRY BIT NOT SET/RESET
MASSBUS CONTROLLER RDY BIT NOT SET/RESET
STARS
*****
BGNTST
T10::
SELTEST =      B.BYTE
50$:  MOV      SELECT,R0          ;LOAD TEST SELECT WORD
      BIT      #SELTEST,R0      ;TEST BYTE MODE
      BEQ      75$              ;CONTINUE IF DEFAULT
EXIT      TST                    ;NO: EXIT TEST
TRAP      C$EXIT
.WORD     L10061-.
75$:  JSR      PC,CLRMBC          ;CLEAR MASSBUS CONTROLLER
      TST      MBCFLG           ;TEST FLAG FOR ERROR
      BEQ      100$            ;CONTINUE IF NO ERROR
ERRDF     1,M.MBC1,ER.DMP       ;DEVICE FATAL
TRAP      C$ERDF
.WORD     1
.WORD     M.MBC1
.WORD     ER.DMP
DOCLN    ;CLEAN UP AND EXIT
TRAP      C$DCLN
100$:  JSR      PC,SETISR        ;SETUP SERVICE ROUTINE VECTOR
      ;EXECUTE SUBTEST
    
```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 137  
TEST 10: CHECK WORD TRANSFER LOGIC

```

4646 024566          STARS
:*****
4647          :
4648          :
4649          :
4650          :
4651          :
4652 024566          STARS
:*****
4653 024566          BGNSUB                      ;CHECK INTERFACE CLEAR CMD
   024566          T10.1:
   024566 104402          TRAP      C$BSUB
4654          :
4655 024570 012777 000020 155512 100$: MOV      #IS.CYC,@A.IS          ;ISSUE CYCLE REQUEST
4656          :
4657 024576 004737 016042          JSR      PC,DLY                ;DELAY A FEW CYCLES
4658          :
4659 024602 004737 015606          JSR      PC,RDREG           ;READ REGISTERS
4660 024606 032737 000200 002340  BIT      #IS.IRY,R.IS          ;TEST FOR IRY SET
4661 024614 001005          BNE      200$                ;IRY SET: CONTINUE
4662          :
4663 024616          ERRHRD 2,M.IRY2,ER.DMP          ;'IRY BIT RESET WHEN CYC BIT SET'
   024616 104456          TRAP      C$ERHRD
   024620 000002          .WORD    2
   024622 011102          .WORD    M.IRY2
   024624 015074          .WORD    ER.DMP
4664 024626 000410          BR       400$                ;EXIT FROM SUB TEST
4665          :
4666 024630 032737 000200 002326 200$: BIT      #CS1.RDY,R.CS1          ;TEST FOR RDY BIT SET
4667 024636 001004          BNE      400$                ;RDY SET: CONTINUE
4668          :
4669 024640          ERRHRD 3,M.RDY2,ER.DMP          ;'MBC RDY BIT NOT SET BY IRY'
   024640 104456          TRAP      C$ERHRD
   024642 000003          .WORD    3
   024644 012024          .WORD    M.RDY2
   024646 015074          .WORD    ER.DMP
4670          :
4671 024650          400$: ENDSUB
   024650          L10062:
   024650 104403          TRAP      C$ESUB

```



ZDRMAD DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 138  
TEST 10: CHECK WORD TRANSFER LOGIC

```

4673 024652          STARS
                     :*****
4674                :
4675                :
4676                :
4677                :
4678                :
4679 024652          STARS
                     :*****
4680 024652          BGNSUB
024652              T10.2:
024652 104402        TRAP    C$SUB
4681
4682 024654 012700 177777 100$: MOV    #-1,R0          ;INITIALIZE BLOCK SIZE
4683 024660 004737 015762      JSR    PC,WRTINI      ;AND SETUP ADDRESS REGISTERS
4684 024664 012777 000061 155404  MOV    #WR.CMD,@A.CS1 ;ISSUE READ TO INTERFACE
4685
4686 024672 004737 015606      JSR    PC,RDREG      ;READ REGISTERS INTO R.TBL
4687 024676 032737 000200 002340  BIT    #IS.IRY,R.IS  ;AND TEST FOR IRY RESET
4688 024704 001405          BEQ    200$          ;IRY RESET: CONTINUE
4689
4690 024706          ERRHRD  4,M.IRY3,ER.DMP      ;'IRY NOT RESET BY DATA TRANSFER CMD'
024706 104456          TRAP    C$ERHRD
024710 000004          .WORD   4
024712 011162          .WORD   M.IRY3
024714 015074          .WORD   ER.DMP
4691 024716 000410          BR     400$          ;EXIT FROM SUB TEST
4692
4693 024720 032737 000200 002326 200$: BIT    #CS1.RDY,R.CS1 ;TEST FOR RDY RESET
4694 024726 001404          BEQ    400$          ;RDY RESET: CONTINUE
4695
4696 024730          ERRHRD  5,M.RDY1,ER.DMP      ;'MBC RDY NOT RESET BY IRY'
024730 104456          TRAP    C$ERHRD
024732 000005          .WORD   5
024734 011750          .WORD   M.RDY1
024736 015074          .WORD   ER.DMP
4697
4698 024740          400$: ENDSUB
024740          L10063:
024740 104403        TRAP    C$ESUB

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 139  
TEST 10: CHECK WORD TRANSFER LOGIC

```

4700 024742          STARS
                    :*****
4701                :
4702                :
4703                :
4704                :
4705                :
4706 024742          STARS
                    :*****
4707 024742          :
   024742          :
   024742 104402     :
                    :
4708                :
4709 024744 012777 000020 155336 100$: MOV   #IS.CYC,@A.IS      ;ISSUE CYCLE REQUEST AND WAIT
4710 024752 004737 015444                JSR   PC,TSTINT      ;TEST FOR INTERRUPT OR TIME OUT
4711                :
4712 024756 004737 015606                JSR   PC,RDREG      ;READ REGISTERS
4713 024762 032737 000200 002340        BIT   #IS.IRY,R.IS  ;TEST FOR IRY SET
4714 024770 001005                BNE   200$           ;IRY SET: CONTINUE
4715                :
4716 024772          ERPHRD 6,M.IRY4,ER.DMP ;"IRY NOT SET BY WORD XFER EBL"
   024772 104456     TRAP   C$ERHRD
   024774 000006     .WORD  6
   024776 011246     .WORD  M.IRY4
   025000 015074     .WORD  ER.DMP
4717 025002 000410     BR     400$           ;EXIT SUB TEST
4718                :
4719 025004 032737 000200 002326 200$: BIT   #IS.IRY,R.CS1  ;TEST FOR RDY SET
4720 025012 001004                BNE   400$           ;RDY SET: CONTINUE
4721                :
4722 025014          ERPHRD 7,M.RDY2,ER.DMP ;'MBC RDY BIT NOT SET BY IRY'
   025014 104456     TRAP   C$ERHRD
   025016 000007     .WORD  7
   025020 012024     .WORD  M.RDY2
   025022 015074     .WORD  ER.DMP
4723                :
4724 025024          400$: ENDSUB
   025024          L10064:
   025024 104403     TRAP   C$ESUB
4725                :
4726 025026 004737 015324                JSR   PC,CLRISR    ;CLEAR VECTOR
4727                :
4728 025032 004737 015550                JSR   PC,CLRTST   ;AND CLEAR TEST DATA
4729                :
4730 025036          L10061:
   025036          ENDTST
   025036 104401     TRAP   C$ETST

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 140  
TEST 11: CHECK INTERRUPT ON WORD TRANSFER

4732  
4733 025040  
  
4734  
4735  
4736  
4737  
4738  
4739  
4740  
4741  
4742  
4743  
4744  
4745  
4746  
4747  
4748  
4749  
4750 025040

```
.SBTTL TEST 11: CHECK INTERRUPT ON WORD TRANSFER
STARS
*****
TEST DESCRIPTION:
CHECK THAT INTERRUPT WAS RECEIVED ON DATA TRANSFER COMPLETION
TEST STEPS:
IF NOT BYTE MODE THEN:
CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR
SETUP INTERRUPT SERVICE ROUTINE VECTOR AND INIT BLOCK SIZE
EXECUTE SUBTEST 1-2 AND CLEAR VECTOR
ERROR CONDITIONS:
MASSBUS CONTROLLER CLEAR ERROR
NO INTERRUPT ON DATA TRANSFER COMPLETE
STARS
*****
```

4751  
4752 025040  
025040

```
BGNTST
T11::
```

4753  
4754 000010  
4755  
4756 025040 013700 003010  
4757 025044 032700 000010  
4758 025050 001402  
4759  
4760 025052  
025052 104132  
025054 000242  
  
4761  
4762 025056 004737 015342  
4763 025062 005737 003030  
4764 025066 001405  
4765  
4766 025070  
025070 104455  
025072 000001  
025074 011650  
025076 015074  
  
4767 025100  
025100 104444  
  
4768  
4769 025102 004737 015274  
4770

```
SELTEST = B.BYTE
50$: MOV SELECT,R0 ;LOAD TEST SELECT WORD
BIT #SELTEST,R0 ;TEST BYTE MODE
BEQ 75$ ;CONTINUE IF NOT BYTE MODE
EXIT TST ;NO: EXIT TEST
TRAP C$EXIT
.WORD L10065-.
75$: JSR PC,CLRMBBC ;CLEAR MASSBUS CONTROLLER
TST MBCFLG ;TEST FLAG FOR ERROR
BEQ 100$ ;CONTINUE IF NO ERROR
ERRDF 1,M.MBC1,ER.DMP ;DEVICE FATAL
TRAP C$ERDF
.WORD 1
.WORD M.MBC1
.WORD ER.DMP
DOCLN ;CLEAN UP AND EXIT
TRAP C$DCLN
100$: JSR PC,SETISR ;SETUP INTERRUPT SERVICE VECTOR
```



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 141  
TEST 11: CHECK INTERRUPT ON WORD TRANSFER

4772 025106

STARS

\*\*\*\*\*

4773

4774

4775

4776

4777

4778 025106

STARS

\*\*\*\*\*

SUBTEST 1:

WRITE BLOCK TO INTERFACE  
CHECK FOR INTERRUPT RECEIVED

4779 025106

025106

025106 104402

T11.1:

BGNSUB

TRAP C\$BSUB

4780

4781 025110 012700 177740

4782 025114 004737 015674

4783 025120 004737 015410

4784 025124 005737 003030

4785 025130 001405

4786

4787 025132

025132 104456

025134 000002

025136 007324

025140 015074

4788 025142 000420

4789

4790 025144 032737 000200 002340 150\$:

4791 025152 001005

4792

4793 025154

025154 104456

025156 000003

025160 007271

025162 015074

4794 025164 000407

4795

4796 025166 005737 003022

4797 025172 001004

4798

4799 025174

025174 104456

025176 000004

025200 010706

025202 015074

4800

4801 025204

025204

025204 104403

400\$:  
L10066:

ENDSUB

TRAP C\$ESUB

MOV #-40,R0  
JSR PC,WRIBLK  
JSR PC,TSTMBC  
TST MBCFLG  
BEQ 150\$

ERRHRD 2,M.WRD2,ER.DMP  
TRAP C\$ERHRD  
.WORD 2  
.WORD M.WRD2  
.WORD ER.DMP  
BR 400\$

BIT #IS.IRY,R.IS  
BNE 200\$

ERRHRD 3,M.WRD1,ER.DMP  
TRAP C\$ERHRD  
.WORD 3  
.WORD M.WRD1  
.WORD ER.DMP  
BR 400\$

TST INTFLG  
BNE 400\$

ERRHRD 4,M.INT1,ER.DMP  
TRAP C\$ERHRD  
.WORD 4  
.WORD M.INT1  
.WORD ER.DMP

;LOAD BLOCK SIZE = 64 WORDS  
;WRITE BLOCK TO INTERFACE  
;READ REGISTERS AND TEST FOR ERROR  
;TEST FOR ERROR  
;BRANCH IF NO ERROR

;'XFER ERROR ON INTERFACE WRITE''

;EXIT SUBTEST

;TEST FOR IRY BIT SET  
;IRY SET: CONTINUE

;'DATA TRANSFER NOT COMPLETE''

;EXIT SUB TEST

;TEST FOR INTERRUPT RECEIVED  
;BRANCH IF NOT ZERO

;'NO INTERRUPT ON WORD XFER EBL''

;WRITE BLOCK



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 142  
 TEST 11: CHECK INTERRUPT ON WORD TRANSFER

```

4803 025206          STARS
                     :*****
4804
4805
4806
4807
4808
4809 025206          STARS
                     :*****
4810 025206          BGNSUB
025206
025206 104402        T11.2: TRAP    C$BSUB
4811
4812 025210 012700 177740      MOV    #-40,R0          ;LOAD BLOCK SIZE = 64 WORDS
4813 025214 004737 015642      JSR    PC,RDBLK        ;READ BLOCK FROM INTERFACE
4814 025220 004737 015410      JSR    PC,TSTMBC       ;READ REGISTERS AND TEST FOR ERROR
4815 025224 005737 003030      TST    MBCFLG         ;TEST FOR ERROR
4816 025230 001405          BEQ    150$           ;BRANCH IF NO ERROR
4817
4818 025232          ERRHRD 5,M.WRD3,ER.DMP      ;'XFER ERROR ON INTERFACE READ'
025232 104456        TRAP    C$ERHRD
025234 000005        .WORD  5
025236 007373        .WORD  M.WRD3
025240 015074        .WORD  ER.DMP
4819 025242 000420        BR     400$           ;EXIT SUBTEST
4820
4821 025244 032737 000200 002340 150$: BIT    #IS.IRY,R.IS      ;TEST FOR IRY BIT SET
4822 025252 001005          BNE    200$           ;IRY SET: CONTINUE
4823
4824 025254          ERRHRD 6,M.WRD1,ER.DMP      ;'DATA TRANSFER NOT COMPLETE'
025254 104456        TRAP    C$ERHRD
025256 000006        .WORD  6
025260 007271        .WORD  M.WRD1
025262 015074        .WORD  ER.DMP
4825 025264 000407        BR     400$           ;EXIT SUB TEST
4826
4827 025266 005737 003022        200$: TST    INTFLG        ;TEST FOR INTERRUPT RECEIVED
4828 025272 001004          BNE    400$           ;BRANCH IF NOT ZERO
4829
4830 025274          ERRHRD 7,M.INT1,ER.DMP      ;'NO INTERRUPT ON WORD XFER EBL'
025274 104456        TRAP    C$ERHRD
025276 000007        .WORD  7
025300 010706        .WORD  M.INT1
025302 015074        .WORD  ER.DMP
4831
4832 025304          400$: ENDSUB                ;READ BLOCK
025304          L10067: TRAP    C$ESUB
025304 104403
4833
4834 025306 004737 015324        JSR    PC,CLRISR       ;AND RESTORE VECTOR ADDRESS
4835
4836 025312 004737 015550        JSR    PC,CLRTST       ;AND CLEAR TEST DATA
4837
4838 025316          L10065: ENDTST
025316          TRAP    C$ETST
025316 104401

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 143  
TEST 12: CHECK WORD BLOCK DATA TRANSFER

4840  
4841 025320

.SBTTL TEST 12: CHECK WORD BLOCK DATA TRANSFER  
STARS

4842  
4843  
4844  
4845  
4846  
4847  
4848  
4849  
4850  
4851  
4852  
4853  
4854  
4855  
4856  
4857  
4858  
4859  
4860  
4861  
4862  
4863  
4864 025320

\*\*\*\*\*  
TEST DESCRIPTION:  
PERFORM 64-WORD DMA DATA TRANSFERS,  
COMPARE DATA READ AGAINST DATA WRITTEN  
TEST STEPS:  
IF NOT BYTE MODE THEN:  
SETUP INTERRUPT SERVICE ROUTINE VECTOR  
INITIALIZE TRANSFER PARAMETERS AND  
EXECUTE SUBTEST 1-4 AND CLEAR INTERRUPT VECTOR  
ERROR CONDITIONS:  
MASSBUS CONTROLLER ERROR STATUS  
DATA TRANSFER NOT COMPLETE  
NO INTERRUPT ON DATA TRANSFER COMPLETE  
DATA RECEIVED DOES NOT MATCH EXPECTED DATA  
PROMPTS:  
CHECK THAT SW1-7 IS IN THE 'ON' POSITION.  
STARS  
\*\*\*\*\*

4865  
4866 025320  
025320

BGNTST  
T12::

4867  
4868 000010  
4869  
4870 025320 013700 003010  
4871 025324 032700 000010  
4872 025330 001402  
4873  
4874 025332  
025332 104432  
025334 002176  
4875  
4876 025336 004737 015274  
4877 025342 012737 177700 002506  
4878 025350 012737 000200 002512  
4879 025356 012737 000001 002510  
4880  
4881 025364

SELTEST = B.BYTE  
MOV SELECT,R0 ;READ SELECT WORD  
BIT #SELTEST,R0 ;AND TEST BYTE MODE BIT SET  
BEQ 50\$ ;BRANCH IF NOT SET  
EXIT TST ;BYTE MODE: EXIT TEST  
TRAP C\$EXIT  
.WORD L10070-  
50\$: JSR PC,SETISR ;SETUP INTERRUPT SERVICE VECTOR  
MOV #-100,D.BLOCK ;INITIALIZE BLOCK SIZE  
MOV #200,D.MAX ;INITIALIZE MAX DATA BUFFER INDEX  
MOV #1,D.LPCNT ;INITIALIZE LOOP COUNTER  
LP.WXFR: ;TRANSFER LOOP LABEL

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 144  
TEST 12: CHECK WORD BLOCK DATA TRANSFER

4883 025364

STARS

\*\*\*\*\*

4884  
4885  
4886  
4887  
4888  
4889  
4890  
4891  
4892  
4893  
4894  
4895  
4896  
4897  
4898  
4899  
4900

SUBTEST 1:

CLEAR THE MASSBUS CONTROLLER AND CHECK FOR ERROR  
SETUP DATA BUFFER FOR ALL ONE'S

INITIALIZE REGISTERS FOR WRITE W/INT ENABLE  
SET CYCLE REQUEST, DELAY AND READ REGISTERS  
CHECK FOR ERROR STATUS AND CHECK FOR INTERRUPT  
IF ERROR OR NO INTERRUPT THEN: EXIT SUBTEST

INITIALIZE REGISTERS FOR READ W/INT ENABLE  
SET CYCLE REQUEST, DELAY AND READ REGISTERS  
CHECK FOR ERROR STATUS AND CHECK FOR INTERRUPT  
IF ERROR OR NO INTERRUPT THEN: EXIT SUBTEST

COMPARE DATA READ AGAINST DATA WRITTEN

4901 025364

STARS

\*\*\*\*\*

4902

4903 025364

025364

104402

4904

4905 025366

004737

015342

4906 025372

005737

003030

4907 025376

001405

4908

4909 025400

025400

104455

025402

000001

025404

011650

025406

015074

4910 025410

025410

104444

4911

4912 025412

005002

4913

4914 025414

012762

177777

004054

4915 025422

012762

000000

003054

4916 025430

062702

000002

4917 025434

023702

002512

4918 025440

003365

4919

4920 025442

012700

177700

4921 025446

004737

015674

4922 025452

004737

015410

4923 025456

005737

003022

4924 025462

001005

4925

4926 025464

025464

104456

025466

000002

025470

010706

025472

015074

T12.1: BGNSUB

TRAP CSBSUB

JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER  
TST MBCFLG ;TEST FLAG FOR ERROR  
BEQ 100\$ ;CONTINUE IF NO ERROR

ERRDF 1,M.MBC1,ER.DMP ;DEVICE FATAL

TRAP C\$ERDF

.WORD 1

.WORD M.MBC1

.WORD ER.DMP

DOCLN ;CLEAN UP AND EXIT

TRAP C\$DCLN

100\$: CLR R2 ;CLEAR BUFFER INDEX REGISTER

150\$: MOV #-1,OBUF(R2) ;LOAD ONES INTO BUFFER  
MOV #0,IBUF(R2) ;CLEAR INPUT BUFFER  
ADD #2,R2 ;AND BUMP INDEX  
CMP D.MAX,R2 ;COMPARE WITH MAX BUFFER INDEX  
BGT 150\$ ;CONTINUE UNTIL BUFFER INITIALIZED

200\$: MOV #-100,R0 ;LOAD BLOCK SIZE = 64 WORDS  
JSR PC,WRIBLK ;WRITE BLOCK TO INTERFACE  
JSR PC,TSTMBC ;READ REGISTERS AND TEST ERRORS  
TST INTFLG ;TEST FOR INTERRUPT  
BNE 250\$ ;BRANCH IF INTERRUPT RECEIVED

ERRHRD 2,M.INT1,ER.DMP ;'NOT INTERRUPT ON WORD XFER EBL''

TRAP C\$ERHRD

.WORD 2

.WORD M.INT1

.WORD ER.DMP



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 144-1  
 TEST 12: CHECK WORD BLOCK DATA TRANSFER

4927	025474	000407		BR	300\$		:EXIT SEGMENT
4928							
4929	025476	005737	003030	250\$: TST	MBCFLG		:TEST FOR ERROR
4930	025502	001404		BEQ	300\$		:CONTINUE IF RESET
4931							
4932	025504			ERRHRD	3,M.WRD2,ER.DMP		: 'WORD XFER ERROR ON INTERFACE WRITE'
	025504	104456		TRAP	C\$ERHRD		
	025506	000003		.WORD	3		
	025510	007324		.WORD	M.WRD2		
	025512	015074		.WORD	ER.DMP		
4933							
4934	025514	012700	177700	300\$: MOV	#-100,R0		:LOAD BLOCK SIZE = 64 WORDS
4935	025520	004737	015642	JSR	PC,RDBLK		:READ BLOCK FROM INTERFACE
4936	025524	004737	015410	JSR	PC,TSTMBC		:READ REGISTERS AND TEST ERRORS
4937	025530	005737	003022	TST	INTFLG		:TEST FOR INTERRUPT
4938	025534	001005		BNE	350\$		:BRANCH IF INTERRUPT RECEIVED
4939							
4940	025536			ERRHRD	4,M.INT1,ER.DMP		: 'NOT INTERRUPT ON WORD XFER EBL'
	025536	104456		TRAP	C\$ERHRD		
	025540	000004		.WORD	4		
	025542	010706		.WORD	M.INT1		
	025544	015074		.WORD	ER.DMP		
4941	025546	000407		BR	400\$		:EXIT SEGMENT
4942							
4943	025550	005737	003030	350\$: TST	MBCFLG		:TEST FOR ERROR
4944	025554	001404		BEQ	400\$		:CONTINUE IF RESET
4945							
4946	025556			ERRHRD	5,M.WRD3,ER.DMP		: 'WORD XFER ERROR ON INTERFACE READ'
	025556	104456		TRAP	C\$ERHRD		
	025560	000005		.WORD	5		
	025562	007373		.WORD	M.WRD3		
	025564	015074		.WORD	ER.DMP		



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 145  
 TEST 12: CHECK WORD BLOCK DATA TRANSFER

```

4948
4949 025566 005002          400$: CLR      R2          :CLEAR BUFFER INDEX REGISTER
4950 025570 005037 003026  CLR      ERRFLG       :CLEAR ERROR COUNT
4951
4952 025574 026262 003054 004054 425$: CMP      IBUF(R2),OBUF(R2) :COMPARE DATA
4953 025602 001431          BEQ      475$         :IDENTICAL: CONTINUE
4954
4955 025604 005737 003026          TST      ERRFLG       :TEST ERROR COUNT
4956 025610 001006          BNE      450$         :BRANCH IF NOT FIRST ERROR
4957
4958 025612          ERRHRD  6,M.WRD4,ER.DATA :'DATA COMPARISON ERROR'
      025612 104456  TRAP    C$ERHRD
      025614 000006  .WORD   6
      025616 007441  .WORD   M.WRD4
      025620 015172  .WORD   ER.DATA
4959 025622 010237 003002  MOV      R2,ERRNDX    :SAVE DATA ERROR INDEX
4960
4961 025626 005237 003026          450$: INC      ERRFLG       :BUMP ERROR COUNT
4962 025632 022737 000010 003026  CMP      #8,ERRFLG    :COMPARE WITH MAX ERROR COUNT
4963 025640 002412          BLT      475$         :BRANCH IF MAX LESS THAN COUNT
4964
4965 025642 010237 002742          MOV      R2,FP.NDX    :SAVE DATA INDEX
4966 025646 016237 003054 002736  MOV      IBUF(R2),FP.ACT :SAVE RECEIVED DATA
4967 025654 016237 004054 002734  MOV      OBUF(R2),FP.EXP :SAVE DATA SENT
4968 025662 004737 016374          JSR      PC,DSPDATA   :AND DISPLAY DATA
4969
4970 025666 062702 000002          475$: ADD      #2,R2      :BUMP INDEX
4971 025672 023702 002512          CMP      D,MAX,R2     :COMPARE WITH MAX BUFFER INDEX
4972 025676 003336          BGT      425$         :CONTINUE UNTIL INDEX EQUALS MAX
4973
4974 025700 005737 003026          500$: TST      ERRFLG       :TEST NUMBER ERRORS
4975 025704 001434          BEQ      600$         :BRANCH IF NO ERRORS
4976
4977 025706          PRINTX  #F.ERCNT,ERRFLG :PRINT SUBTEST ERROR COUNT
      025706 013746 003026  MOV      ERRFLG,-(SP)
      025712 012746 013304  MOV      #F.ERCNT,-(SP)
      025716 012746 000002  MOV      #2,-(SP)
      025722 010600          MOV      SP,R0
      025724 104415          TRAP    C$PNTX
      025726 062706 000006  ADD      #6,SP
      025732 005237 003004  INC      ERRCNT       :ADD TO TEST ERROR COUNT
4978
4979
4980 025736 022737 000040 003026  CMP      #40,ERRFLG   :TEST FOR 32 COMPARISON ERRORS
4981 025744 001014          BNE      600$         :NO: EXIT SUBTEST
4982 025746 022737 000100 003002  CMP      #100,ERRNDX  :TEST FOR 33RD WORD IN ERROR
4983 025754 001010          BNE      600$         :NO: EXIT SUBTEST
4984
4985 025756          PRINTB  #F.MODE      :PROMPT OPERATOR TO CHECK SW1-7
      025756 012746 013340  MOV      #F.MODE,-(SP)
      025762 012746 000001  MOV      #1,-(SP)
      025766 010600          MOV      SP,R0
      025770 104414          TRAP    C$PNTB
      025772 062706 000004  ADD      #4,SP
4986
4987 025776          600$: ENDSUB
      025776          L10071:
      025776 104403          TRAP    C$ESUB

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 146  
 TEST 12: CHECK WORD BLOCK DATA TRANSFER

4989 026000

STARS

\*\*\*\*\*

4990

SUBTEST 2:

4991

CLEAR THE MASSBUS CONTROLLER AND CHECK FOR ERROR  
 SETUP DATA BUFFER FOR ALL ZERO'S

4992

INITIALIZE REGISTERS FOR WRITE W/INT ENABLE  
 SET CYCLE REQUEST, DELAY AND READ REGISTERS  
 CHECK FOR ERROR STATUS AND CHECK FOR INTERRUPT  
 IF ERROR OR NO INTERRUPT THEN: EXIT SUBTEST

4993

4994

4995

4996

4997

4998

4999

5000

5001

5002

5003

5004

5005

5006

5007 026000

STARS

\*\*\*\*\*

5008 026000

BGNSUB

026000

T12.2:

026000 104402

TRAP C\$BSUB

5009

5010 026002

004737

015342

JSR PC,CLRMBC

;CLEAR MASSBUS CONTROLLER

5011 026006

005737

003030

TST MBCFLG

;TEST FLAG FOR ERROR

5012 026012

001405

BEQ 100\$

;CONTINUE IF NO ERROR

5013

5014 026014

104455

ERRDF 7,M.MBC1,ER.DMP

;DEVICE FATAL

026014 104455

TRAP C\$ERDF

026016 000007

.WORD 7

026020 011650

.WORD M.MBC1

026022 015074

.WORD ER.DMP

5015 026024

104444

DOCLN

;CLEAN UP AND EXIT

5016

5017 026026

005002

100\$:

CLR R2

;CLEAR BUFFER INDEX REGISTER

5018

5019 026030

012762

000000

004054

150\$:

MOV #0,obuf(R2)

;LOAD ZERO'S INTO BUFFER

5020 026036

012762

000000

003054

MOV #0,ibuf(R2)

;CLEAR INPUT BUFFER

5021 026044

062702

000002

ADD #2,R2

;AND BUMP INDEX

5022 026050

023702

002512

CMP D,MAX,R2

;COMPARE WITH MAX BUFFER INDEX

5023 026054

003365

BGT 150\$

;CONTINUE UNTIL BUFFER INITIALIZED

5024

5025 026056

012700

177700

200\$:

MOV #-100,R0

;LOAD BLOCK SIZE = 64 WORDS

5026 026062

004737

015674

JSR PC,WRTBLK

;WRITE BLOCK TO INTERFACE

5027 026066

004737

015410

JSR PC,TSTMBC

;READ REGISTERS AND TEST ERRORS

5028 026072

005737

003022

TST INTFLG

;TEST FOR INTERRUPT

5029 026076

001005

BNE 250\$

;BRANCH IF INTERRUPT RECEIVED

5030

5031 026100

104456

ERRHRD 8,M.INT1,ER.DMP

; 'NO? INTERRUPT ON WORD XFER EBL'

026100 104456

TRAP C\$ERHRD

026102 000010

.WORD 8

026104 010706

.WORD M.INT1

026106 015074

.WORD ER.DMP

5032 026110

000407

BR 300\$

;EXIT SEGMENT

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 146-1  
 TEST 12: CHECK WORD BLOCK DATA TRANSFER

5033									
5034	026112	005737	003030	250\$:	TST	MBCFLG			;TEST FOR ERROR
5035	026116	001404			BEQ	300\$			;CONTINUE IF RESET
5036									
5037	026120				ERRHRD	9,M.WRD2,ER.DMP			;'WORD XFER ERROR ON INTERFACE WRITE''
	026120	104456			TRAP	C\$ERHRD			
	026122	000011			.WORD	9			
	026124	007324			.WORD	M.WRD2			
	026126	015074			.WORD	ER.DMP			
5038									
5039	026130	012700	177700	300\$:	MOV	#-100,R0			;LOAD BLOCK SIZE = 64 WORDS
5040	026134	004737	015642		JSR	PC,RDBLK			;READ BLOCK FROM INTERFACE
5041	026140	004737	015410		JSR	PC,TSTMBC			;READ REGISTERS AND TEST ERRORS
5042	026144	005737	003022		TST	INTFLG			;TEST FOR INTERRUPT
5043	026150	001005			BNE	350\$			;BRANCH IF INTERRUPT RECEIVED
5044									
5045	026152				ERRHRD	10,M.INT1,ER.DMP			;'NO INTERRUPT ON WORD XFER EBL''
	026152	104456			TRAP	C\$ERHRD			
	026154	000012			.WORD	10			
	026156	010706			.WORD	M.INT1			
	026160	015074			.WORD	ER.DMP			
5046	026162	000407			BR	400\$			;EXIT SEGMENT
5047									
5048	026164	005737	003030	350\$:	TST	MBCFLG			;TEST FOR ERROR
5049	026170	001404			BEQ	400\$			;CONTINUE IF RESET
5050									
5051	026172				ERRHRD	11,M.WRD3,ER.DMP			;'WORD XFER ERROR ON INTERFACE READ''
	026172	104456			TRAP	C\$ERHRD			
	026174	000013			.WORD	11			
	026176	007373			.WORD	M.WRD3			
	026200	015074			.WORD	ER.DMP			



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 147  
 TEST 12: CHECK WORD BLOCK DATA TRANSFER

```

5053
5054 026202 005002          400$: CLR      R2          ;CLEAR BUFFER INDEX REGISTER
5055 026204 005037 003026  CLR      ERRFLG      ;CLEAR ERROR COUNT
5056
5057 026210 026262 003054 004054 425$: CMP      IBUF(R2),OBUF(R2) ;COMPARE DATA
5058 026216 001431          BEQ      475$         ;IDENTICAL: CONTINUE
5059
5060 026220 005737 003026          TST      ERRFLG      ;TEST ERROR COUNT
5061 026224 001006          BNE      450$         ;BRANCH IF NOT FIRST ERROR
5062
5063 026226          ERRHRD  12,M.WRD4,ER.DATA ;'DATA COMPARISON ERROR'
      026226 104456  TRAP   C$ERHRD
      026230 000014  .WORD  12
      026232 007441  .WORD  M.WRD4
      026234 015172  .WORD  ER.DATA
5064 026236 010237 003002  MOV      R2,ERRNDX   ;SAVE DATA ERROR INDEX
5065
5066 026242 005237 003026          450$: INC      ERRFLG      ;BUMP ERROR COUNT
5067 026246 022737 000010 003026  CMP      #8,ERRFLG   ;COMPARE WITH MAX ERROR COUNT
5068 026254 002412          BLT      475$         ;BRANCH IF MAX LESS THAN COUNT
5069
5070 026256 010237 002742          MOV      R2,FP.NDX   ;SAVE DATA INDEX
5071 026262 016237 003054 002736  MOV      IBUF(R2),FP.ACT ;SAVE RECEIVED DATA
5072 026270 016237 004054 002734  MOV      OBUF(R2),FP.EXP ;SAVE DATA SENT
5073 026276 004737 016374          JSR      PC,DSPDATA  ;AND DISPLAY DATA
5074
5075 026302 062702 000002          475$: ADD      #2,R2      ;BUMP INDEX
5076 026306 023702 002512          CMP      D.MAX,R2    ;COMPARE WITH MAX BUFFER INDEX
5077 026312 003336          BGT      425$         ;CONTINUE UNTIL INDEX EQUALS MAX
5078
5079
5080 026314 005737 003026          500$: TST      ERRFLG      ;TEST NUMBER ERRORS
5081 026320 001434          BEQ      600$         ;BRANCH IF NO ERRORS
5082
5083 026322          PRINTX #F.ERCNT,ERRFLG ;PRINT SUBTEST ERROR COUNT
      026322 013746 003026  MOV      ERRFLG,-(SP)
      026326 012746 013304  MOV      #F.ERCNT,-(SP)
      026332 012746 000002  MOV      #2,-(SP)
      026336 010600          MOV      SP,R0
      026340 104415  TRAP   C$PNTX
      026342 062706 000006  ADD      #6,SP
5084 026346 005237 003004          INC      ERRCNT      ;ADD TO TEST ERROR COUNT
5085
5086 026352 022737 000040 003026  CMP      #40,ERRFLG  ;TEST FOR 32 COMPARISON ERRORS
5087 026360 001014          BNE      600$         ;NO: EXIT SUBTEST
5088 026362 022737 000100 003002  CMP      #100,ERRNDX ;TEST FOR 33RD WORD IN ERROR
5089 026370 001010          BNE      600$         ;NO: EXIT SUBTEST
5090
5091 026372          PRINTB #F.MODE      ;PROMPT OPERATOR TO CHECK SW1-7
      026372 012746 013340  MOV      #F.MODE,-(SP)
      026376 012746 000001  MOV      #1,-(SP)
      026402 010600          MOV      SP,R0
      026404 104414  TRAP   C$PNTB
      026406 062706 000004  ADD      #4,SP
5092
5093 026412          600$: ENDSUB
      026412          L10072:

```



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 147-1  
TEST 12: CHECK WORD BLOCK DATA TRANSFER

026412 104403

TRAP C\$ESUB

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 148  
TEST 12: CHECK WORD BLOCK DATA TRANSFER

5095 026414

STARS

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5096  
5097  
5098  
5099  
5100  
5101  
5102  
5103  
5104  
5105  
5106  
5107  
5108  
5109  
5110  
5111  
5112

SUBTEST 3:

CLEAR THE MASSBUS CONTROLLER AND CHECK FOR ERROR  
SETUP DATA BUFFER WITH MOVING ONE PATTERN

INITIALIZE REGISTERS FOR WRITE W/INT ENABLE  
SET CYCLE REQUEST, DELAY AND READ REGISTERS  
CHECK FOR ERROR STATUS AND CHECK FOR INTERRUPT  
IF ERROR OR NO INTERRUPT THEN: EXIT SUBTEST

INITIALIZE REGISTERS FOR READ W/INT ENABLE  
SET CYCLE REQUEST, DELAY AND READ REGISTERS  
CHECK FOR ERROR STATUS AND CHECK FOR INTERRUPT  
IF ERROR OR NO INTERRUPT THEN: EXIT SUBTEST

COMPARE DATA READ AGAINST DATA WRITTEN

5113 026414

STARS

\*\*\*\*\*

5114 026414  
026414  
026414 104402

T12.3:

BGNSUB ;MOVING ONE PATTERN

TRAP CSBSUB

5115  
5116 026416 004737 015342  
5117 026422 005737 003030  
5118 026426 001405  
5119

JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER  
TST MBCFLG ;TEST FLAG FOR ERROR  
BEQ 100\$ ;CONTINUE IF NO ERROR

5120 026430  
026430 104455  
026432 000015  
026434 011650  
026436 015074

ERRDF 13,M.MBC1,ER.DMP ;DEVICE FATAL  
TRAP CSERDF  
.WORD 13  
.WORD M.MBC1  
.WORD ER.DMP

5121 026440  
026440 104444

DOCLN ;CLEAN UP AND EXIT  
TRAP CSDCLN

5122  
5123 026442 005002  
5124 026444 012705 000004  
5125

100\$: CLR R2 ;CLEAR BUFFER INDEX REGISTER  
MOV #4,R5 ;INITIALIZE COUNTER

5126 026450 012704 000001  
5127

125\$: MOV #1,R4 ;INITIALIZE PATTERN REGISTER

5128 026454 010462 004054  
5129 026460 012762 000000 003054  
5130 026466 062702 000002  
5131 026472 023702 002512  
5132 026476 001404

150\$: MOV R4,OBUFF(R2) ;LOAD ONES INTO BUFFER  
MOV #0,IBUFF(R2) ;CLEAR INPUT BUFFER  
ADD #2,R2 ;AND BUMP INDEX  
CMP D.MAX,R2 ;COMPARE WITH MAX BUFFER INDEX  
BEQ 200\$ ;BRANCH IF END OF BUFFER

5133  
5134 026500 006304  
5135 026502 001364  
5136 026504 005305  
5137 026506 001360  
5138

ASL R4 ;SHIFT PATTERN  
BNE 150\$ ;NO: CONTINUE  
DEC R5 ;DECREMENT BLOCK COUNTER  
BNE 125\$ ;AND CONTINUE IF ANOTHER BLOCK

5139 026510 012700 177700  
5140 026514 004737 015674  
5141 026520 004737 015410  
5142 026524 005737 003022

200\$: MOV #-100,R0 ;LOAD BLOCK SIZE = 64 WORDS  
JSR PC,WRTBLK ;WRITE BLOCK TO INTERFACE  
JSR PC,TSTMBC ;READ REGISTERS AND TEST ERRORS  
TST INTFLG ;TEST FOR INTERRUPT

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 148-1  
 TEST 12: CHECK WORD BLOCK DATA TRANSFER

5143	026530	001005		BNE	250\$		:BRANCH IF INTERRUPT RECEIVED
5144							
5145	026532			ERRHRD	14,M.INT1,ER.DMP		: 'NO INTERRUPT ON WORD XFER EBL''
	026532	104456		TRAP	C\$ERHRD		
	026534	000016		.WORD	14		
	026536	010706		.WORD	M.INT1		
	026540	015074		.WORD	ER.DMP		
5146	026542	000407		BR	300\$		:EXIT SEGMENT
5147							
5148	026544	005737	003030	250\$:	TST	MBCFLG	:TEST FOR ERROR
5149	026550	001404		BEQ	300\$		:CONTINUE IF RESET
5150							
5151	026552			ERRHRD	15,M.WRD2,ER.DMP		: 'WORD XFER ERROR ON INTERFACE WRITE''
	026552	104456		TRAP	C\$ERHRD		
	026554	000017		.WORD	15		
	026556	007324		.WORD	M.WRD2		
	026560	015074		.WORD	ER.DMP		
5152							
5153	026562	012700	177700	300\$:	MOV	#-100,R0	:LOAD BLOCK SIZE = 64 WORDS
5154	026566	004737	015642	JSR	PC,RDBLK		:READ BLOCK FROM INTERFACE
5155	026572	004737	015410	JSR	PC,TSTMBC		:READ REGISTERS AND TEST ERRORS
5156	026576	005737	003022	TST	INTFLG		:TEST FOR INTERRUPT
5157	026602	001005		BNE	350\$		:BRANCH IF INTERRUPT RECEIVED
5158							
5159	026604			ERRHRD	16,M.INT1,ER.DMP		: 'NO INTERRUPT ON WORD XFER EBL''
	026604	104456		TRAP	C\$ERHRD		
	026606	000020		.WORD	16		
	026610	010706		.WORD	M.INT1		
	026612	015074		.WORD	ER.DMP		
5160	026614	000407		BR	400\$		:EXIT SEGMENT
5161							
5162	026616	005737	003030	350\$:	TST	MBCFLG	:TEST FOR ERROR
5163	026622	001404		BEQ	400\$		:CONTINUE IF RESET
5164							
5165	026624			ERRHRD	17,M.WRD3,ER.DMP		: 'WORD XFER ERROR ON INTERFACE READ''
	026624	104456		TRAP	C\$ERHRD		
	026626	000021		.WORD	17		
	026630	007373		.WORD	M.WRD3		
	026632	015074		.WORD	ER.DMP		



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 149  
 TEST 12: CHECK WORD BLOCK DATA TRANSFER

```

5167
5168 026634 005002          400$: CLR      R2          ;CLEAR BUFFER INDEX REGISTER
5169 026636 005037 003026  CLR      ERRFLG      ;CLEAR ERROR COUNT
5170
5171 026642 026262 003054 004054 425$: CMP      IBUF(R2),OBUF(R2) ;COMPARE DATA
5172 026650 001431          BEQ      475$         ;IDENTICAL: CONTINUE
5173
5174 026652 005737 003026          TST      ERRFLG      ;TEST ERROR COUNT
5175 026656 001006          BNE      450$         ;BRANCH IF NOT FIRST ERROR
5176
5177 026660          ERRHRD  18,M.WRD4,ER.DATA ;'DATA COMPARISON ERROR''
      026660 104456      TRAP   C$ERHRD
      026662 000022      .WORD  18
      026664 007441      .WORD  M.WRD4
      026666 015172      .WORD  ER.DATA
5178 026670 010237 003002          MOV      R2,ERRNDX   ;SAVE DATA ERROR INDEX
5179
5180 026674 005237 003026          450$: INC      ERRFLG      ;BUMP ERROR COUNT
5181 026700 022737 000010 003026  CMP      #8,ERRFLG   ;COMPARE WITH MAX ERROR COUNT
5182 026706 002412          BLT      475$         ;BRANCH IF MAX LESS THAN COUNT
5183
5184 026710 010237 002742          MOV      R2,FP.NDX   ;SAVE DATA INDEX
5185 026714 016237 003054 002736  MOV      IBUF(R2),FP.ACT ;SAVE RECEIVED DATA
5186 026722 016237 004054 002734  MOV      OBUF(R2),FP.EXP ;SAVE DATA SENT
5187 026730 004737 016374          JSR      PC,DSPDATA  ;AND DISPLAY DATA
5188
5189 026734 062702 000002          475$: ADD      #2,R2      ;BUMP INDEX
5190 026740 023702 002512          CMP      D.MAX,R2    ;COMPARE WITH MAX BUFFER INDEX
5191 026744 003336          BGT      425$         ;CONTINUE UNTIL INDEX EQUALS MAX
5192
5193
5194 026746 005737 003026          500$: TST      ERRFLG      ;TEST NUMBER ERRORS
5195 026752 001434          BEQ      600$         ;BRANCH IF NO ERRORS
5196
5197 026754          PRINTX  #F.ERCNT,ERRFLG ;PRINT SUBTEST ERROR COUNT
      026754 013746 003026  MOV      ERRFLG,-(SP)
      026760 012746 013304  MOV      #F.ERCNT,-(SP)
      026764 012746 000002  MOV      #2,-(SP)
      026770 010600          MOV      SP,R0
      026772 104415          TRAP   C$PNTX
      026774 062706 000006  ADD      #6,SP
5198 027000 005237 003004          INC      ERRCNT      ;ADD TO TEST ERROR COUNT
5199
5200 027004 022737 000040 003026  CMP      #40,ERRFLG  ;TEST FOR 32 COMPARISON ERRORS
5201 027012 001014          BNE      600$         ;NO: EXIT SUBTEST
5202 027014 022737 000100 003002  CMP      #100,ERRNDX ;TEST FOR 33RD WORD IN ERROR
5203 027022 001010          BNE      600$         ;NO: EXIT SUBTEST
5204
5205 027024          PRINTB  #F.MODE      ;PROMPT OPERATOR TO CHECK SW1-7
      027024 012746 013340  MOV      #F.MODE,-(SP)
      027030 012746 000001  MOV      #1,-(SP)
      027034 010600          MOV      SP,R0
      027036 104414          TRAP   C$PNTB
      027040 062706 000004  ADD      #4,SP
5206
5207 027044          600$: ENDSUB
      027044          L10073:

```



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 149-1  
TEST 12: CHECK WORD BLOCK DATA TRANSFER

027044 104403

TRAP C\$ESUB



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 150-1  
 TEST 12: CHECK WORD BLOCK DATA TRANSFER

5257	027162	004737	015410		JSR	PC,TSTMBC		:READ REGISTERS AND TEST ERRORS
5258	027166	005737	003022		TST	INTFLG		:TEST FOR INTERRUPT
5259	027172	001005			BNE	250\$		:BRANCH IF INTERRUPT RECEIVED
5260								
5261	027174				ERRHRD	20,M.INT1,ER.DMP		: 'NO INTERRUPT ON WORD XFER EBL'
	027174	104456			TRAP	C\$ERHRD		
	027176	000024			.WORD	20		
	027200	010706			.WORD	M.INT1		
	027202	015074			.WORD	ER.DMP		
5262	027204	000407			BR	300\$		:EXIT SEGMENT
5263								
5264	027206	005737	003030	250\$:	TST	MBCFLG		:TEST FOR ERROR
5265	027212	001404			BEQ	300\$		:CONTINUE IF RESET
5266								
5267	027214				ERRHRD	21,M.WRD2,ER.DMP		: 'WORD XFER ERROR ON INTERFACE WRITE'
	027214	104456			TRAP	C\$ERHRD		
	027216	000025			.WORD	21		
	027220	007324			.WORD	M.WRD2		
	027222	015074			.WORD	ER.DMP		
5268								
5269	027224	012700	177700	300\$:	MOV	#-100,R0		:LOAD BLOCK SIZE = 64 WORDS
5270	027230	004737	015642		JSR	PC,RDBLK		:READ BLOCK FROM INTERFACE
5271	027234	004737	015410		JSR	PC,TSTMBC		:READ REGISTERS AND TEST ERRORS
5272	027240	005737	003022		TST	INTFLG		:TEST FOR INTERRUPT
5273	027244	001005			BNE	350\$		:BRANCH IF INTERRUPT RECEIVED
5274								
5275	027246				ERRHRD	22,M.INT1,ER.DMP		: 'NO INTERRUPT ON WORD XFER EBL'
	027246	104456			TRAP	C\$ERHRD		
	027250	000026			.WORD	22		
	027252	010706			.WORD	M.INT1		
	027254	015074			.WORD	ER.DMP		
5276	027256	000407			BR	400\$		:EXIT SEGMENT
5277								
5278	027260	005737	003030	350\$:	TST	MBCFLG		:TEST FOR ERROR
5279	027264	001404			BEQ	400\$		:CONTINUE IF RESET
5280								
5281	027266				ERRHRD	23,M.WRD3,ER.DMP		: 'WORD XFER ERROR ON INTERFACE READ'
	027266	104456			TRAP	C\$ERHRD		
	027270	000027			.WORD	23		
	027272	007373			.WORD	M.WRD3		
	027274	015074			.WORD	ER.DMP		







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TEST 12: CHECK WORD BLOCK DATA TRANSFER

5323

ZDRMAD DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 152  
 TEST 12: CHECK WORD BLOCK DATA TRANSFER

5325							
5326	027510	005337	002510		DEC	D.LPCNT	;DECREMENT LOOP COUNTER
5327	027514	001402			BEQ	800\$	;AND EXIT IF ZERO
5328	027516	000137	025364		JMP	LP.WXFR	;CONTINUE TRANSFER
5329							
5330	027522	004737	015324	800\$:	JSR	PC,CLRISR	;CLEAR INTERRUPT SERVICE VECTOR
5331							
5332	027526	004737	015550		JSR	PC,CLRTST	;AND CLEAR TEST DATA
5333							
5334	027532				ENDTST		
	027532			L10070:			
	027532	104401			TRAP	CSETST	

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 153  
TEST 13: CHECK WORD TRANSFER ABORT LOGIC (XABT)

5336  
5337 027534

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5354  
5355 027534

..SBTTL TEST 13: CHECK WORD TRANSFER ABORT LOGIC (XABT)

STARS

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TEST DESCRIPTION:

CHECK WORD MODE DATA TRANSFER ABORT LOGIC THROUGH XABT BIT

TEST STEPS:

IF NOT REV "A" AND NOT BYTE MODE THEN:  
SETUP INTERRUPT SERVICE ROUTINE VECTOR  
EXECUTE SUBTEST 1-2 AND CLEAR INTERRUPT SERVICE VECTOR

ERROR CONDITIONS:

MASSBUS CONTROLLER CLEAR ERROR  
NO WRITE/READ TRANSFER ABORT  
TRE NOT SET: ADJUST BANDWIDTH  
INTERFACE IRY BIT NOT SET BY TRANSFER ABORT

STARS

\*\*\*\*\*

5356  
5357 027534  
027534

BGNTST

T13::

5358  
5359 000210  
5360  
5361 027534 013700 003010  
5362 027540 032700 000210  
5363 027544 001402  
5364  
5365 027546  
027546 104432  
027550 000462

SELMASK = B.REVA + B.BYTE

MOV SELECT,R0 ;READ SELECT WORD  
BIT #SELMASK,R0 ;TEST FOR REVA OR BYTE BIT SET  
BEQ 50\$ ;BRANCH IF RESET

EXIT TST ;REVA OR BYTE MODE: EXIT TEST  
TRAP C\$EXIT  
.WORD L10075-

5366  
5367 027552 004737 015274  
5368 027556 013737 002406 002730  
5369 027564 013737 002436 002746  
5370

50\$: JSR PC,SETISR ;SETUP VECTOR  
MOV NA.CS1,FP.NAM ;LOAD REGISTER NAME ADDRESS  
MOV BA.CS1,FP.TBL ;LOAD REGISTER BIT TABLE ADDRESS  
;EXECUTE SUBTEST

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 154  
TEST 13: CHECK WORD TRANSFER ABORT LOGIC (XABT)

5372 027572

STARS

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5373

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5381 027572

SUBTEST 1:

CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR  
ISSUE INTERFACE WRITE CMD AND SET CYCLE REQUEST BIT  
DELAY A FEW CYCLES AND SET IS REGISTER XABT BIT  
READ REGISTERS, CHECK IRY BIT SET  
CHECK WORD COUNT LESS THAN ZERO, AND TRE BIT SET

STARS

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5382

5383 027572

027572

027572 104402

T13.1: BGNSUB

TRAP CSBSUB

5384

5385 027574 004737 015342

5386 027600 005737 003030

5387 027604 001405

5388

5389 027606

027606 104455

027610 000001

027612 011650

027614 015074

5390 027616

027616 104444

50\$:

JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER  
TST MBCFLG ;TEST FLAG FOR ERROR  
BEQ 100\$ ;CONTINUE IF NO ERROR

ERRDF 1,M.MBC1,ER.DMP ;DEVICE FATAL  
TRAP C\$ERDF

.WORD 1

.WORD M.MBC1

.WORD ER.DMP

DOCLN

TRAP C\$DCLN

;CLEAN UP AND EXIT

5391

5392 027620 012700 177600

5393 027624 004737 015762

5394 027630 012777 000161 152440

5395 027636 004737 016030

5396 027642 012777 000020 152440

5397 027650 004737 016016

5398

5399 027654 012777 004000 152426

5400 027662 004737 015444

5401 027666 004737 015606

5402

5403 027672 032737 000200 002340

5404 027700 001005

5405

5406 027702

027702 104456

027704 000002

027706 011320

027710 015074

5407 027712 000425

5408

5409 027714 005737 002330

5410 027720 100404

5411

5412 027722

027722 104456

027724 000003

027726 006375

100\$:

MOV #-200,R0 ;LOAD BLOCK SIZE = 128 WORDS  
JSR PC,WRTINI ;AND INITIALIZE ADDRESS REGISTERS  
MOV #WIE.CMD,@A.CS1 ;ISSUE WRITE COMMAND TO CS1  
JSR PC,SILODLY ;WAIT FOR SILO TO FILL  
MOV #IS.CYC,@A.IS ;SET IS REGISTER CYC BIT  
JSR PC,DMADLY ;DELAY A FEW CYCLES

MOV #IS.XABT,@A.IS ;SET IS REGISTER TRANSFER ABORT  
JSR PC,TSTINT ;WAIT FOR INTERRUPT OR TIME-OUT  
JSR PC,RDREG ;READ REGISTERS

BIT #IS.IRY,R.IS ;TEST FOR IRY BIT SET  
BNE 200\$ ;YES: CONTINUE

ERRHRD 2,M.IRY5,ER.DMP ;"IRY NOT SET BY WORD TRANSFER ABORT"  
TRAP C\$ERHRD

.WORD 2

.WORD M.IRY5

.WORD ER.DMP

BR 400\$

;EXIT SUBTEST

200\$:

TST R.WC ;TEST WORD COUNT  
BMI 300\$ ;IF LESS THAN ZERO THEN OK

ERRHRD 3,M.ABT1,ER.DMP ;"NO XFER ABORT ON INTERFACE WRITE"  
TRAP C\$ERHRD

.WORD 3

.WORD M.ABT1



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 154-1  
 TEST 13: CHECK WORD TRANSFER ABORT LOGIC (XABT)

5413	027730	015074			.WORD	ER.DMP		
5414	027732	012737	144260	002734	300\$:	MOV	#144260,FP.EXP	:EXPECTED VALUE: SC,TRE,DVA,RDY,WRITE
5415	027740	023737	002734	002326		CMP	FP.EXP,R.CS1	:COMPARE WITH EXPECTED MBA STATUS
5416	027746	001407				BEQ	400\$	:IF EQ THEN CONTINUE
5417								
5418	027750	013737	002326	002736		MOV	R.CS1,FP.ACT	:LOAD ACTUAL VALUE
5419	027756					ERRHRD	4,M.CSR2,ER.REG	: "CS1 REGISTER STATUS ERROR"
	027756	104456				TRAP	C\$ERHRD	
	027760	000004				.WORD	4	
	027762	007237				.WORD	M.CSR2	
	027764	015016				.WORD	ER.REG	
5420								
5421	027766				400\$:	ENDSUB		
	027766				L10076:			
	027766	104403				TRAP	C\$ESUB	

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 155  
TEST 13: CHECK WORD TRANSFER ABORT LOGIC (XABT)

5423 027770

STARS

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5424

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5429

5430

5431

5432

5433 027770

STARS

\*\*\*\*\*

SUBTEST 2:

CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR  
WRITE BLOCK TO INTERFACE AND CHECK FOR ERROR  
ISSUE INTERFACE READ CMD AND SET CYCLE REQUEST BIT  
DELAY A FEW CYCLES AND SET IS REGISTER XABT BIT  
READ REGISTERS, CHECK IRY BIT SET  
CHECK WORD COUNT LESS THAN ZERO, AND TRE BIT SET

5434

5435 027770

027770

027770 104402

5436

5437 027772 004737 015342

5438 027776 005737 003030

5439 030002 001405

5440

5441 030004

030004 104455

030006 000004

030010 011650

030012 015074

5442 030014

030014 104444

5443

5444 030016 012700 177700

5445 030022 004737 015674

5446 030026 004737 015410

5447 030032 005737 003030

5448

5449

5450 030040

030040 104456

030042 000005

030044 007324

030046 015074

5451 030050

030050 000463

T13.2: BGNSUB

TRAP C\$BSUB

50\$:

JSR PC,CLRMBC

TST MBCFLG

BEQ 100\$

:CLEAR MASSBUS CONTROLLER

:TEST FLAG FOR ERROR

:CONTINUE IF NO ERROR

ERRDF 4,M.MBC1,ER.DMP

TRAP C\$ERDF

.WORD 4

.WORD M.MBC1

.WORD ER.DMP

:DEVICE FATAL

DOCLN

TRAP C\$DCLN

:CLEAN UP AND EXIT

100\$:

MOV #-100,R0

JSR PC,WRTBLK

JSR PC,TSTMBC

TST MBCFLG

BEQ 150\$

:LOAD BLOCK SIZE = 64 WORDS

:WRITE BLOCK TO INTERFACE

:READ REGISTERS AND TEST ERRORS

:TEST FOR ERROR

:BRANCH IF NO ERROR

ERRHRD 5,M.WRD2,ER.DMP

TRAP C\$ERHRD

.WORD 5

.WORD M.WRD2

.WORD ER.DMP

: 'XFER ERROR ON INTERFACE WRITE'

BR 400\$

:EXIT SUBTEST

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 156  
 TEST 13: CHECK WORD TRANSFER ABORT LOGIC (XABT)

```

5453
5454 030052 012700 177600      150$:  MOV    #-200,R0      ;LOAD BLOCK SIZE = 128 WORDS
5455 030056 004737 015726      JSR    PC,RDINI      ;AND INITIALIZE ADDRESS REGISTERS
5456 030062 012777 000171 152206  MOV    #RIE.CMD,@A.CS1 ;ISSUE READ COMMAND TO CS1
5457 030070 004737 016030      JSR    PC,SILODLY    ;WAIT FOR SILO TO FILL
5458 030074 012777 000020 152206  MOV    #IS.CYC,@A.IS ;SET IS REGISTER CYC BIT
5459 030102 004737 016016      JSR    PC,DMADLY     ;DELAY A FEW CYCLES
5460
5461 030106 012777 004000 152174  MOV    #IS.XABT,@A.IS ;SET IS REGISTER TRANSFER ABORT
5462 030114 004737 015444      JSR    PC,TSTINT     ;WAIT FOR INTERRUPT OR TIME-OUT
5463 030120 004737 015606      JSR    PC,RDREG      ;READ REGISTERS
5464
5465 030124 032737 000200 002340  BIT    #IS.IRY,R.IS  ;TEST FOR IRY BIT SET
5466 030132 001005      BNE    200$         ;YES: CONTINUE
5467
5468 030134      ERRHRD 6,M.IRY5,ER.DMP ;"IRY NOT SET BY WORD TRANSFER ABORT"
      TRAP  C$ERHRD
      .WORD 6
      .WORD M.IRY5
      .WORD ER.DMP
5469 030144 000425      BR     400$        ;EXIT SUBTEST
5470
5471 030146 005737 002330      200$: TST    R.WC        ;TEST WORD COUNT
5472 030152 100404      BMI    300$        ;IF LESS THAN ZERO THEN OK
5473
5474 030154      ERRHRD 7,M.ABT2,ER.DMP ;"NO XFER ABORT ON INTERFACE READ"
      TRAP  C$ERHRD
      .WORD 7
      .WORD M.ABT2
      .WORD ER.DMP
5475
5476 030164 012737 144270 002734 300$: MOV    #144270,FP.EXP ;EXPECTED VALUE: SC,TRE,DVA,RDY,READ
5477 030172 023737 002734 002326  CMP    FP.EXP,R.CS1 ;COMPARE CS1 WITH EXPECTED STATUS
5478 030200 001407      BEQ    400$        ;IF EQ THEN CONTINUE
5479
5480 030202 013737 002326 002736  MOV    R.CS1,FP.ACT  ;LOAD ACTUAL VALUE
5481 030210      ERRHRD 8,M.CSR2,ER.REG ;"CS1 REGISTER STATUS ERROR"
      TRAP  C$ERHRD
      .WORD 8
      .WORD M.CSR2
      .WORD ER.REG
5482
5483
5484 030220      400$: ENDSUB
      L10077: TRAP  C$ESUB
5485
5486 030222 004737 015324      JSR    PC,CLRISR    ;CLEAR ISR VECTOR
5487
5488 030226 004737 015550      JSR    PC,CLRTST   ;AND CLEAR TEST DATA
5489
5490 030232      L10075: ENDTST
      L10075: TRAP  C$ETST
030232 104401

```



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 157  
TEST 14: CHECK WORD TRANSFER ABORT LOGIC (AT03)

5492  
5493 030234

.SBTTL TEST 14: CHECK WORD TRANSFER ABORT LOGIC (AT03)

STARS

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TEST DESCRIPTION:

CHECK WORD MODE DATA TRANSFER ABORT LOGIC THROUGH LOOP-BACK

TEST STEPS:

IF NOT REVA & NOT BYTE MODE & AT3 ABORT NOT DISABLED THEN:  
SETUP INTERRUPT SERVICE ROUTINE VECTOR  
EXECUTE SUBTEST 1-2 AND CLEAR VECTOR

ERROR CONDITIONS:

MASSBUS CONTROLLER CLEAR ERROR  
NO WRITE/READ TRANSFER ABORT  
TRE NOT SET: ADJUST BANDWIDTH  
INTERFACE IRY BIT NOT SET BY TRANSFER ABORT

STARS

\*\*\*\*\*

5512  
5513 030234  
030234

BGNTST

T14::

5514  
5515 000214  
5516  
5517 030234 013700 003010  
5518 030240 032700 000214  
5519 030244 001402  
5520  
5521 030246  
030246 104432  
030250 000476  
5522  
5523 030252 004737 015274  
5524 030256 013737 002406 002730  
5525 030264 013737 002436 002746  
5526

SELMASK = B.REVA + B.BYTE + B.ABORT

MOV SELECT,R0 ;READ SELECT WORD  
BIT #SELMASK,R0 ;TEST REVA,BYTE OR ABORT BIT SET  
BEQ 50\$ ;BRANCH IF ALL BITS RESET

EXIT TST ;EXIT TEST  
TRAP C\$EXIT  
.WORD L10100-

50\$: JSR PC,SETISR ;SETUP ISR VECTOR  
MOV NA.CS1,FP.NAM ;LOAD REGISTER NAME ADDRESS  
MOV BA.CS1,FP.TBL ;LOAD REGISTER BIT TABLE ADDRESS  
;EXECUTE SUBTEST



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 158  
 TEST 14: CHECK WORD TRANSFER ABORT LOGIC (AT03)

5528 030272

STARS

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5537 030272

SUBTEST 1:

CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR  
 ISSUE INTERFACE WRITE CMD AND SET CYCLE REQUEST BIT  
 DELAY A FEW CYCLES AND SET FS REGISTER FUNCTION BIT F3  
 READ REGISTERS, CHECK IRY BIT SET  
 CHECK WORD COUNT LESS THAN ZERO, AND TRE BIT SET

STARS

\*\*\*\*\*

5538

5539 030272

030272

030272 104402

T14.1: BGNSUB

TRAP C\$BSUB

5540

5541 030274 004737 015342

5542 030300 005737 003030

5543 030304 001405

5544

5545 030306

030306 104455

030310 000001

030312 011650

030314 015074

5546 030316

030316 104444

50\$:

JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER  
 TST MBCFLG ;TEST FLAG FOR ERROR  
 BEQ 100\$ ;CONTINUE IF NO ERROR

ERRDF 1,M.MBC1,ER.DMP ;DEVICE FATAL  
 TRAP C\$ERDF

.WORD 1

.WORD M.MBC1

.WORD ER.DMP

DOCLN TRAP ;CLEAN UP AND EXIT

C\$DCLN

5547

5548 030320 012700 177600

5549 030324 004737 015762

5550 030330 012777 000161 151740

5551 030336 004737 016030

5552 030342 012777 000020 151740

5553 030350 004737 016016

5554

5555 030354 012777 004000 151722

5556 030362 004737 015444

5557 030366 004737 015606

5558 030372 012777 000000 151704

5559

5560 030400 032737 000200 002340

5561 030406 001005

5562

5563 030410

030410 104456

030412 000002

030414 011320

030416 015074

5564 030420

030420 000425

5565

5566 030422 005737 002330

5567 030426 100404

5568

5569 030430

030430 104456

030432 000003

100\$:

MOV #-200,R0 ;LOAD BLOCK SIZE = 128 WORDS  
 JSR PC,WRTINI ;AND INITIALIZE ADDRESS REGISTERS  
 MOV #WIE.CMD,@A.CS1 ;ISSUE WRITE COMMAND TO CS1  
 JSR PC,SILODLY ;WAIT FOR SILO TO FILL  
 MOV #IS.CYC,@A.IS ;SET IS REGISTER CYC BIT  
 JSR PC,DMADLY ;DELAY A FEW CYCLES

MOV #FS.F3,@A.FS ;SET FS REGISTER FUNCTION BIT F3  
 JSR PC,TSTINT ;WAIT FOR INTERRUPT OR TIME-OUT  
 JSR PC,RDREG ;READ REGISTERS  
 MOV #0,@A.FS ;CLEAR FUNCTION / STATUS BITS

BIT #IS.IRY,R.IS ;TEST FOR IRY BIT SET  
 BNE 200\$ ;YES: CONTINUE

ERRHRD 2,M.IRY5,ER.DMP ;"IRY NOT SET BY WORD TRANSFER ABORT"

TRAP C\$ERHRD

.WORD 2

.WORD M.IRY5

.WORD ER.DMP

BR 400\$ ;EXIT SUBTEST

200\$:

TST R.WC ;TEST WORD COUNT  
 BMI 300\$ ;IF LESS THAN ZERO THEN OK

ERRHRD 3,M.ABT1,ER.DMP ;"NO XFER ABORT ON INTERFACE WRITE"

TRAP C\$ERHRD

.WORD 3

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 158-1  
 TEST 14: CHECK WORD TRANSFER ABORT LOGIC (AT03)

	030434	006375				.WORD	M.ABT1		
	030436	015074				.WORD	ER.DMP		
5570									
5571	030440	012737	144260	002734	300\$:	MOV	#144260,FP.EXP		;EXPECTED VALUE: SC,TRE,DVA,RDY,WRITE
5572	030446	023737	002734	002326		CMP	FP.EXP,R.CS1		;COMPARE CS1 WITH EXPECTED STATUS
5573	030454	001407				BEQ	400\$		;IF EQ THEN CONTINUE
5574									
5575	030456	013737	002326	002736		MOV	R.CS1,FP.ACT		;LOAD ACTUAL VALUE
5576	030464					ERRHRD	4,M.CSR2,ER.REG		; "CS1 REGISTER STATUS ERROR"
	030464	104456				TRAP	C\$ERHRD		
	030466	000004				.WORD	4		
	030470	007237				.WORD	M.CSR2		
	030472	015016				.WORD	ER.REG		
5577									
5578	030474				400\$:	ENDSUB			
	030474				L10101:				
	030474	104403				TRAP	C\$ESUB		

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 159  
TEST 14: CHECK WORD TRANSFER ABORT LOGIC (AT03)

5580 030476

STARS

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5581

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5589

5590 030476

STARS

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SUBTEST 2:

CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR  
WRITE BLOCK TO INTERFACE AND CHECK FOR ERRORS  
ISSUE INTERFACE WRITE CMD AND SET CYCLE REQUEST BIT  
DELAY A FEW CYCLES AND SET FS REGISTER FUNCTION BIT F5  
READ REGISTERS, CHECK IRY BIT SET  
CHECK WORD COUNT LESS THAN ZERO, AND TRE BIT SET

5591

5592 030476

030476

030476 104402

T14.2: BGNSUB

TRAP C\$BSUB

5593

5594 030500 004737 015342

5595 030504 005737 003030

5596 030510 001405

5597

5598 030512

030512 104455

030514 000004

030516 011650

030520 015074

5599 030522

030522 104444

5600

5601 030524 012700 177700

5602 030530 004737 015674

5603 030534 004737 015410

5604 030540 005737 003030

5605 030544 001405

5606

5607 030546

030546 104456

030550 000005

030552 007324

030554 015074

5608 030556 000466

50\$:

JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER  
TST MBCFLG ;TEST FLAG FOR ERROR  
BEQ 100\$ ;CONTINUE IF NO ERROR

ERRDF 4,M.MBC1,ER.DMP ;DEVICE FATAL

TRAP C\$ERDF

.WORD 4

.WORD M.MBC1

.WORD ER.DMP

DOCLN ;CLEAN UP AND EXIT

TRAP C\$DCLN

100\$:

MOV #-100,R0 ;LOAD BLOCK SIZE = 64 WORDS  
JSR PC,WRTBLK ;WRITE BLOCK TO INTERFACE  
JSR PC,TSTMBC ;READ REGISTERS AND TEST ERRORS  
TST MSCFLG ;TEST FOR ERROR  
BEQ 150\$ ;BRANCH IF NO ERROR

ERRHRD 5,M.WRD2,ER.DMP ;"XFER ERROR ON INTERFACE WRITE"

TRAP C\$ERHRD

.WORD 5

.WORD M.WRD2

.WORD ER.DMP

BR 400\$ ;EXIT SUBTEST



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 160  
 TEST 14: CHECK WORD TRANSFER ABORT LOGIC (AT03)

```

5610
5611 030560 012700 177600      150$: MOV    #-200,R0      ;LOAD BLOCK SIZE = 128 WORDS
5612 030564 004737 015726      JSR    PC,RDINI    ;AND INITIALIZE ADDRESS REGISTERS
5613 030570 012777 000171 151500  MOV    #RIE.CMD,@A.CS1 ;ISSUE READ COMMAND TO CS1
5614 030576 004737 016030      JSR    PC,SiLODLY  ;WAIT FOR SILO TO FILL
5615 030602 012777 000020 151500  MOV    #IS.CYC,@A.IS ;SET IS REGISTER CYC BIT
5616 030610 004737 016016      JSR    PC,DMADLY   ;DELAY A FEW CYCLES
5617
5618 030614 012777 004000 151462  MOV    #FS.F3,@A.FS ;SET FS REGISTER FUNCTION BIT F3
5619 030622 004737 015444      JSR    PC,TSTINT   ;WAIT FOR INTERRUPT OR TIME-OUT
5620 030626 004737 015606      JSR    PC,RDREG    ;READ REGISTERS
5621 030632 012777 000000 151444  MOV    #0,@A.FS    ;ZERO ALL FUNCTION BITS
5622
5623 030640 032737 000200 002340  BIT    #IS.IRY,R.IS ;TEST FOR IRY BIT SET
5624 030646 001005      BNE    200$        ;YES: CONTINUE
5625
5626 030650      ERRHRD 6,M.IRY5,ER.DMP ;"IRY NOT SET BY WORD TRANSFER ABORT"
      030650 104456      TRAP   C$ERHRD
      030652 000006      .WORD 6
      030654 011320      .WORD M.IRY5
      030656 015074      .WORD ER.DMP
5627 030660 000425      BR     400$
5628
5629 030662 005737 002330      200$: TST    R.WC        ;TEST WORD COUNT
5630 030666 100404      BMI    300$        ;IF LESS THAN ZERO THEN OK
5631
5632 030670      ERRHRD 7,M.ABT2,ER.DMP ;"NO XFER ABORT ON INTERFACE READ"
      030670 104456      TRAP   C$ERHRD
      030672 000007      .WORD 7
      030674 006447      .WORD M.ABT2
      030676 015074      .WORD ER.DMP
5633
5634 030700 012737 144270 002734 300$: MOV    #144270,FP.EXP ;EXPECTED VALUE: SC,TRE,DVA,RDY,READ
5635 030706 023737 002734 002326  CMP    FP.EXP,R.CS1 ;COMPARE CS1 WITH EXPECTED STATUS
5636 030714 001407      BEQ    400$        ;IF EQ THEN CONTINUE
5637
5638 030716 013737 002326 002736  MOV    R.CS1,FP.ACT ;LOAD ACTUAL VALUE
5639 030724      ERRHRD 8,M.CSR2,ER.REG ;"CS1 REGISTER STATUS ERROR"
      030724 104456      TRAP   C$ERHRD
      030726 000010      .WORD 8
      030730 007237      .WORD M.CSR2
      030732 015016      .WORD ER.REG
5640
5641 030734      400$: ENDSUB
      030734      L10102: TRAP   C$ESUB
      030734 104403
5642
5643 030736 004737 015324      JSR    PC,CLRISR   ;CLEAR VECTOR
5644
5645 030742 004737 015550      JSR    PC,CLRTST  ;AND CLEAR TEST DATA
5646
5647 030746      L10100: ENDTST
      030746      TRAP   C$ETST
      030746 104401

```



ZDRMAD DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 161  
TEST 15: CHECK BYTE TRANSFER LOGIC

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5650 030750

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5667  
5668  
5669 030750

5670 030750  
030750

5671  
5672 000010  
5673  
5674 030750 013700 003010  
5675 030754 032700 000010  
5676 030760 001002  
5677  
5678 030762  
030762 104432  
030764 000302  
5679  
5680 030766 004737 015342  
5681 030772 005737 003030  
5682 030776 001405  
5683  
5684 031000  
031000 104455  
031002 000001  
031004 011650  
031006 015074  
5685 031010  
031010 104444  
5686  
5687 031012 004737 015274  
5688

.SBTTL TEST 15: CHECK BYTE TRANSFER LOGIC

STARS

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TEST DESCRIPTION:

CHECK IRY AND CYC BITS FOR PROPER FUNCTION  
AROUND DATA TRANSFER COMMANDS

TEST STEPS:

IF BYTE MODE THEN:  
SETUP INTERRUPT SERVICE VECTOR  
CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR STATUS  
EXECUTE SUBTEST 1-3 AND CLEAR VECTOR

ERROR CONDITIONS:

MASSBUS CONTROLLER ERROR STATUS  
INTERFACE STATUS IRY BIT NOT SET/RESET  
MASSBUS CONTROLLER RDY BIT NOT SET/RESET

STARS

\*\*\*\*\*

BGNTST

T15::

SELTEST = B.BYTE

50\$: MOV SELECT,R0 ;LOAD TEST SELECT WORD  
BIT #SELTEST,R0 ;TEST BYTE MODE  
BNE 75\$ ;CONTINUE IF BYTE MODE

EXIT TST ;NO: EXIT TEST  
TRAP C\$EXIT  
.WORD L10103-

75\$: JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER  
TST MBCFLG ;TEST FLAG FOR ERROR  
BEQ 100\$ ;CONTINUE IF NO ERROR

ERRDF 1,M.MBC1,ER.DMP ;DEVICE FATAL  
TRAP C\$ERDF  
.WORD 1  
.WORD M.MBC1  
.WORD ER.DMP

DOCLN ;CLEAN UP AND EXIT  
TRAP C\$DCLN

100\$: JSR PC,SETISR ;SETUP SERVICE ROUTINE VECTOR  
;EXECUTE SUBTEST

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 162  
TEST 15: CHECK BYTE TRANSFER LOGIC

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5690 031016          STARS
                    :*****
5691                :
5692                :
5693                :
5694                :
5695                :
5696 031016          STARS
                    :*****
5697 031016          BGNSUB                                ;CHECK INTERFACE CLEAR CMD
                    T15.1:
5698                TRAP      C$BSUB
5699 031020 012777 000020 151262 100$: MOV      #IS.CYC,@A.IS      ;ISSUE CYCLE REQUEST
5700 031026 004737 016042          JSR      PC,DLY              ;DELAY A FEW CYCLES
5701 031032 004737 015606          JSR      PC,RDREG           ;READ REGISTERS
5702
5703 031036 032737 000200 002340      BIT      #IS.IRY,R.IS      ;TEST FOR IRY SET
5704 031044 001005          BNE      200$                    ;IRY SET: CONTINUE
5705
5706 031046          ERRHRD  2,M.IRY2,ER.DMP                ;'IRY BIT RESET WHEN CYC BIT SET'
                    TRAP      C$ERHRD
                    .WORD     2
                    .WORD     M.IRY2
                    .WORD     ER.DMP
5707 031056 000410          BR       400$                    ;EXIT FROM SUB TEST
5708
5709 031060 032737 000200 002326 200$: BIT      #CS1.RDY,R.CS1      ;TEST FOR RDY BIT SET
5710 031066 001004          BNE      400$                    ;RDY SET: CONTINUE
5711
5712 031070          ERRHRD  3,M.RDY2,ER.DMP                ;'MBC RDY BIT NOT SET BY IRY'
                    TRAP      C$ERHRD
                    .WORD     3
                    .WORD     M.RDY2
                    .WORD     ER.DMP
5713
5714 031100          400$: ENDSUB
                    L10104: TRAP      C$ESUB
                    031100 104403

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 163  
TEST 15: CHECK BYTE TRANSFER LOGIC

5716 031102

STARS

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5717

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5722 031102

SUBTEST 2:

INITIALIZE REGISTERS AND ISSUE INTERFACE WRITE  
READ REGISTERS, CHECK IRY RESET AND RDY RESET

STARS

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5723 031102

031102

031102 104402

BGNSUB

T15.2:

TRAP C\$BSUB

5724

5725 031104 012700 177770

5726 031110 004737 015762

5727 031114 012777 000061 151154

5728

5729 031122 004737 015606

5730 031126 032737 000200 002340

5731 031134 001405

5732

5733 031136

031136 104456

031140 000004

031142 011162

031144 015074

5734 031146 000410

5735

5736 031150 032737 000200 002326 200\$:

5737 031156 001404

5738

5739 031160

031160 104456

031162 000005

031164 011750

031166 015074

5740

5741 031170

031170

031170 104403

100\$:

MOV #-10,R0 ;LOAD BLOCK SIZE = 8 BYTES  
JSR PC,WRTINI ;AND SETUP ADDRESS REGISTERS  
MOV #WR.CMD,@A.CS1 ;ISSUE READ TO INTERFACE

JSR PC,RDREG ;READ REGISTERS INTO R.TBL  
BIT #IS.IRY,R.IS ;AND TEST FOR IRY RESET  
BEQ 200\$ ;IRY RESET: CONTINUE

ERRHRD 4,M.IRY3,ER.DMP ;'IRY NOT RESET BY DATA TRANSFER CMD'

TRAP C\$ERHRD

.WORD 4

.WORD M.IRY3

.WORD ER.DMP

BR 400\$

;EXIT FROM SUB TEST

BIT #CS1.RDY,R.CS1 ;TEST FOR RDY RESET

BEQ 400\$ ;RDY RESET: CONTINUE

ERRHRD 5,M.RDY1,ER.DMP ;'MBC RDY NOT RESET BY IRY'

TRAP C\$ERHRD

.WORD 5

.WORD M.RDY1

.WORD ER.DMP

400\$: ENDSUB

L10105: TRAP C\$ESUB







ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 165  
TEST 16: CHECK INTERRUPT ON BYTE TRANSFER

5775  
5776 031270

.SBTTL TEST 16: CHECK INTERRUPT ON BYTE TRANSFER

STARS

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TEST DESCRIPTION:

CHECK THAT INTERRUPT WAS RECEIVED ON DATA TRANSFER COMPLETION

TEST STEPS:

IF BYTE MODE THEN:

CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR

SETUP INTERRUPT SERVICE ROUTINE VECTOR AND INIT BLOCK SIZE

EXECUTE SUBTEST 1-2 AND CLEAR VECTOR

ERROR CONDITIONS:

MASSBUS CONTROLLER CLEAR ERROR

NO INTERRUPT ON DATA TRANSFER COMPLETE

STARS

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5791  
5792

5793 031270

5794

5795 031270  
031270

T16:: BGNTST

5796  
5797 000010  
5798

SELTEST = B.BYTE

5799 031270 013700 003010  
5800 03 274 032700 000010  
5801 031300 001002

50\$: MOV SELECT,R0 ;LOAD TEST SELECT WORD  
BIT #SELTEST,R0 ;TEST BYTE MODE  
BNE 75\$ ;CONTINUE IF BYTE MODE

5802  
5803 031302  
031302 104432  
031304 000242

EXIT TST ;NO: EXIT TEST  
TRAP C\$EXIT  
.WORD L10107-

5804  
5805 031306 004737 015342  
5806 031312 005737 003030  
5807 031316 001405

75\$: JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER  
TST MBCFLG ;TEST FLAG FOR ERROR  
BEQ 100\$ ;CONTINUE IF NO ERROR

5808  
5809 031320  
031320 104455  
031322 000001  
031324 011650  
031326 015074

ERRDF 1,M.MBC1,ER.DMP ;DEVICE FATAL  
TRAP C\$ERDF  
.WORD 1  
.WORD M.MBC1  
.WORD ER.DMP

5810 031330  
031330 104444

DOCLN ;CLEAN UP AND EXIT  
TRAP C\$DCLN

5811  
5812 031332 004737 015274  
5813

100\$: JSR PC,SETISR ;SETUP INTERRUPT SERVICE VECTOR

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 166  
TEST 16: CHECK INTERRUPT ON BYTE TRANSFER

5815 031336

STARS

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5816

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5819

5820

5821 031336

STARS

\*\*\*\*\*

SUBTEST 1:

WRITE BLOCK TO INTERFACE  
CHECK FOR INTERRUPT RECEIVED

5822 031336

031336

031336 104402

BGNSUB

T16.1:

TRAP C\$BSUB

5823

5824 031340 012700 177770

5825 031344 004737 015674

5826 031350 004737 015410

5827 031354 005737 003030

5828 031360 001405

5829

5830

031362

031362 104456

031364 000002

031366 007533

031370 015074

5831 031372 000420

5832

5833 031374 032737 000200 002340 150\$:

5834 031402 001005

5835

5836

031404

031404 104456

031406 000003

031410 007500

031412 015074

5837 031414 000407

5838

5839 031416 005737 003022

5840 031422 001004

5841

5842

031424

031424 104456

031426 000004

031430 010761

031432 015074

5843

5844

031434

031434

031434 104403

400\$:

L10110:

ENDSUB

TRAP C\$ESUB

:LOAD BLOCK SIZE = 8 BYTES  
:WRITE BLOCK TO INTERFACE  
:READ REGISTERS AND TEST FOR ERROR  
:TEST FOR ERROR  
:BRANCH IF NO ERROR  
:'BYTE XFER ERROR ON INTERFACE WRITE''

:EXIT SUBTEST

:TEST FOR IRY BIT SET  
:IRY SET: CONTINUE

:'DATA TRANSFER NOT COMPLETE''

:EXIT SUB TEST

:TEST FOR INTERRUPT RECEIVED  
:BRANCH IF NOT ZERO

:'NO INTERRUPT ON BYTE XFER EBL''

:WRITE BLOCK

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 167  
TEST 16: CHECK INTERRUPT ON BYTE TRANSFER

5846 031436

STARS  
:\*\*\*\*\*

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5851

5852 031436

SUBTEST 2:  
READ BLOCK FROM INTERFACE  
CHECK FOR INTERRUPT RECEIVED

STARS  
:\*\*\*\*\*

5853 031436

031436

031436 104402

BGNSUB

T16.2:

TRAP C\$BSUB

5854

5855 031440 012700 177770

5856 031444 004737 015642

5857 031450 004737 015410

5858 031454 005737 003030

5859 031460 001405

5860

5861 031462

031462 104456

031464 000005

031466 007602

031470 015074

5862 031472 000420

5863

5864 031474 032737 000200 002340 150\$:

5865 031502 001005

5866

5867 031504

031504 104456

031506 000006

031510 007500

031512 015074

5868 031514 000407

5869

5870 031516 005737 003022 200\$:

5871 031522 001004

5872

5873 031524

031524 104456

031526 000007

031530 010761

031532 015074

5874

5875 031534

031534 104403

5876

5877 031536 004737 015324

5878

5879 031542 004737 015550

5880

5881 031546

031546 104401

MOV #-10,R0 ;LOAD BLOCK SIZE = 8 BYTES  
JSR PC,RDBLK ;READ BLOCK FROM INTERFACE  
JSR PC,TSTMBC ;READ REGISTERS AND TEST FOR ERROR  
TST MBCFLG ;TEST FOR ERROR  
BEQ 150\$ ;BRANCH IF NO ERROR  
  
ERRHRD 5,M.BYT3,ER.DMP ;'BYTE XFER ERROR CN INTERFACE READ'  
TRAP C\$ERHRD  
.WORD 5  
.WORD M.BYT3  
.WORD ER.DMP  
BR 400\$ ;EXIT SUBTEST  
  
BIT #IS.IRY,R.IS ;TEST FOR IRY BIT SET  
BNE 200\$ ;IRY SET: CONTINUE  
  
ERRHRD 6,M.BYT1,ER.DMP ;'BYTE TRANSFER NOT COMPLETE'  
TRAP C\$ERHRD  
.WORD 6  
.WORD M.BYT1  
.WORD ER.DMP  
BR 400\$ ;EXIT SUB TEST  
  
TST INTFLG ;TEST FOR INTERRUPT RECEIVED  
BNE 400\$ ;BRANCH IF NOT ZERO  
  
ERRHRD 7,M.INT2,ER.DMP ;'NO INTERRUPT ON BYTE XFER EBL'  
TRAP C\$ERHRD  
.WORD 7  
.WORD M.INT2  
.WORD ER.DMP  
  
400\$: ENDSUB ;READ BLOCK  
L10111: TRAP C\$ESUB  
  
JSR PC,CLRISR ;AND RESTORE VECTOR ADDRESS  
JSR PC,CLRTST ;AND CLEAR TEST DATA  
  
ENDTST  
L10107: TRAP C\$ETST



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 168  
TEST 17: CHECK BYTE BLOCK DATA TRANSFER

5883  
5884 031550

.SBTTL TEST 17: CHECK BYTE BLOCK DATA TRANSFER  
STARS

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5902  
5903  
5904 031550

TEST DESCRIPTION:

PERFORM 64-BYTE DMA DATA TRANSFERS,  
COMPARE DATA READ AGAINST DATA WRITTEN

TEST STEPS:

IF BYTE MODE THEN:  
SETUP INTERRUPT SERVICE ROUTINE VECTOR  
INITIALIZE TRANSFER PARAMETERS AND  
EXECUTE SUBTEST 1-4 AND CLEAR INTERRUPT VECTOR

ERROR CONDITIONS:

MASSBUS CONTROLLER ERROR STATUS  
DATA TRANSFER NOT COMPLETE  
NO INTERRUPT ON DATA TRANSFER COMPLETE  
DATA RECEIVED DOES NOT MATCH EXPECTED DATA

STARS

\*\*\*\*\*

5905  
5906 031550  
031550

BGNTST

T17::

5907  
5908 000010  
5909  
5910 031550 013700 003010  
5911 031554 032700 000010  
5912 031560 001002  
5913  
5914 031562  
031562 104432  
031564 001756

SELTEST = B.BYTE

MOV SELECT,R0 ;READ SELECT WORD  
BIT #SELTEST,R0 ;TEST IF BYTE SELECT  
BNE 50\$ ;BRANCH IF SET

EXIT TST ;NOT BYTE MODE: EXIT TEST  
TRAP C\$EXIT  
.WORD L10112-

5915  
5916 031566 004737 015274 50\$: JSR PC,SETISR ;SETUP INTERRUPT SERVICE VECTOR  
5917 031572 012737 000100 002512 MOV #100,D.MAX ;INITIALIZE MAX DATA BUFFER INDEX  
5918 031600 012737 000001 002510 MOV #1,D.LPCNT ;INITIALIZE TRANSFER LOOP COUNTER  
5919  
5920 031606 LP.BXFR: ;TRANSFER LOOP LABEL  
5921



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 169  
TEST 17: CHECK BYTE BLOCK DATA TRANSFER

5923 031606

STARS

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SUBTEST 1:

CLEAR THE MASSBUS CONTROLLER AND CHECK FOR ERROR  
SETUP DATA BUFFER FOR ALL ONE'S

INITIALIZE REGISTERS FOR WRITE W/INT ENABLE  
SET CYCLE REQUEST, DELAY AND READ REGISTERS  
CHECK FOR ERROR STATUS AND CHECK FOR INTERRUPT  
IF ERROR OR NO INTERRUPT THEN: EXIT SUBTEST

INITIALIZE REGISTERS FOR READ W/INT ENABLE  
SET CYCLE REQUEST, DELAY AND READ REGISTERS  
CHECK FOR ERROR STATUS AND CHECK FOR INTERRUPT  
IF ERROR OR NO INTERRUPT THEN: EXIT SUBTEST

COMPARE DATA READ AGAINST DATA WRITTEN

STARS

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5941 031606

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5943 031606  
031606 104402  
031606

T17.1:

BGNSUB

TRAP C\$BSUB

5944  
5945 031610 004737 015342  
5946 031614 005737 003030  
5947 031620 001405

JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER  
TST MBCFLG ;TEST FLAG FOR ERROR  
BEQ 100\$ ;CONTINUE IF NO ERROR

5948  
5949 031622  
031622 104455  
031624 000001  
031626 011650  
031630 015074

ERRDF 1,M.MBC1,ER.DMP ;DEVICE FATAL  
TRAP C\$ERDF  
.WORD 1  
.WORD M.MBC1  
.WORD ER.DMP

5950 031632  
031632 104444

DOCLN ;CLEAN UP AND EXIT  
TRAP C\$DCLN

5951  
5952 031634 005002 -

100\$: CLR R2 ;CLEAR BUFFER INDEX REGISTER

5953  
5954 031636 012762 177777 004054  
5955 031644 012762 000000 003054  
5956 031652 062702 000002  
5957 031656 023702 002512  
5958 031662 003365

150\$: MOV #177777,IBUF(R2) ;LOAD ONE'S INTO BUFFER  
MOV #0,IBUF(R2) ;CLEAR INPUT BUFFER  
ADD #2,R2 ;AND BUMP INDEX  
CMP D,MAX,R2 ;COMPARE WITH MAX BUFFER INDEX  
BGT 150\$ ;CONTINUE UNTIL BUFFER INITIALIZED

5959  
5960 031664 012700 177740  
5961 031670 004737 015674  
5962 031674 004737 015410  
5963 031700 005737 003022  
5964 031704 001005

200\$: MOV #-40,R0 ;LOAD BLOCK SIZE = 64 BYTES  
JSR PC,WRTBLK ;WRITE BLOCK TO INTERFACE  
JSR PC,TSTMBC ;READ REGISTERS AND TEST ERRORS  
TST INTFLG ;TEST FOR INTERRUPT  
BNE 250\$ ;BRANCH IF INTERRUPT RECEIVED

5965  
5966 031706  
031706 104456  
031710 000002  
031712 010761  
031714 015074

ERRHRD 2,M.INT2,ER.DMP ;'NO INTERRUPT ON BYTE XFER EBL'  
TRAP C\$ERHRD  
.WORD 2  
.WORD M.INT2  
.WORD ER.DMP

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 TEST 17: CHECK BYTE BLOCK DATA TRANSFER

```

5967 031716 000407          BR      300$          ;EXIT SEGMENT
5968
5969 031720 005737 003030    250$:  TST      MBCFLG          ;TEST FOR ERROR
5970 031724 001404          BEQ      300$          ;CONTINUE IF RESET
5971
5972 031726          ERRHRD  3,M.BYT2,ER.DMP      ;'BYTE XFER ERROR ON INTERFACE WRITE''
      031726 104456      TRAP    C$ERHRD
      031730 000003      .WORD   3
      031732 007533      .WORD   M.BYT2
      031734 015074      .WORD   ER.DMP
5973
5974 031736 012700 177740    300$:  MOV      #-40,R0          ;LOAD BLOCK SIZE = 64 BYTES
5975 031742 004737 015642    JSR      PC,RDBLK        ;READ BLOCK FROM INTERFACE
5976 031746 004737 015410    JSR      PC,TSTMBC       ;READ REGISTERS AND TEST ERRORS
5977 031752 005737 003022    TST      INTFLG         ;TEST FOR INTERRUPT
5978 031756 001005          BNE      350$          ;BRANCH IF INTERRUPT RECEIVED
5979
5980 031760          ERRHRD  4,M.INT2,ER.DMP      ;'NO INTERRUPT ON BYTE XFER EBL''
      031760 104456      TRAP    C$ERHRD
      031762 000004      .WORD   4
      031764 010761      .WORD   M.INT2
      031766 015074      .WORD   ER.DMP
5981 031770 000407          BR      400$          ;EXIT SEGMENT
5982
5983 031772 005737 003030    350$:  TST      MBCFLG          ;TEST FOR ERROR
5984 031776 001404          BEQ      400$          ;CONTINUE IF RESET
5985
5986 032000          ERRHRD  5,M.BYT3,ER.DMP      ;'BYTE XFER ERROR ON INTERFACE READ''
      032000 104456      TRAP    C$ERHRD
      032002 000005      .WORD   5
      032004 007602      .WORD   M.BYT3
      032006 015074      .WORD   ER.DMP

```

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 TEST 17: CHECK BYTE BLOCK DATA TRANSFER

```

5988
5989 032010 005002          400$: CLR      R2          ;CLEAR BUFFER INDEX REGISTER
5990 032012 005037 003026  CLR      ERRFLG      ;CLEAR ERROR COUNT
5991
5992 032016 026262 003054 004054 425$: CMP      IBUF(R2),OBUF(R2) ;COMPARE DATA
5993 032024 001427          BEQ      475$         ;IDENTICAL: CONTINUE
5994
5995 032026 005737 003026          TST      ERRFLG      ;TEST ERROR COUNT
5996 032032 001004          BNE      450$         ;BRANCH IF NOT FIRST ERROR
5997
5998 032034          ERRHRD  6,M.BYT4,ER.DATA ;'DATA COMPARISON ERROR'
      032034 104456      TRAP   C$ERHRD
      032036 000006      .WORD  6
      032040 007650      .WORD  M.BYT4
      032042 015172      .WORD  ER.DATA
5999
6000 032044 005237 003026          450$: INC      ERRFLG      ;BUMP ERROR COUNT
6001 032050 022737 000010 003026  CMP      #8,ERRFLG   ;COMPARE WITH MAX ERROR COUNT
6002 032056 002412          BLT      475$         ;BRANCH IF MAX LESS THAN COUNT
6003
6004 032060 010237 002742          MOV      R2,FP.NDX   ;SAVE DATA INDEX
6005 032064 016237 003054 002736  MOV      IBUF(R2),FP.ACT ;SAVE RECEIVED DATA
6006 032072 016237 004054 002734  MOV      OBUF(R2),FP.EXP ;SAVE DATA SENT
6007 032100 004737 016374          JSR      PC,DSPDATA  ;AND DISPLAY DATA
6008
6009 032104 062702 000002          475$: ADD      #2,R2      ;BUMP INDEX
6010 032110 023702 002512          CMP      D.MAX,R2   ;COMPARE WITH MAX BUFFER INDEX
6011 032114 003340          BGT      425$         ;CONTINUE UNTIL INDEX EQUALS MAX
6012
6013 032116 005737 003026          500$: TST      ERRFLG      ;TEST NUMBER ERRORS
6014 032122 001414          BEQ      600$         ;BRANCH IF NO ERRORS
6015
6016 032124          PRINTX #F.ERCNT,ERRFLG ;PRINT SUBTEST ERROR COUNT
      032124 013746 003026  MOV      ERRFLG,-(SP)
      032130 012746 013304  MOV      #F.ERCNT,-(SP)
      032134 012746 000002  MOV      #2,-(SP)
      032140 010600          MOV      SP,R0
      032142 104415          TRAP   C$PNTX
      032144 062706 000006  ADD      #6,SP
6017 032150 005237 003004          INC      ERRCNT      ;ADD TO TEST ERROR COUNT
6018
6019 032154          600$: ENDSUB
      032154          L10113:
      032154 104403          TRAP   C$ESUB
  
```



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 TEST 17: CHECK BYTE BLOCK DATA TRANSFER

6021 032156

STARS

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SUBTEST 2:

CLEAR THE MASSBUS CONTROLLER AND CHECK FOR ERROR  
 SETUP DATA BUFFER FOR ALL ZERO'S

INITIALIZE REGISTERS FOR WRITE W/INT ENABLE  
 SET CYCLE REQUEST, DELAY AND READ REGISTERS  
 CHECK FOR ERROR STATUS AND CHECK FOR INTERRUPT  
 IF ERROR OR NO INTERRUPT THEN: EXIT SUBTEST

INITIALIZE REGISTERS FOR READ W/INT ENABLE  
 SET CYCLE REQUEST, DELAY AND READ REGISTERS  
 CHECK FOR ERROR STATUS AND CHECK FOR INTERRUPT  
 IF ERROR OR NO INTERRUPT THEN: EXIT SUBTEST

COMPARE DATA READ AGAINST DATA WRITTEN

STARS

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6039 032156

6040

6041 032156  
 032156  
 032156 104402  
 6042  
 6043 032160 004737 015342  
 6044 032164 005737 003030  
 6045 032170 001405  
 6046  
 6047 032172  
 032172 104455  
 032174 000007  
 032176 011650  
 032200 015074  
 6048 032202  
 032202 104444  
 6049  
 6050 032204 005002  
 6051  
 6052 032206 012762 000000 004054  
 6053 032214 012762 000000 003054  
 6054 032222 062702 000002  
 6055 032226 023702 002512  
 6056 032232 003365  
 6057  
 6058 032234 012700 177740  
 6059 032240 004737 015674  
 6060 032244 004737 015410  
 6061 032250 005737 003022  
 6062 032254 001005  
 6063  
 6064 032256  
 032256 104456  
 032260 000010  
 032262 010761  
 032264 015074

```

T17.2:  BGNSUB                ;ALL ZERO'S
        TRAP      CSBSUB
        JSR       PC,CLRMBC    ;CLEAR MASSBUS CONTROLLER
        TST      MBCFLG      ;TEST FLAG FOR ERROR
        BEQ      100$        ;CONTINUE IF NO ERROR

        ERRDF    7,M.MBC1,ER.DMP ;DEVICE FATAL
        TRAP    C$ERDF
        .WORD   7
        .WORD   M.MBC1
        .WORD   ER.DMP

        DOCLN   ;CLEAN UP AND EXIT
        TRAP   C$DCLN

100$:   CLR      R2          ;CLEAR BUFFER INDEX REGISTER

150$:   MOV     #0,OBUF(R2)  ;LOAD ZERO'S INTO BUFFER
        MOV     #0,IBUF(R2) ;CLEAR INPUT BUFFER
        ADD     #2,R2       ;AND BUMP INDEX
        CMP    D.MAX,R2    ;COMPARE WITH MAX BUFFER INDEX
        BGT    150$       ;CONTINUE UNTIL BUFFER INITIALIZED

200$:   MOV     #-40,R0     ;LOAD BLOCK SIZE = 64 BYTES
        JSR    PC,WRTBLK   ;WRITE BLOCK TO INTERFACE
        JSR    PC,TSTMBC   ;READ REGISTERS AND TEST ERRORS
        TST    INTFLG     ;TEST FOR INTERRUPT
        BNE    250$       ;BRANCH IF INTERRUPT RECEIVED

        ERRHRD  8,M.INT2,ER.DMP ;'NO INTERRUPT ON BYTE XFER EBL'
        TRAP   C$ERHRD
        .WORD  8
        .WORD  M.INT2
        .WORD  ER.DMP
    
```



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 TEST 17: CHECK BYTE BLOCK DATA TRANSFER

6065	032266	000407		BR	300\$		:EXIT SEGMENT
6066							
6067	032270	005737	003030	250\$:	TST	MBCFLG	:TEST FOR ERROR
6068	032274	001404			BEQ	300\$	:CONTINUE IF RESET
6069							
6070	032276				ERRHRD	9,M.BYT2,ER.DMP	: 'BYTE XFER ERROR ON INTERFACE WRITE'
	032276	104456			TRAP	C\$ERHRD	
	032300	000011			.WORD	9	
	032302	007533			.WORD	M.BYT2	
	032304	015074			.WORD	ER.DMP	
6071							
6072	032306	012700	177740	300\$:	MOV	#-40,R0	:LOAD BLOCK SIZE = 64 BYTES
6073	032312	004737	015642		JSR	PC,RDBLK	:READ BLOCK FROM INTERFACE
6074	032316	004737	015410		JSR	PC,TSTMBC	:READ REGISTERS AND TEST ERRORS
6075	032322	005737	003022		TST	INTFLG	:TEST FOR INTERRUPT
6076	032326	001005			BNE	350\$	:BRANCH IF INTERRUPT RECEIVED
6077							
6078	032330				ERRHRD	10,M.INT2,ER.DMP	: 'NO INTERRUPT ON BYTE XFER EBL'
	032330	104456			TRAP	C\$ERHRD	
	032332	000012			.WORD	10	
	032334	010761			.WORD	M.INT2	
	032336	015074			.WORD	ER.DMP	
6079	032340	000407			BR	400\$	:EXIT SEGMENT
6080							
6081	032342	005737	003030	350\$:	TST	MBCFLG	:TEST FOR ERROR
6082	032346	001404			BEQ	400\$	:CONTINUE IF RESET
6083							
6084	032350				ERRHRD	11,M.BYT3,ER.DMP	: 'BYTE XFER ERROR ON INTERFACE READ'
	032350	104456			TRAP	C\$ERHRD	
	032352	000013			.WORD	11	
	032354	007602			.WORD	M.BYT3	
	032356	015074			.WORD	ER.DMP	



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TEST 17: CHECK BYTE BLOCK DATA TRANSFER

6119 032526

STARS

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6137 032526

SUBTEST 3:

CLEAR THE MASSBUS CONTROLLER AND CHECK FOR ERROR  
SETUP DATA BUFFER WITH MOVING ONE PATTERN

INITIALIZE REGISTERS FOR WRITE W/INT ENABLE  
SET CYCLE REQUEST, DELAY AND READ REGISTERS  
CHECK FOR ERROR STATUS AND CHECK FOR INTERRUPT  
IF ERROR OR NO INTERRUPT THEN: EXIT SUBTEST

INITIALIZE REGISTERS FOR READ W/INT ENABLE  
SET CYCLE REQUEST, DELAY AND READ REGISTERS  
CHECK FOR ERROR STATUS AND CHECK FOR INTERRUPT  
IF ERROR OR NO INTERRUPT THEN: EXIT SUBTEST

COMPARE DATA READ AGAINST DATA WRITTEN

STARS

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6138  
6139 032526  
032526  
032526 104402  
6140  
6141 032530 004737 015342  
6142 032534 005737 003030  
6143 032540 001405  
6144  
6145 032542  
032542 104455  
032544 000015  
032546 011650  
032550 015074  
6146 032552  
032552 104444  
6147  
6148 032554 005002  
6149 032556 012705 000010  
6150  
6151 032562 012704 000401  
6152  
6153 032566 010462 004054  
6154 032572 012762 000000 003054  
6155 032600 062702 000002  
6156 032604 023702 002512  
6157 032610 001405  
6158  
6159 032612 006304  
6160 032614 105704  
6161 032616 001363  
6162 032620 005305  
6163 032622 001357  
6164  
6165 032624 012700 177740  
6166 032630 004737 015674

BGNSUB ;MOVING ONE PATTERN  
T17.3: TRAP CSBSUB  
JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER  
TST MBCFLG ;TEST FLAG FOR ERROR  
BEQ 100\$ ;CONTINUE IF NO ERROR  
ERRDF 13,M.MBC1,ER.DMP ;DEVICE FATAL  
TRAP CSERDF  
.WORD 13  
.WORD M.MBC1  
.WORD ER.DMP  
DOCLN ;CLEAN UP AND EXIT  
TRAP CSDCLN  
100\$: CLR R2 ;CLEAR BUFFER INDEX REGISTER  
MOV #8.,R5 ;INITIALIZE COUNTER  
125\$: MOV #401,R4 ;INITIALIZE PATTERN REGISTER  
150\$: MOV R4,OBUF(R2) ;LOAD ONES INTO BUFFER  
MOV #0,IBUF(R2) ;CLEAR INPUT BUFFER  
ADD #2,R2 ;AND BUMP INDEX  
CMP D.MAX,R2 ;COMPARE WITH MAX BUFFER INDEX  
BEQ 200\$ ;BRANCH IF END OF BUFFER  
ASL R4 ;SHIFT PATTERN  
TSTB R4 ;COMPARE WITH LAST PATTERN  
BNE 150\$ ;MOVE AGAIN IF NOT SAME  
DEC R5 ;DECREMENT BLOCK COUNTER  
BNE 125\$ ;AND CONTINUE IF ANOTHER BLOCK  
200\$: MOV #-40,R0 ;LOAD BLOCK SIZE = 64 BYTES  
JSR PC,WRTBLK ;WRITE BLOCK TO INTERFACE



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 TEST 17: CHECK BYTE BLOCK DATA TRANSFER

6167	032634	004737	015410		JSR	PC,TSTMBC	:READ REGISTERS AND TEST ERRORS
6168	032640	005737	003022		TST	INTFLG	:TEST FOR INTERRUPT
6169	032644	001005			BNE	250\$	:BRANCH IF INTERRUPT RECEIVED
6170							
6171	032646				ERRHRD	14,M.INT2,ER.DMP	: 'NO INTERRUPT ON BYTE XFER EBL'
	032646	104456			TRAP	C\$ERHRD	
	032650	000016			.WORD	14	
	032652	010761			.WORD	M.INT2	
	032654	015074			.WORD	ER.DMP	
6172	032656	000407			BR	300\$	:EXIT SEGMENT
6173							
6174	032660	005737	003030	250\$:	TST	MBCFLG	:TEST FOR ERROR
6175	032664	001404			BEQ	300\$	:CONTINUE IF RESET
6176							
6177	032666				ERRHRD	15,M.BYT2,ER.DMP	: 'BYTE XFER ERROR ON INTERFACE WRITE'
	032666	104456			TRAP	C\$ERHRD	
	032670	000017			.WORD	15	
	032672	007533			.WORD	M.BYT2	
	032674	015074			.WORD	ER.DMP	
6178							
6179	032676	012700	177740	300\$:	MOV	#-40,R0	:LOAD BLOCK SIZE = 64 BYTES
6180	032702	004737	015642		JSR	PC,RDBLK	:READ BLOCK FROM INTERFACE
6181	032706	004737	015410		JSR	PC,TSTMBC	:READ REGISTERS AND TEST ERRORS
6182	032712	005737	003022		TST	INTFLG	:TEST FOR INTERRUPT
6183	032716	001005			BNE	350\$	:BRANCH IF INTERRUPT RECEIVED
6184							
6185	032720				ERRHRD	16,M.INT2,ER.DMP	: 'NO INTERRUPT ON BYTE XFER EBL'
	032720	104456			TRAP	C\$ERHRD	
	032722	000020			.WORD	16	
	032724	010761			.WORD	M.INT2	
	032726	015074			.WORD	ER.DMP	
6186	032730	000407			BR	400\$	:EXIT SEGMENT
6187							
6188	032732	005737	003030	350\$:	TST	MBCFLG	:TEST FOR ERROR
6189	032736	001404			BEQ	400\$	:CONTINUE IF RESET
6190							
6191	032740				ERRHRD	17,M.BYT3,ER.DMP	: 'BYTE XFER ERROR ON INTERFACE READ'
	032740	104456			TRAP	C\$ERHRD	
	032742	000021			.WORD	17	
	032744	007602			.WORD	M.BYT3	
	032746	015074			.WORD	ER.DMP	





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TEST 17: CHECK BYTE BLOCK DATA TRANSFER

6226 033116

STARS

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SUBTEST 4:

CLEAR THE MASSBUS CONTROLLER AND CHECK FOR ERROR  
SETUP DATA BUFFER WITH MOVING ZERO PATTERN

INITIALIZE REGISTERS FOR WRITE W/INT ENABLE  
SET CYCLE REQUEST, DELAY AND READ REGISTERS  
CHECK FOR ERROR STATUS AND CHECK FOR INTERRUPT  
IF ERROR OR NO INTERRUPT THEN: EXIT SUBTEST

INITIALIZE REGISTERS FOR READ W/INT ENABLE  
SET CYCLE REQUEST, DELAY AND READ REGISTERS  
CHECK FOR ERROR STATUS AND CHECK FOR INTERRUPT  
IF ERROR OR NO INTERRUPT THEN: EXIT SUBTEST

COMPARE DATA READ AGAINST DATA WRITTEN

STARS

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6245

6246 033116  
033116  
033116 104402

T17.4: BGNSUB

:MOVING ZERO PATTERN

6247  
6248 033120 004737 015342  
6249 033124 005737 003030  
6250 033130 001405

TRAP CSBSUB

JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER  
TST MBCFLG ;TEST FLAG FOR ERROR  
BEQ 100\$ ;CONTINUE IF NO ERROR

6251  
6252 033132  
033132 104455  
033134 000023  
033136 011650  
033140 015074

ERRDF 19,M.MBC1,ER.DMP ;DEVICE FATAL  
TRAP CSERDF  
.WORD 19  
.WORD M.MBC1  
.WORD ER.DMP

6253 033142  
033142 104444

DOCLN ;CLEAN UP AND EXIT  
TRAP CSDCLN

6254  
6255 033144 005002  
6256 033146 012705 000010

100\$: CLR R2 ;CLEAR BUFFER INDEX REGISTER  
MOV #8.,R5 ;INITIALIZE COUNTER

6257  
6258 033152 012704 177376  
6259

125\$: MOV #177376,R4 ;INITIALIZE PATTERN REGISTER

6260 033156 010462 004054  
6261 033162 012762 000000 003054  
6262 033170 062702 000002  
6263 033174 023702 002512

150\$: MOV R4,OBUF(R2) ;LOAD ONES INTO BUFFER  
MOV #0,IBUF(R2) ;CLEAR INPUT BUFFER  
ADD #2,R2 ;AND BUMP INDEX  
CMP D.MAX,R2 ;COMPARE WITH MAX BUFFER INDEX  
BEQ 200\$ ;BRANCH IF END OF BUFFER

6264 033200 001412  
6265  
6266 033202 006304  
6267 033204 052704 000001  
6268 033210 052704 000400  
6269 033214 022704 177777  
6270 033220 001356

ASL R4 ;SHIFT PATTERN  
BIS #BIT00,R4 ;SET INCOMING BIT  
BIS #BIT08,R4 ;FOR BOTH BYTES  
CMP #-1,R4 ;TEST FOR ALL BITS ONE  
BNE 150\$ ;NO: CONTINUE

6271  
6272 033222 005305  
6273 033224 001352

DEC R5 ;DECREMENT BLOCK COUNTER  
BNE 125\$ ;AND CONTINUE IF ANOTHER BLOCK



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 TEST 17: CHECK BYTE BLOCK DATA TRANSFER

6274									
6275	033226	012700	177740	200\$:	MOV	#-40,R0		:LOAD BLOCK SIZE = 64 BYTES	
6276	033232	004737	015674		JSR	PC,WRTBLK		:WRITE BLOCK TO INTERFACE	
6277	033236	004737	015410		JSR	PC,TSTMBC		:READ REGISTERS AND TEST ERRORS	
6278	033242	005737	003022		TST	INTFLG		:TEST FOR INTERRUPT	
6279	033246	001005			BNE	250\$		:BRANCH IF INTERRUPT RECEIVED	
6280									
6281	033250				ERRHRD	20,M.INT2,ER.DMP		: 'NO INTERRUPT ON BYTE XFER EBL'	
	033250	104456			TRAP	C\$ERHRD			
	033252	000024			.WORD	20			
	033254	010761			.WORD	M.INT2			
	033256	015074			.WORD	ER.DMP			
6282	033260	000407			BR	300\$		:EXIT SEGMENT	
6283									
6284	033262	005737	003030	250\$:	TST	MBCFLG		:TEST FOR ERROR	
6285	033266	001404			BEQ	300\$		:CONTINUE IF RESET	
6286									
6287	033270				ERRHRD	21,M.BYT2,ER.DMP		: 'BYTE XFER ERROR ON INTERFACE WRITE'	
	033270	104456			TRAP	C\$ERHRD			
	033272	000025			.WORD	21			
	033274	007533			.WORD	M.BYT2			
	033276	015074			.WORD	ER.DMP			
6288									
6289	033300	012700	177740	300\$:	MOV	#-40,R0		:LOAD BLOCK SIZE = 64 BYTES	
6290	033304	004737	015642		JSR	PC,RDBLK		:READ BLOCK FROM INTERFACE	
6291	033310	004737	015410		JSR	PC,TSTMBC		:READ REGISTERS AND TEST ERRORS	
6292	033314	005737	003022		TST	INTFLG		:TEST FOR INTERRUPT	
6293	033320	001005			BNE	350\$		:BRANCH IF INTERRUPT RECEIVED	
6294									
6295	033322				ERRHRD	22,M.INT2,ER.DMP		: 'NO INTERRUPT ON BYTE XFER EBL'	
	033322	104456			TRAP	C\$ERHRD			
	033324	000026			.WORD	22			
	033326	010761			.WORD	M.INT2			
	033330	015074			.WORD	ER.DMP			
6296	033332	000407			BR	400\$		:EXIT SEGMENT	
6297									
6298	033334	005737	003030	350\$:	TST	MBCFLG		:TEST FOR ERROR	
6299	033340	001404			BEQ	400\$		:CONTINUE IF RESET	
6300									
6301	033342				ERRHRD	23,M.BYT3,ER.DMP		: 'BYTE XFER ERROR ON INTERFACE READ'	
	033342	104456			TRAP	C\$ERHRD			
	033344	000027			.WORD	23			
	033346	007602			.WORD	M.BYT3			
	033350	015074			.WORD	ER.DMP			



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 177  
TEST 18: CHECK BYTE TRANSFER ABORT LOGIC (XABT)

6346  
6347 033544

.SBTTL TEST 18: CHECK BYTE TRANSFER ABORT LOGIC (XABT)  
STARS

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6348  
6349  
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6363  
6364

TEST DESCRIPTION:  
CHECK BYTE DATA TRANSFER ABORT LOGIC THROUGH XABT BIT

TEST STEPS:  
IF BYTE MODE & NOT REVA THEN:  
SETUP INTERRUPT SERVICE ROUTINE VECTOR  
EXECUTE SUBTEST 1-2 AND CLEAR VECTOR

ERROR CONDITIONS:  
MASSBUS CONTROLLER CLEAR ERROR  
NO WRITE/READ TRANSFER ABORT  
TRE NOT SET: ADJUST BANDWIDTH  
INTERFACE IRY BIT NOT SET BY TRANSFER ABORT

6365 033544

STARS  
\*\*\*\*\*

6366  
6367 033544  
033544

BGNTST  
T18::

6368  
6369 000027  
6370 000010  
6371  
6372 033544 013700 003010  
6373 033550 042700 000027  
6374 033554 022700 000010  
6375 033560 001402

SELMASK = B.UPAR + B.ABORT + B.AT3 + B.AT0  
SELTEST = B.BYTE

MOV SELECT,R0 ;READ SELECT WORD  
BIC #SELMASK,R0 ;CLEAR DON'T CARE SELECT BITS  
CMP #SELTEST,R0 ;COMPARE WITH BYTE MODE  
BEQ 50\$ ;BRANCH IF EQUAL

6376  
6377 033562  
033562 104432  
033564 000462

25\$: EXIT TST ;REV 'A' OR NOT BYTE MODE: EXIT TEST  
TRAP C\$EXIT  
.WORD L10117-

6378  
6379 033566 004737 015274  
6380 033572 013737 002406 002730  
6381 033600 013737 002436 002746  
6382

50\$: JSR PC,SETISR ;SETUP ISR VECTOR  
MOV NA.CS1,FP.NAM ;LOAD REGISTER NAME ADDRESS  
MOV BA.CS1,FP.TBL ;LOAD REGISTER BIT TABLE ADDRESS  
;EXECUTE SUBTEST



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 178  
TEST 18: CHECK BYTE TRANSFER ABORT LOGIC (XABT)

6384 033606

STARS

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6385

6386

6387

6388

6389

6390

6391

6392

6393 033606

STARS

\*\*\*\*\*

SUBTEST 1:

CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR  
ISSUE INTERFACE WRITE CMD AND SET CYCLE REQUEST BIT  
DELAY A FEW CYCLES AND SET IS REGISTER XABT BIT  
READ REGISTERS, CHECK IRY BIT SET  
CHECK WORD COUNT LESS THAN ZERO, AND TRE BIT SET

6394

6395 033606

033606

033606 104402

6396

6397 033610

004737 015342

6398 033614

005737 003030

6399 033620

001405

6400

6401 033622

033622 104455

033624 000001

033626 011650

033630 015074

6402 033632

033632 104444

6403

6404 033634

012700 177600

6405 033640

004737 015762

6406 033644

012777 000161 146424

6407 033652

004737 016030

6408 033656

012777 000020 146424

6409 033664

004737 016016

6410

6411 033670

012777 004000 146412

6412 033676

004737 015444

6413 033702

004737 015606

6414

6415 033706

032737 000200 002340

6416 033714

001005

6417

6418 033716

033716 104456

033720 000002

033722 011500

033724 015074

6419 033726

000425

6420

6421 033730

005737 002330

6422 033734

100404

6423

6424 033736

033736 104456

033740 000003

033742 006520

T18.1: BGNSUB

TRAP C\$BSUB

50\$:

JSR PC,CLRMBC  
TST MBCFLG  
BEQ 100\$

;CLEAR MASSBUS CONTROLLER  
;TEST FLAG FOR ERROR  
;CONTINUE IF NO ERROR

ERRDF 1,M.MBC1,ER.DMP  
TRAP C\$ERDF  
.WORD 1  
.WORD M.MBC1  
.WORD ER.DMP

;DEVICE FATAL

DOCLN  
TRAP C\$DCLN

;CLEAN UP AND EXIT

100\$:

MOV #-200,R0  
JSR PC,WRTINI  
MOV #WIE.CMD,@A.CS1  
JSR PC,SILODLY  
MOV #IS.CYC,@A.IS  
JSR PC,DMADLY

;LOAD BLOCK SIZE = 256 BYTES  
;AND INITIALIZE ADDRESS REGISTERS  
;ISSUE WRITE COMMAND TO CS1  
;WAIT FOR SILO TO FILL  
;SET IS REGISTER CYC BIT  
;DELAY A FEW CYCLES

MOV #IS.XABT,@A.IS  
JSR PC,TSTINT  
JSR PC,RDREG

;SET IS REGISTER TRANSFER ABORT  
;WAIT FOR INTERRUPT OR TIME-OUT  
;READ REGISTERS

BIT #IS.IRY,R.IS  
BNE 200\$

;TEST FOR IRY BIT SET  
;YES: CONTINUE

ERRHRD 2,M.IRY8,ER.DMP  
TRAP C\$ERHRD  
.WORD 2  
.WORD M.IRY8  
.WORD ER.DMP  
BR 400\$

;"IRY NOT SET BY BYTE TRANSFER ABORT"

;EXIT SUBTEST

200\$:

TST R.WC  
BMI 300\$

;TEST WORD COUNT  
;IF LESS THAN ZERO THEN OK

ERRHRD 3,M.ABT3,ER.DMP  
TRAP C\$ERHRD  
.WORD 3  
.WORD M.ABT3

;"NO XFER ABORT ON INTERFACE WRITE"

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 178-1  
 TEST 18: CHECK BYTE TRANSFER ABORT LOGIC (XABT)

6425	033744	015074			.WORD	ER.DMP	
6426	033746	012737	144260	002734	300\$:	MOV	#144260,FP.EXP
6427	033754	023737	002734	002326		CMP	FP.EXP,R.CS1
6428	033762	001407				BEQ	400\$
6429							
6430	033764	013737	002326	002736		MOV	R.CS1,FP.ACT
6431	033772					ERRHRD	4,M.CSR2,ER.REG
	033772	104456				TRAP	C\$ERHRD
	033774	000004				.WORD	4
	033776	007237				.WORD	M.CSR2
	034000	015016				.WORD	ER.REG
6432							
6433	034002				400\$:	ENDSUB	
	034002				L10120:		
	034002	104403				TRAP	C\$ESUB

:EXPECTED VALUE: SC,TRE,DVA,RDY,WRITE  
 :COMPARE CS1 WITH EXPECTED STATUS  
 :IF EQ THEN CONTINUE

:LOAD ACTUAL VALUE  
 :'"CS1 REGISTER STATUS ERROR''

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 179  
TEST 18: CHECK BYTE TRANSFER ABORT LOGIC (XABT)

6435 034004

STARS

\*\*\*\*\*

6436

6437

6438

6439

6440

6441

6442

6443

6444

6445 034004

SUBTEST 2:

STARS

\*\*\*\*\*

6446

6447 034004

034004

034004 104402

6448

6449 034006

004737

015342

6450 034012

005737

003030

6451 034016

001405

6452

6453 034020

034020 104455

034022 000004

034024 011650

034026 015074

6454 034030

034030 104444

6455

6456 034032

012700

177740

6457 034036

004737

015674

6458 034042

004737

015410

6459 034046

005737

003030

6460 034052

001405

6461

6462 034054

034054 104456

034056 000005

034060 007533

034062 015074

6463 034064

000463

T18.2: BGNSUB

TRAP C\$BSUB

50\$: JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER  
TST MBCFLG ;TEST FLAG FOR ERROR  
BEQ 100\$ ;CONTINUE IF NO ERROR

ERRDF 4,M.MBC1,ER.DMP ;DEVICE FATAL

TRAP C\$ERDF

.WORD 4

.WORD M.MBC1

.WORD ER.DMP

DOCLN ;CLEAN UP AND EXIT

TRAP C\$DCLN

100\$: MOV #-40,R0 ;LOAD BLOCK SIZE = 64 BYTES

JSR PC,WRTBLK ;WRITE BLOCK TO INTERFACE

JSR PC,TSTMBC ;READ REGISTERS AND TEST ERRORS

TST MBCFLG ;TEST FOR ERROR

BEQ 150\$ ;BRANCH IF NO ERROR

ERRHRD 5,M.BYT2,ER.DMP ;'XFER ERROR ON INTERFACE WRITE'

TRAP C\$ERHRD

.WORD 5

.WORD M.BYT2

.WORD ER.DMP

BR 400\$ ;EXIT SUBTEST



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 180  
 TEST 18: CHECK BYTE TRANSFER ABORT LOGIC (XABT)

```

6465
6466 034066 012700 177600          150$: MOV    #-200,R0          ;LOAD BLOCK SIZE = 256 BYTES
6467 034072 004737 015726          JSR    PC,RDINI        ;AND INITIALIZE ADDRESS REGISTERS
6468 034076 012777 000171 146172  MOV    #RIE.CMD,@A.CS1 ;ISSUE READ COMMAND TO CS1
6469 034104 004737 016030          JSR    PC,SILODLY      ;WAIT FOR SILO TO FILL
6470 034110 012777 000020 146172  MOV    #IS.CYC,@A.IS   ;SET IS REGISTER CYC BIT
6471 034116 004737 016016          JSR    PC,DMADLY      ;DELAY A FEW CYCLES
6472
6473 034122 012777 004000 146160  MOV    #IS.XABT,@A.IS  ;SET IS REGISTER TRANSFER ABORT
6474 034130 004737 015444          JSR    PC,TSTINT      ;WAIT FOR INTERRUPT OR TIME-OUT
6475 034134 004737 015606          JSR    PC,RDREG       ;READ REGISTERS
6476
6477 034140 032737 000200 002340  BIT    #IS.IRY,R.IS    ;TEST FOR IRY BIT SET
6478 034146 001005                BNE    200$           ;YES: CONTINUE
6479
6480 034150                ERRHRD 6,M.IRY8,ER.DMP ;"IRY NOT SET BY BYTE TRANSFER ABORT"
        034150 104456          TRAP  C$ERHRD
        034152 000006          .WORD 6
        034154 011500          .WORD M.IRY8
        034156 015074          .WORD ER.DMP
6481 034160 000425                BR     400$           ;EXIT SUBTEST
6482
6483 034162 005737 002330          200$: TST    R.WC          ;TEST WORD COUNT
6484 034166 100404                BMI    300$           ;IF LESS THAN ZERO THEN OK
6485
6486 034170                ERRHRD 7,M.ABT4,ER.DMP ;"NO XFER ABORT ON INTERFACE READ"
        034170 104456          TRAP  C$ERHRD
        034172 000007          .WORD 7
        034174 006572          .WORD M.ABT4
        034176 015074          .WORD ER.DMP
6487
6488 034200 012737 144270 002734 300$: MOV    #144270,FP.EXP   ;EXPECTED VALUE: SC,TRE,DVA,RDY,READ
6489 034206 023737 002734 002326  CMP    FP.EXP,R.CS1   ;COMPARE CS1 WITH EXPECTED STATUS
6490 034214 001407                BEQ    400$           ;IF EQ THEN CONTINUE
6491
6492 034216 013737 002326 002736  MOV    R.CS1,FP.ACT   ;LOAD ACTUAL VALUE
6493 034224                ERRHRD 8,M.CSR2,ER.REG ;"CS1 REGISTER STATUS ERROR"
        034224 104456          TRAP  C$ERHRD
        034226 000010          .WORD 8
        034230 007237          .WORD M.CSR2
        034232 015016          .WORD ER.REG
6494
6495 034234                400$: ENDSUB
        034234                L10121: TRAP  C$ESUB
        034234 104403
6496
6497 034236 004737 015324          JSR    PC,CLRISR     ;CLEAR VECTOR
6498
6499 034242 004737 015550          JSR    PC,CLRTST    ;AND CLEAR TEST DATA
6500
6501 034246                L10117: ENDTST
        034246                TRAP  C$ETST
        034246 104401

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 181  
TEST 19: CHECK BYTE TRANSFER ABORT LOGIC (AT03)

6503  
6504 034250

.SBTTL TEST 19: CHECK BYTE TRANSFER ABORT LOGIC (AT03)

STARS

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TEST DESCRIPTION:

CHECK BYTE DATA TRANSFER ABORT LOGIC THROUGH LOOP-BACK

TEST STEPS:

IF NOT REVA AND BYTE MODE AND AT3 ABORT NOT DISABLED THEN:  
SETUP INTERRUPT SERVICE ROUTINE VECTOR  
INITIALIZE 64-BYTE BLOCK SIZE AND  
EXECUTE SUBTEST 1-2 AND CLEAR VECTOR

ERROR CONDITIONS:

MASSBUS CONTROLLER CLEAR ERROR  
NO WRITE/READ TRANSFER ABORT  
TRE NOT SET: ADJUST BANDWIDTH  
INTERFACE IRY BIT NOT SET BY TRANSFER ABORT

STARS

\*\*\*\*\*

6524  
6525 034250  
034250

BGNTST

T19::

6526  
6527 000023  
6528 000010  
6529  
6530 034250 013700 003010  
6531 034254 042700 000023  
6532 034260 022700 000010  
6533 034264 001402  
6534  
6535 034266  
034266 104432  
034270 000476

SELMASK = B.UPAR + B.AT3 + B.AT0  
SELTEST = B.BYTE

MOV SELECT,RO ;READ SELECT WORD  
BIC #SELMASK,RO ;CLEAR DON'T CARE SELECT BITS  
CMP #SELTEST,RO ;TEST BYTE MODE SET  
BEQ 50\$ ;BRANCH IF EQUAL

25\$: EXIT TST ;EXIT TEST  
TRAP C\$EXIT  
.WORD L10122-

6536  
6537 034272 004737 015274  
6538 034276 013737 002406 002730  
6539 034304 013737 002436 002746  
6540

50\$: JSR PC,SETISR ;SETUP ISR VECTOR  
MOV NA.CS1,FP.NAM ;LOAD REGISTER NAME ADDRESS  
MOV BA.CS1,FP.TBL ;LOAD REGISTER BIT TABLE ADDRESS  
;EXECUTE SUBTEST

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 182  
TEST 19: CHECK BYTE TRANSFER ABORT LOGIC (AT03)

6542 034312

STARS

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6543

6544

6545

6546

6547

6548

6549

6550

6551 034312

STARS

\*\*\*\*\*

6552

6553 034312

034312

034312 104402

6554

6555 034314

004737 015342

6556 034320

005737 003030

6557 034324

001405

6558

6559 034326

034326 104455

034330 000001

034332 011650

034334 015074

6560 034336

034336 104444

6561

6562 034340

012700 177600

6563 034344

004737 015762

6564 034350

012777 000161 145720

6565 034356

004737 016030

6566 034362

012777 000020 145720

6567 034370

004737 016016

6568

6569 034374

012777 004000 145702

6570 034402

004737 015444

6571 034406

004737 015606

6572 034412

012777 000000 145664

6573

6574 034420

032737 000200 002340

6575 034426

001005

6576

6577 034430

034430 104456

034432 000002

034434 011500

034436 015074

6578 034440

000425

6579

6580 034442

005737 002330

6581 034446

100404

6582

6583 034450

034450 104456

034452 000003

T19.1: BGNSUB

TRAP C\$BSUB

50\$: JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER

TST MBCFLG ;TEST FLAG FOR ERROR

BEQ 100\$ ;CONTINUE IF NO ERROR

ERRDF 1,M.MBC1,ER.DMP ;DEVICE FATAL

TRAP C\$ERDF

.WORD 1

.WORD M.MBC1

.WORD ER.DMP

DOCLN ;CLEAN UP AND EXIT

TRAP C\$DCLN

100\$: MOV #-200,R0 ;LOAD BLOCK SIZE = 256 BYTES

JSR PC,WRTINI ;AND INITIALIZE ADDRESS REGISTERS

MOV #WIE.CMD,@A.CS1 ;ISSUE WRITE COMMAND TO CS1

JSR PC,SILODLY ;WAIT FOR SILO TO FILL

MOV #IS.CYC,@A.IS ;SET CYCLE REQUEST

JSR PC,DMADLY ;DELAY A FEW CYCLES

MOV #FS.F3,@A.FS ;SET FS REGISTER FUNCTION BIT F3

JSR PC,TSTINT ;WAIT FOR INTERRUPT OR TIME-OUT

JSR PC,RDREG ;READ REGISTERS

MOV #0,@A.FS ;CLEAR FUNCTION / STATUS BITS

BIT #IS.IRY,R.IS ;TEST FOR IRY BIT SET

BNE 200\$ ;YES: CONTINUE

ERRHRD 2,M.IRY8,ER.DMP ;"IRY NOT SET BY BYTE TRANSFER ABORT"

TRAP C\$ERHRD

.WORD 2

.WORD M.IRY8

.WORD ER.DMP

BR 400\$ ;EXIT SUBTEST

200\$: TST R.WC ;TEST WORD COUNT

BMI 300\$ ;IF LESS THAN ZERO THEN OK

ERRHRD 3,M.ABT3,ER.DMP ;"NO XFER ABORT ON INTERFACE WRITE"

TRAP C\$ERHRD

.WORD 3



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 182-1  
 TEST 19: CHECK BYTE TRANSFER ABORT LOGIC (AT03)

	034454	006520				.WORD	M.ABT3		
	034456	015074				.WORD	ER.DMP		
6584									
6585	034460	012737	144260	002734	300\$:	MOV	#144260,FP.EXP	:EXPECTED VALUE: SC,TRE,DVA,RDY,WRITE	
6586	034466	023737	002734	002326		CMP	FP.EXP,R.CS1	:COMPARE CS1 WITH EXPECTED STATUS	
6587	034474	001407				BEQ	400\$	:IF EQ THEN CONTINUE	
6588									
6589	034476	013737	002326	002736		MOV	R.CS1,FP.ACT	:LOAD ACTUAL VALUE	
6590	034504					ERRHRD	4,M.CSR2,ER.REG	: "CS1 REGISTER STATUS ERROR"	
	034504	104456				TRAP	C\$ERHRD		
	034506	000004				.WORD	4		
	034510	007237				.WORD	M.CSR2		
	034512	015016				.WORD	ER.REG		
6591									
6592	034514				400\$:	ENDSUB			
	034514				L10123:				
	034514	104403				TRAP	C\$ESUB		

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 183  
 TEST 19: CHECK BYTE TRANSFER ABORT LOGIC (AT03)

```

6594 034516 STARS
:*****
6595
6596
6597
6598
6599
6600
6601
6602
6603
6604 034516 STARS
:*****
6605
6606 034516
034516
034516 104402 T19.2: BGNSUB
6607 TRAP C$BSUB
6608 034520 004737 015342 50$: JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER
6609 034524 005737 003030 TST MBCFLG ;TEST FLAG FOR ERROR
6610 034530 001405 BEQ 100$ ;CONTINUE IF NO ERROR
6611
6612 034532 ERRDF 4,M.MBC1,ER.DMP ;DEVICE FATAL
034532 104455 TRAP C$ERDF
034534 000004 .WORD 4
034536 011650 .WORD M.MBC1
034540 015074 .WORD ER.DMP
6613 034542 DOCLN ;CLEAN UP AND EXIT
034542 104444 TRAP C$DCLN
6614
6615 034544 012700 177740 100$: MOV #-40,R0 ;LOAD BLOCK SIZE = 64 BYTES
6616 034550 004737 015674 JSR PC,WRTBLK ;WRITE BLOCK TO INTERFACE
6617 034554 004737 015410 JSR PC,TSTMBC ;READ REGISTERS AND TEST ERRORS
6618 034560 005737 003030 TST MBCFLG ;TEST FOR ERROR
6619 034564 001405 BEQ 150$ ;BRANCH IF NO ERROR
6620
6621 034566 ERRHRD 5,M.BYT2,ER.DMP ;'XFER ERROR ON INTERFACE WRITE'
034566 104456 TRAP C$ERHRD
034570 000005 .WORD 5
034572 007533 .WORD M.BYT2
034574 015074 .WORD ER.DMP
6622 034576 000466 BR 400$ ;EXIT SUBTEST

```

ZDRMAU DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 184  
 TEST 19: CHECK BYTE TRANSFER ABORT LOGIC (AT03)

```

6624
6625 034600 012700 177600      150$:  MOV    #-200,R0      ;LOAD BLOCK SIZE = 256 BYTES
6626 034604 004737 015726      JSR    PC,RDINI     ;AND INITIALIZE ADDRESS REGISTERS
6627 034610 012777 000171 145460  MOV    #RIE.CMD,@A.CS1 ;ISSUE READ COMMAND TO CS1
6628 034616 004737 016030      JSR    PC,SILODLY  ;WAIT FOR SILO TO FILL
6629 034622 012777 000020 145460  MOV    #IS.CYC,@A.IS ;SET CYCLE REQUEST
6630 034630 004737 016016      JSR    PC,DMADLY   ;DELAY A FEW CYCLES
6631
6632 034634 012777 004000 145442  MOV    #FS.F3,@A.FS ;SET FS REGISTER FUNCTION BIT F3
6633 034642 004737 015444      JSR    PC,TSTINT   ;WAIT FOR INTERRUPT OR TIME-OUT
6634 034646 004737 015606      JSR    PC,RDREG    ;READ REGISTERS
6635 034652 012777 000000 145424  MOV    #0,@A.FS    ;CLEAR FUNCTION / STATUS BITS
6636
6637 034660 032737 000200 002340  BIT    #IS.IRY,R.IS ;TEST FOR IRY BIT SET
6638 034666 001005                BNE    200$        ;YES: CONTINUE
6639
6640 034670                ERRHRD 6,M.IRY8,ER.DMP ;"IRY NOT SET BY BYTE TRANSFER ABORT"
        034670 104456      TRAP  C$ERHRD
        034672 000006      .WORD 6
        034674 011500      .WORD M.IRY8
        034676 015074      .WORD ER.DMP
6641 034700 000425      BR     400$        ;EXIT SUBTEST
6642
6643 034702 005737 002330      200$:  TST    R.WC        ;TEST WORD COUNT
6644 034706 100404                BMI    300$        ;IF LESS THAN ZERO THEN OK
6645
6646 034710                ERRHRD 7,M.ABT4,ER.DMP ;"NO XFER ABORT ON INTERFACE READ"
        034710 104456      TRAP  C$ERHRD
        034712 000007      .WORD 7
        034714 006572      .WORD M.ABT4
        034716 015074      .WORD ER.DMP
6647
6648 034720 012737 144270 002734 300$:  MOV    #144270,FP.EXP ;EXPECTED VALUE: SC.TRE,DVA,RDY,READ
6649 034726 023737 002734 002326  CMP    FP.EXP,R.CS1 ;COMPARE CS1 WITH EXPECTED STATUS
6650 034734 001407                BEQ    400$        ;IF EQ THEN CONTINUE
6651
6652 034736 013737 002326 002736  MOV    R.CS1,FP.ACT ;LOAD ACTUAL VALUE
6653 034744                ERRHRD 8,M.CSR2,ER.REG ;"CS1 REGISTER STATUS ERROR"
        034744 104456      TRAP  C$ERHRD
        034746 000010      .WORD 8
        034750 007237      .WORD M.CSR2
        034752 015016      .WORD ER.REG
6654
6655 034754                400$:  ENDSUB
        034754                L10124: TRAP  C$ESUB
        034754 104403
6656
6657 034756 004737 015324      JSR    PC,CLRISR   ;CLEAR ISR VECTOR
6658
6659 034762 004737 015550      JSR    PC,CLRTST  ;AND CLEAR TEST DATA
6660
6661 034766                ENDTST
        034766                L10122: TRAP  C$ETST
        034766 104401

```



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 185  
TEST 20: CHECK INTERFACE STATUS ICP BIT

6663  
6664 034770

.SBTTL TEST 20: CHECK INTERFACE STATUS ICP BIT  
STARS

\*\*\*\*\*

6665  
6666  
6667  
6668  
6669  
6670  
6671  
6672  
6673  
6674  
6675  
6676  
6677  
6678  
6679

TEST DESCRIPTION:  
VERIFY PROPER FUNCTION OF IS REGISTER ICP BIT  
TEST STEPS:  
IF NOT REVA THEN:  
CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR  
SETUP ISR VECTOR AND DISPLAY PARMS  
EXECUTE SUBTEST 1-2 AND CLEAR VECTOR  
ERROR CONDITIONS:  
IS REGISTER ICP BIT NOT SET/RESET

6680 034770

STARS  
\*\*\*\*\*

6681  
6682 034770  
034770

BGNTST  
T20::

6683  
6684 000200  
6685  
6686 034770 013700 003010  
6687 034774 032700 000200  
6688 035000 001402  
6689  
6690 035002  
035002 104432  
035004 000330

SELTEST = B.REVA ;TEST SELECT BIT  
MOV SELECT,R0 ;LOAD TEST SELECT WORD  
BIT #SELTEST,R0 ;TEST FOR REVA SET  
BEQ 50\$ ;CONTINUE IF REVA NOT SET  
EXIT TST ;EXIT FROM TEST  
TRAP C\$EXIT  
.WORD L10125-

6691  
6692 035006 004737 015274  
6693 035012 013737 002420 002730  
6694 035020 013737 002450 002746  
6695

50\$: JSR PC,SETISR ;SETUP INTERRUPT SERVICE VECTOR  
MOV NA.IS,FP.NAM ;LOAD IS REGISTER NAME POINTER  
MOV BA.IS,FP.TBL ;LOAD REGISTER EXPAND TABLE ADDRESS  
;EXECUTE SUBTEST



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 186-1  
TEST 20: CHECK INTERFACE STATUS ICP BIT

6737					
6738	035160		ERRHRD	4,M.ICP2,ER.DMP	;'ICP BIT NOT RESET BY DRIVE CLEAR''
	035160	104456	TRAP	C\$ERHRD	
	035162	000004	.WORD	4	
	035164	010535	.WORD	M.ICP2	
	035166	015074	.WORD	ER.DMP	
6739					
6740	035170		400\$:	ENDSUB	;SET ICP
	035170		L10126:		
	035170	104403	TRAP	C\$ESUB	



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 187  
TEST 20: CHECK INTERFACE STATUS ICP BIT

6742 035172

STARS

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6743

6744

6745

6746

6747

6748

6749

6750

6751 035172

STARS

\*\*\*\*\*

SUBTEST 2:

CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR  
SET PAT BIT IN CS2 REGISTER AND ISSUE INTERFACE WRITE CMD  
READ REGISTERS AND TEST INTERFACE STATUS ICP SET  
RESET CS2 REGISTER PAT BIT AND WRITE TO INTERFACE STATUS ICP  
READ REGISTERS AND TEST INTERFACE STATUS ICP RESET

6752

6753 035172

035172

035172

104402

T20.2: BGNSUB

TRAP C\$BSUB

6754

6755 035174

004737

015342

50\$:

JSR PC,CLRMBC

;CLEAR MASSBUS CONTROLLER

6756 035200

005737

003030

TST MBCFLG

;TEST FLAG FOR ERROR

6757 035204

001405

BEQ 100\$

;CONTINUE IF NO ERROR

6758

6759 035206

035206

104455

ERRDF 5,M.MBC1,ER.DMP

;DEVICE FATAL

035210

000005

TRAP C\$ERDF

035212

011650

.WORD 5

035214

015074

.WORD M.MBC1

.WORD ER.DMP

;CLEAN UP AND EXIT

6760 035216

035216

104444

TRAP C\$DCLN

6761

6762 035220

052777

000020

145060

100\$:

BIS #CS2.PAT,@A.CS2

;SET PARITY TEST

6763 035226

012700

177777

MOV #-1,R0

;LOAD BLOCK SIZE = 1 WORD

6764 035232

004737

015674

JSR PC,WRTBLK

;ISSUE INTERFACE WRITE CMD

6765 035236

004737

015606

JSR PC,RDREG

;AND READ REGISTERS

6766

6767 035242

032737

001000

002340

BIT #IS.ICP,R.IS

;TEST ICP BIT SET

6768 035250

001004

BNE 200\$

;BRANCH IF SET

6769

6770 035252

035252

104456

ERRHRD 6,M.ICP1,ER.DMP

;'ICP BIT NOT SET BY PARITY TEST'

035254

000006

TRAP C\$ERHRD

035256

010450

.WORD 6

035260

015074

.WORD M.ICP1

.WORD ER.DMP

6771

6772 035262

042777

000020

145016

200\$:

BIC #CS2.PAT,@A.CS2

;CLEAR PARITY TEST

6773 035270

052777

001000

145012

BIS #IS.ICP,@A.IS

;WRITE TO INTERFACE STATUS ICP

6774 035276

004737

015606

JSR PC,RDREG

;READ REGISTERS

6775 035302

032737

001000

002340

BIT #IS.ICP,R.IS

;TEST FOR ICP RESET

6776 035310

001404

BEQ 400\$

;CONTINUE IF NO ERROR

6777

6778 035312

035312

104456

ERRHRD 7,M.ICP3,ER.DMP

;'INTERFACE STATUS ICP NOT RESET'

035314

000007

TRAP C\$ERHRD

035316

010623

.WORD 7

035320

015074

.WORD M.ICP3

.WORD ER.DMP

6779

6780 035322

035322

400\$: ENDSUB

;RESET ICP

L10127:

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 187-1  
TEST 20: CHECK INTERFACE STATUS ICP BIT

6781	035322	104403		TRAP	C\$ESUB	
6782	035324	004737	015324	JSR	PC,CLRISR	;CLEAR SERVICE ROUTINE VECTOR
6783						
6784	035330	004737	015550	JSR	PC,CLRTST	;AND CLEAR TEST DATA
6785						
6786	035334			ENDTST		
	035334					
	035334	104401	L10125:	TRAP	C\$ETST	

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 188  
TEST 21: CHECK INTERFACE STATUS IDP BIT

6788  
6789 035336

.SBTTL TEST 21: CHECK INTERFACE STATUS IDP BIT

STARS

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6790  
6791

TEST DESCRIPTION:

6792  
6793

VERIFY PROPER FUNCTION OF IS REGISTER IDP BIT

6794  
6795

TEST STEPS:

6796  
6797

IF NOT REVA OR NOT UPAR THEN:  
SETUP ISR VECTOR AND INITIALIZE  
EXECUTE SUBTEST 1-4 AND CLEAR VECTOR

6798  
6799

ERROR CONDITIONS:

6800  
6801

IS REGISTER IDP BIT NOT SET/RESET

6802  
6803

STARS

\*\*\*\*\*

6804 035336

6805  
6806 035336

BGNTST

T21::

6807  
6808

000017

SELMASK = B.BYTE + B.ABORT + B.AT3 + B.ATO

6809  
6810 035336

013700 003010

MOV SELECT,R0 ;LOAD TEST SELECT WORD  
BIC #SELMASK,R0 ;TEST FOR REVA OR UPAR SET  
BEQ 50\$ ;CONTINUE IF REVA AND UPAR NOT SET

6811 035342  
6812 035346

042700 000017

001402

6813  
6814 035350

104432

EXIT TST ;EXIT FROM TEST  
TRAP C\$EXIT  
.WORD L10130-

6815  
6816 035354

004737 015274

50\$: JSR PC,SETISR ;SETUP INTERRUPT SERVICE VECTOR  
MOV NA.IS,FP.NAM ;LOAD IS REGISTER NAME POINTER  
MOV BA.IS,FP.TBL ;LOAD REGISTER EXPAND TABLE ADDRESS  
;EXECUTE SUBTEST

6817 035360  
6818 035366

013737 002420 002730

013737 002450 002746

6819



ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 189  
TEST 21: CHECK INTERFACE STATUS IDP BIT

6821 035374

STARS

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6822

6823

6824

6825

6826

6827

6828

6829

6830

6831 035374

STARS

\*\*\*\*\*

SUBTEST 1:

CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR  
SETUP DATA PATTERN WITH ODD LOW BYTE, EVEN HIGH BYTE  
INITIALIZE REGISTERS FOR WRITE W/INT ENABLE  
SET CYCLE REQUEST, INVERT PARITY AND WAIT FOR INTERRUPT  
READ REGISTERS AND CHECK IDP & ERR BITS SET  
WRITE INTERFACE CLEAR CMD, AND CHECK IDP BIT RESET

6832

6833 035374

035374

035374 104402

T21.1: BGNSUB

TRAP CSBSUB

6834

6835 035376 004737 015342

6836 035402 005737 003030

6837 035406 001405

6838

6839 035410

035410 104455

035412 000001

035414 011650

035416 015074

6840 035420

035420 104444

JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER  
TST MBCFLG ;TEST FLAG FOR ERROR  
BEQ 100\$ ;CONTINUE IF NO ERROR

ERRDF 1,M.MBC1,ER.DMP ;DEVICE FATAL

TRAP C\$ERDF

.WORD 1

.WORD M.MBC1

.WORD ER.DMP

DOCLN ;CLEAN UP AND EXIT  
TRAP C\$DCLN

6841

6842 035422 005002

6843 035424 012701 000001

6844 035430 010137 002744

6845

6846 035434 010162 004054

6847 035440 012762 000000 003054

6848 035446 062702 000002

6849 035452 023702 002512

6850 035456 003366

6851

6852 035460 012700 177740

6853 035464 004737 015762

6854 035470 012777 000161 144600

6855 035476 012777 010020 144604

6856 035504 004737 015444

6857

6858 035510 004737 015606

6859 035514 032737 000400 002340

6860 035522 001014

6861

6862 035524 013737 002340 002736

6863 035532 012737 150600 002734

6864 035540

035540 104456

035542 000002

035544 010215

035546 015016

100\$: CLR R2 ;CLEAR BUFFER INDEX REGISTER  
MOV #1,R1 ;LOAD DATA PATTERN  
MOV R1,FP.DPAT ;AND INITIALIZE DISP PARM

150\$: MOV R1,OBUFF(R2) ;LOAD EVEN HIGH BYTE ODD LOW BYTE  
MOV #0,IBUFF(R2) ;CLEAR INPUT BUFFER  
ADD #2,R2 ;AND BUMP INDEX  
CMP D.MAX,R2 ;COMPARE WITH MAX BUFFER INDEX  
BGT 150\$ ;CONTINUE UNTIL BUFFER INITIALIZED

200\$: MOV #-40,R0 ;LOAD BLOCK SIZE = 32 WORDS/BYTES  
JSR PC,WRTINI ;INITIALIZE FOR INTERFACE WRITE  
MOV #WIE.CMD,@A.CS1 ;ISSUE INTERFACE WRITE  
MOV #10020,@A.IS ;CYCLE REQUEST WITH INVERT PARITY  
JSR PC,TSTINT ;WAIT FOR INTERRUPT OR TIME OUT

JSR PC,RDREG ;READ REGISTERS  
BIT #IS.IDP,R.IS ;TEST IDP BIT SET  
BNE 300\$ ;BRANCH IF SET

MOV R.IS,FP.ACT ;LOAD ACTUAL VALUE  
MOV #150600,FP.EXP ;EXPECTED: ATA, ERR, IP, IDP & IRY  
ERRHRD 2,M.IDP1,ER.REG ;"IDP BIT NOT SET BY PARITY ERROR"  
TRAP C\$ERHRD  
.WORD 2  
.WORD M.IDP1  
.WORD ER.REG

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 189-1  
TEST 21: CHECK INTERFACE STATUS IDP BIT

6865  
6866 035550 004737 016510

JSR PC,DSPDPAT

;DISPLAY DATA PATTERN

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 190  
 TEST 21: CHECK INTERFACE STATUS IDP BIT

```

6868
6869 035554 004737 015464      300$: JSR   PC,CLRDRI      ;ISSUE INTERFACE CLEAR
6870 035560 005737 003032      TST   DRIFLG          ;TEST ERROR FLAG
6871 035564 001405              BEQ   400$           ;BRANCH IF OK
6872
6873 035566              ERRHRD 3,M.ISR2,ER.DMP ;"INTERFACE STATUS ERROR ON CLEAR"
        035566 104456      TRAP  C$ERHRD
        035570 000003      .WORD 3
        035572 011572      .WORD M.ISR2
        035574 015074      .WORD ER.DMP
6874 035576 000416      BR    500$           ;EXIT TEST
6875
6876 035600 032737 000400 002340 400$: BIT   #IS.IDP,R.IS    ;TEST FOR IDP BIT RESET
6877 035606 001412              BEQ   500$           ;BRANCH IF RESET
6878
6879 035610 013737 002340 002736      MOV   R.IS,FP.ACT    ;LOAD ACTUAL VALUE
6880 035616 012737 000200 002734      MOV   #200,FP.EXP   ;EXPECTED: IRY
6881 035624              ERRHRD 4,M.IDP2,ER.REG ;"IDP NOT RESET BY DRIVE CLEAR"
        035624 104456      TRAP  C$ERHRD
        035626 000004      .WORD 4
        035630 010277      .WORD M.IDP2
        035632 015016      .WORD ER.REG
6882
6883 035634              500$: ENDSUB
        035634              L10131:
        035634 104403      TRAP  C$ESUB
    
```



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 191  
TEST 21: CHECK INTERFACE STATUS IDP BIT

6885 035636

STARS

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6886

6887

6888

6889

6890

6891

6892

6893

6894

6895 035636

SUBTEST 2:

CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR  
WRITE BLOCK TO INTERFACE AND CHECK FOR ERROR  
INITIALIZE REGISTERS FOR READ W/INT ENABLE  
SET CYCLE REQUEST, INVERT PARITY AND WAIT FOR INTERRUPT  
READ REGISTERS AND CHECK IDP & ERR BITS SET  
WRITE TO INTERFACE STATUS IDP, READ REGISTERS AND CHECK IDP RESET

STARS

\*\*\*\*\*

6896

6897 035636

035636

035636 104402

6898

6899 035640

004737 015342

6900 035644

005737 003030

6901 035650

001405

6902

6903 035652

035652 104455

035654 000005

035656 011650

035660 015074

6904 035662

035662 104444

6905

6906 035664

012700 177740

6907 035670

004737 015674

6908 035674

004737 015410

6909 035700

005737 003030

6910 035704

001404

6911

6912 035706

035706 104456

035710 000006

035712 007324

035714 015074

6913

6914 035716

012700 177740

6915 035722

004737 015726

6916 035726

012777 000171 144342

6917 035734

012777 010020 144346

6918 035742

004737 015444

6919

6920 035746

004737 015606

6921 035752

032737 000400 002340

6922 035760

001026

6923

6924 035762

013737 002340 002736

6925 035770

012737 150600 002734

6926 035776

035776 104456

036000 000007

T21.2: BGNSUB

TRAP C\$BSUB

JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER  
TST MBCFLG ;TEST FLAG FOR ERROR  
BEQ 200\$ ;CONTINUE IF NO ERROR

ERRDF 5,M.MBC1,ER.DMP ;DEVICE FATAL

TRAP C\$ERDF

.WORD 5

.WORD M.MBC1

.WORD ER.DMP

DOCLN ;CLEAN UP AND EXIT

TRAP C\$DCLN

200\$: MOV #-40,R0 ;LOAD BLOCK SIZE = 32 WORDS/BYTES  
JSR PC,WRTBLK ;WRITE BLOCK TO INTERFACE  
JSR PC,TSTMBC ;READ REGISTERS AND TEST FOR ERROR  
TST MBCFLG ;TEST ERROR FLAG  
BEQ 225\$ ;BRANCH IF NO ERROR

ERRHRD 6,M.WRD2,ER.DMP ;"XFER ERROR ON INTERFACE WRITE"

TRAP C\$ERHRD

.WORD 6

.WORD M.WRD2

.WORD ER.DMP

225\$: MOV #-40,R0 ;LOAD BLOCK SIZE = 32 WORDS/BYTES  
JSR PC,RDINI ;INITIALIZE FOR INTERFACE READ  
MOV #RIE.CMD,@A.CS1 ;ISSUE INTERFACE READ  
MOV #10020,@A.IS ;CYCLE REQUEST WITH INVERT PARITY  
JSR PC,TSTINT ;WAIT FOR INTERRUPT OR TIME OUT

250\$: JSR PC,RDREG ;READ REGISTERS  
BIT #IS.IDP,R.IS ;TEST IDP BIT SET  
BNE 400\$ ;BRANCH IF SET

MOV R.IS,FP.ACT ;LOAD ACTUAL VALUE  
MOV #150600,FP.EXP ;EXPECTED: ATA, ERR, IP, IDP & IRY  
ERRHRD 7,M.IDP1,ER.REG ;"IDP BIT NOT SET BY PARITY ERROR"  
TRAP C\$ERHRD  
.WORD 7

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 191-1  
 TEST 21: CHECK INTERFACE STATUS IDP BIT

	036002	010215		.WORD	M.IDP1	
	036004	015016		.WORD	ER.REG	
6927						
6928	036006	004737	016510	JSR	PC,DSPDPAT	;DISPLAY DATA PATTERN
6929						
6930	036012			PRINTX	#F.PERR	;PROMPT FOR PARITY SWITCH
	036012	012746	013412	MOV	#F.PERR,-(SP)	
	036016	012746	000001	MOV	#1,-(SP)	
	036022	010600		MOV	SP,R0	
	036024	104415		TRAP	C\$PNTX	
	036026	062706	000004	ADD	#4,SP	
6931	036032	005237	003052	INC	PERFLG	;BUMP MESSAGE COUNT

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 192  
 TEST 21: CHECK INTERFACE STATUS IDP BIT

```

6933
6934 036036 052777 000400 144244 400$: BIS #IS.IDP,@A.IS ;WRITE TO INTERFACE STATUS IDP
6935 036044 004737 015606 JSR PC,RDREG ;READ REGISTERS AND
6936 036050 032737 000400 002340 BIT #IS.IDP,R.IS ;TEST FOR IDP BIT RESET
6937 036056 001412 BEQ 500$ ;BRANCH IF RESET
6938
6939 036060 013737 002340 002736 MOV R.IS,FP.ACT ;LOAD ACTUAL VALUE
6940 036066 012737 000200 002734 MOV #200,FP.EXP ;EXPECTED: IRY
6941 036074 104456 ERRHRD 8,M.IDP3,ER.REG ;"IDP NOT RESET BY DRIVE CLEAR"
036074 000010 TRAP C$ERHRD
036076 000010 .WORD 8
036100 010365 .WORD M.IDP3
036102 015016 .WORD ER.REG
6942
6943 036104 500$: ENDSUB
036104 L10132: TRAP C$ESUB
036104 104403

```



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 193  
 TEST 21: CHECK INTERFACE STATUS IDP BIT

6945 036106

STARS

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6946

6947

6948

6949

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6951

6952

6953

6954

6955 036106

SUBTEST 3:

CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR  
 SETUP DATA PATTERN WITH ODD LOW BYTE, EVEN HIGH BYTE  
 INITIALIZE REGISTERS FOR WRITE W/INT ENABLE  
 SET CYCLE REQUEST, INVERT PARITY AND WAIT FOR INTERRUPT  
 READ REGISTERS AND CHECK IDP & ERR BITS SET  
 WRITE INTERFACE CLEAR CMD, AND CHECK IDP BIT RESET

STARS

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6956

6957 036106

036106

036106 104402

6958

6959 036110

004737 015342

6960 036114

005737 003030

6961 036120

001405

6962

6963 036122

036122 104455

036124 000011

036126 011650

036130 015074

6964 036132

036132 104444

6965

6966 036134

005002

6967 036136

012701 000400

6968 036142

010137 002744

6969

6970 036146

010162 004054

6971 036152

012762 000000 003054

6972 036160

062702 000002

6973 036164

023702 002512

6974 036170

003366

6975

6976 036172

012700 177740

6977 036176

004737 015762

6978 036202

012777 000161 144066

6979 036210

012777 010020 144072

6980 036216

004737 015444

6981

6982 036222

004737 015606

6983 036226

032737 000400 002340

6984 036234

001014

6985

6986 036236

013737 002340 002736

6987 036244

012737 150600 002734

6988 036252

036252 104456

036254 000012

036256 010215

036260 015016

BGNSUB

T21.3:

TRAP C\$BSUB

JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER  
 TST MBCFLG ;TEST FLAG FOR ERROR  
 BEQ 100\$ ;CONTINUE IF NO ERROR

ERRDF 9,M.MBC1,ER.DMP ;DEVICE FATAL

TRAP C\$ERDF

.WORD 9

.WORD M.MBC1

.WORD ER.DMP

DOCLN ;CLEAN UP AND EXIT

TRAP C\$DCLN

100\$: CLP R2 ;CLEAR BUFFER INDEX REGISTER  
 MOV #400,R1 ;LOAD DATA PATTERN  
 MOV R1,FP.DPAT ;AND INITIALIZE DISP PARM

150\$: MOV R1,OBUF(R2) ;LOAD ODD HIGH BYTE EVEN LOW BYTE  
 MOV #0,IBUF(R2) ;CLEAR INPUT BUFFER  
 ADD #2,R2 ;AND BUMP INDEX  
 CMP D.MAX,R2 ;COMPARE WITH MAX BUFFER INDEX  
 BGT 150\$ ;CONTINUE UNTIL BUFFER INITIALIZED

200\$: MOV #-40,R0 ;LOAD BLOCK SIZE = 32 WORDS/BYTES  
 JSR PC,WRTINI ;INITIALIZE FOR INTERFACE WRITE  
 MOV #WIE.CMD,@A.CS1 ;ISSUE INTERFACE WRITE  
 MOV #10020,@A.IS ;CYCLE REQUEST WITH INVERT PARITY  
 JSR PC,TSTINT ;WAIT FOR INTERRUPT OR TIME OUT

JSR PC,RDREG ;READ REGISTERS  
 BIT #IS.IDP,R.IS ;TEST IDP BIT SET  
 BNE 300\$ ;BRANCH IF SET

MOV R.IS,FP.ACT ;LOAD ACTUAL VALUE  
 MOV #150600,FP.EXP ;EXPECTED: ATA, ERR, IP, IDP & IRY  
 ERRHRD 10,M.IDP1,ER.REG ;"IDP BIT NOT SET BY PARITY ERROR"  
 TRAP C\$ERHRD  
 .WORD 10  
 .WORD M.IDP1  
 .WORD ER.REG

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 193-1  
TEST 21: CHECK INTERFACE STATUS IDP BIT

6989  
6990 036262 004737 016510

JSR PC,DSPDPAT

;DISPLAY DATA PATTERN

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 194  
 TEST 21: CHECK INTERFACE STATUS IDP BIT

```

6992
6993 036266 004737 015464      300$: JSR   PC,CLRDRI      ;ISSUE INTERFACE CLEAR
6994 036272 005737 003032      TST   DRIFLG           ;TEST ERROR FLAG
6995 036276 001405              BEQ   400$            ;BRANCH IF OK
6996
6997 036300              ERRHRD 11,M.ISR2,ER.DMP ;"INTERFACE STATUS ERROR ON CLEAR"
      036300 104456      TRAP  C$ERHRD
      036302 000013      .WORD 11
      036304 011572      .WORD M.ISR2
      036306 015074      .WORD ER.DMP
6998 036310 000416      BR    500$           ;EXIT TEST
6999
7000 036312 032737 000400 002340 400$: BIT   #IS.IDP,R.IS     ;TEST FOR IDP BIT RESET
7001 036320 001412              BEQ   500$           ;BRANCH IF RESET
7002
7003 036322 013737 002340 002736      MOV   R.IS,FP.ACT     ;LOAD ACTUAL VALUE
7004 036330 012737 000200 002734      MOV   #200,FP.EXP    ;EXPECTED: IRY
7005 036336              ERRHRD 12,M.IDP2,ER.REG ;"IDP NOT RESET BY DRIVE CLEAR"
      036336 104456      TRAP  C$ERHRD
      036340 000014      .WORD 12
      036342 010277      .WORD M.IDP2
      036344 015016      .WORD ER.REG
7006
7007 036346              500$: ENDSUB
      036346              L10133: TRAP  C$ESUB
      036346 104403

```



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 195  
TEST 21: CHECK INTERFACE STATUS IDP BIT

7009 036350

STARS

\*\*\*\*\*

7010

7011

7012

7013

7014

7015

7016

7017

7018

7019 036350

STARS

\*\*\*\*\*

SUBTEST 4:

CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR  
WRITE BLOCK TO INTERFACE AND CHECK FOR ERROR  
INITIALIZE REGISTERS FOR READ W/INT ENABLE  
SET CYCLE REQUEST, INVERT PARITY AND WAIT FOR INTERRUPT  
READ REGISTERS AND CHECK IDP & ERR BITS SET  
WRITE TO INTERFACE STATUS IDP, READ REGISTERS AND CHECK IDP BIT RESET

7020

7021 036350

036350

036350 104402

T21.4: BGNSUB

TRAP CSBSUB

7022

7023 036352 004737 015342

7024 036356 005737 003030

7025 036362 001405

7026

7027 036364

036364 104455

036366 000015

036370 011650

036372 015074

7028 036374

036374 104444

JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER  
TST MBCFLG ;TEST FLAG FOR ERROR  
BEQ 200\$ ;CONTINUE IF NO ERROR

ERRDF 13,M.MBC1,ER.DMP ;DEVICE FATAL

TRAP CSERDF

.WORD 13

.WORD M.MBC1

.WORD ER.DMP

DOCLN ;CLEAN UP AND EXIT

TRAP CSDCLN

7029

7030 036376 012700 177740

7031 036402 004737 015674

7032 036406 004737 015410

7033 036412 005737 003030

7034

7035 036416 001404

7036 036420

036420 104456

036422 000016

036424 007324

036426 015074

200\$: MOV #-40,R0 ;LOAD BLOCK SIZE = 32 WORDS/BYTES  
JSR PC,WRTBLK ;WRITE BLOCK TO INTERFACE  
JSR PC,TSTMBC ;READ REGISTERS AND TEST FOR ERROR  
TST MBCFLG ;TEST ERROR FLAG  
BEQ 225\$ ;BRANCH IF NO ERROR

ERRHRD 14,M.WRD2,ER.DMP ;'XFER ERROR ON INTERFACE WRITE'

TRAP CSERHRD

.WORD 14

.WORD M.WRD2

.WORD ER.DMP

7037

7038 036430 012700 177740

7039 036434 004737 015726

7040 036440 012777 000171 143630

7041 036446 012777 010020 143634

7042

7043 036454 004737 015444

7044 036460 004737 015606

7045 036464 032737 000400 002340

7046 036472 001014

7047

7048 036474 013737 002340 002736

7049 036502 012737 150600 002734

7050 036510

036510 104456

036512 000017

225\$: MOV #-40,R0 ;LOAD BLOCK SIZE = 32 WORDS/BYTES  
JSR PC,RDINI ;INITIALIZE FOR INTERFACE READ  
MOV #RIE.CMD,@A.CS1 ;ISSUE INTERFACE READ  
MOV #10020,@A.IS ;CYCLE REQUEST WITH INVERT PARITY  
JSR PC,TSTINT ;WAIT FOR INTERRUPT OR TIME OUT

JSR PC,RDREG ;READ REGISTERS

BIT #IS.IDP,R.IS ;TEST IDP BIT SET

BNE 400\$ ;BRANCH IF SET

MOV R.IS,FP.ACT ;LOAD ACTUAL VALUE

MOV #150600,FP.EXP ;EXPECTED: ATA, ERR, IP, IDP & IRY

ERRHRD 15,M.IDP1,ER.REG ;'IDP BIT NOT SET BY PARITY ERROR'

TRAP CSERHRD

.WORD 15

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 195-1  
TEST 21: CHECK INTERFACE STATUS IDP BIT

```

036514 010215 .WORD M.IDP1
036516 015016 .WORD ER.REG
7051
7052 036520 004737 016510 JSR PC,DSPDPAT ;DISPLAY DATA PATTERN
7053
7054 036524 052777 000400 143556 400$: BIS #IS.IDP,@A.IS ;WRITE TO INTERFACE STATUS IDP
7055 036532 004737 015606 JSR PC,RDREG ;READ REGISTERS AND
7056 036536 032737 000400 002340 BIT #IS.IDP,R.IS ;TEST FOR IDP BIT RESET
7057 036544 001412 BEQ 500$ ;BRANCH IF RESET
7058
7059 036546 013737 002340 002736 MOV R.IS,FP.ACT ;LOAD ACTUAL VALUE
7060 036554 012737 000200 002734 MOV #200,FP.EXP ;EXPECTED: IRY
7061 036562 ERRHRD 16,M.IDP3,ER.REG ;"INTERFACE STATUS IDP NOT RESET"
036562 104456 TRAP C$ERHRD
036564 000020 .WORD 16
036566 010365 .WORD M.IDP3
036570 015016 .WORD ER.REG
7062
7063 036572 500$: ENDSUB
036572 L10134:
036572 104403 TRAP C$ESUB
7064
7065 036574 004737 015324 JSR PC,CLRISR ;CLEAR SERVICE ROUTINE VECTOR
7066
7067 036600 004737 015550 JSR PC,CLRTST ;AND CLEAR TEST DATA
7068
7069 036604 ENDTST
036604 L10130:
036604 104401 TRAP C$ETST

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 196  
 TEST 22: VERIFY SW4 DISABLES INTERFACE ATOO BIT ATTN

7071  
 7072 036606  
 7073  
 7074  
 7075  
 7076  
 7077  
 7078  
 7079  
 7080  
 7081  
 7082  
 7083  
 7084  
 7085  
 7086  
 7087  
 7088  
 7089  
 7090 036606

```

.SBTTL TEST 22: VERIFY SW4 DISABLES INTERFACE ATOO BIT ATTN
STARS
*****
TEST DESCRIPTION:
    VERIFY SW4 IN 'OFF' POSITION WILL DISABLE
    USER ATTENTION BIT ATOO FROM ASSERTING ATA
TEST STEPS:
    IF NOT REVA AND ATO DISABLED THEN:
        CLEAR MBC AND CHECK FOR ERROR
        ISSUE INTERFACE CLEAR CMD AND TEST FOR ERROR STATUS
        SET FS REGISTER FUNCTION BIT F0
        READ IS REGISTER AND CHECK ATOO BIT SET & ATA BIT RESET
ERROR CONDITIONS:
    IS REGISTER ATOO & ATA BITS NOT SET/RESET PROPERLY
STARS
*****
    
```

7091  
 7092 036606  
 036606  
 7093  
 7094 000036  
 7095 000001  
 7096  
 7097 036606 013700 003010  
 7098 036612 042700 000036  
 7099 036616 022700 000001  
 7100 036622 001402  
 7101  
 7102 036624  
 036624 104432  
 036626 000164  
 7103  
 7104 036630 004737 015342  
 7105 036634 005737 003030  
 7106 036640 001405  
 7107  
 7108 036642  
 036642 104455  
 036644 000001  
 036646 011650  
 036650 015074  
 7109 036652  
 036652 104444

```

BGNTST
T22::
SELMASK = B.UPAR + B.BYTE + B.ABORT + B.AT3
SELTEST = B.ATO
MOV SELECT,R0 ;READ SELECT WORD
BIC #SELMASK,R0 ;CLEAR DON'T CARE SELECT BITS
CMP #SELTEST,R0 ;COMPARE AND
BEQ 50$ ;BRANCH IF EQUAL
EXIT TST ;EXIT TEST
TRAP C$EXIT
.WORD L10135-.
50$: JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER
TST MBCFLG ;TEST FLAG FOR ERROR
BEQ 100$ ;CONTINUE IF NO ERROR
ERRDF 1,M.MBC1,ER.DMP ;DEVICE FATAL
TRAP C$ERDF
.WORD 1
.WORD M.MBC1
.WORD ER.DMP
DOCLN ;CLEAN UP AND EXIT
TRAP C$DCLN
    
```



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 197  
 TEST 22: VERIFY SW4 DISABLES INTERFACE AT00 BIT ATTN

```

7111
7112 036654 004737 015464      100$: JSR   PC,CLRDRI      ;CLEAR DRIVE AND TEST FOR ERROR
7113 036660 005737 003032      TST   DRIFLG          ;TEST ERROR FLAG
7114 036664 001405              BEQ   150$           ;CONTINUE IF NO ERROR
7115
7116 036666              ERRHRD 2,M.ISR2,ER.DMP ;"INTERFACE STATUS ERROR ON CLEAR CMD"
      036666 104456      TRAP  C$ERHRD
      036670 000002      .WORD 2
      036672 011572      .WORD M.ISR2
      036674 015074      .WORD ER.DMP
7117 036676 000443      BR    400$         ;EXIT TEST
7118
7119 036700 012777 000400 143376 150$: MOV   #FS.F0,@A.FS    ;SET FUNCTION BIT F5
7120 036706 017737 143376 002736    MOV   @A.IS,FP.ACT   ;READ REGISTER
7121 036714 012777 000000 143362    MOV   #0,@A.FS      ;CLEAR FS REGISTER
7122
7123 036722 012737 000201 002734 200$: MOV   #201,FP.EXP     ;LOAD EXPECTED: IRY & AT00
7124 036730 032737 100000 002736    BIT   #IS.ATA,FP.ACT ;TEST FOR ATA RESET
7125 036736 001413              BEQ   300$           ;CONTINUE IF RESET
7126
7127 036740 013737 002420 002730    MOV   NA.IS,FP.NAM  ;LOAD REGISTER NAME ADDRESS
7128 036746 013737 002450 002746    MOV   BA.IS,FP.TBL  ;LOAD REGISTER EXPAND TABLE ADDRESS
7129 036754              ERRHRD 3,M.SW4,ER.REG ;"SW4 DOES NOT INIHIBIT ATO BIT SET"
      036754 104456      TRAP  C$ERHRD
      036756 000003      .WORD 3
      036760 012153      .WORD M.SW4
      036762 015016      .WORD ER.REG
7130 036764 000410      BR    400$         ;EXIT TEST
7131
7132 036766 023737 002736 002734 300$: CMP   FP.ACT,FP.EXP  ;COMPARE VALUE
7133 036774 001404              BEQ   400$           ;IDENTICAL: EXIT TEST
7134
7135 036776              ERRHRD 4,M.ISR1,ER.DMP ;"INTERFACE STATUS ERROR"
      036776 104456      TRAP  C$ERHRD
      037000 000004      .WORD 4
      037002 011543      .WORD M.ISR1
      037004 015074      .WORD ER.DMP
7136
7137 037006 004737 015550      400$: JSR   PC,CLRTST  ;AND CLEAR TEST DATA
7138
7139 037012              ENDTST
      037012              L10135:
      037012 104401      TRAP  C$ETST
  
```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 198  
TEST 23: VERIFY SW5 DISABLES INTERFACE AT03 BIT

7141  
7142 037014

.SBTTL TEST 23: VERIFY SW5 DISABLES INTERFACE AT03 BIT

STARS

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7143  
7144  
7145  
7146  
7147  
7148  
7149  
7150  
7151  
7152  
7153  
7154  
7155  
7156  
7157  
7158  
7159

TEST DESCRIPTION:

VERIFY SW5 IN 'OFF' POSITION WILL DISABLE  
USER ATTENTION BIT AT03 FROM ASSERTING ATA

TEST STEPS:

IF NOT REVA AND AT03 DISABLED THEN:  
CLEAR MBC AND CHECK FOR ERROR  
ISSUE INTERFACE CLEAR CMD AND TEST FOR ERROR STATUS  
SET FS REGISTER FUNCTION BIT F3  
READ IS REGISTER AND CHECK AT03 BIT SET & ATA BIT RESET

ERROR CONDITIONS:

IS REGISTER AT03 & ATA BITS NOT SET/RESET PROPERLY

7160 037014

STARS

\*\*\*\*\*

7161  
7162 037014  
037014

BGNTST

T23::

7163  
7164 000035  
7165 000002  
7166  
7167 037014 013700 003010  
7168 037020 042700 000035  
7169 037024 022700 000002  
7170 037030 001402  
7171  
7172 037032  
037032 104432  
037034 000164  
7173  
7174 037036 004737 015342  
7175 037042 005737 003030  
7176 037046 001405  
7177  
7178 037050  
037050 104455  
037052 000001  
037054 011650  
037056 015074  
7179 037060  
037060 104444

SELMASK = B.UPAR + B.BYTE + B.ABORT + B.ATO  
SELTEST = B.AT3

MOV SELECT,R0 ;READ SELECT WORD  
BIC #SELMASK,R0 ;CLEAR DON'T CARE SELECT BITS  
CMP #SELTEST,R0 ;COMPARE AND  
BEQ 50\$ ;BRANCH IF EQUAL

EXIT TST ;EXIT TEST  
TRAP C\$EXIT  
.WORD L10136-

50\$: JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER  
TST MBCFLG ;TEST FLAG FOR ERROR  
BEQ 100\$ ;CONTINUE IF NO ERROR

ERRDF 1,M.MBC1,ER.DMP ;DEVICE FATAL  
TRAP C\$ERDF

.WORD 1  
.WORD M.MBC1  
.WORD ER.DMP ;CLEAN UP AND EXIT  
DOCLN  
TRAP C\$DCLN

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 199  
 TEST 23: VERIFY SW5 DISABLES INTERFACE AT03 BIT

```

7181
7182 037062 004737 015464      100$: JSR   PC,CLRDR1      :CLEAR DRIVE AND TEST FOR ERROR
7183 037066 005737 003032      TST   DRIFLG          :TEST ERROR FLAG
7184 037072 001405              BEQ   150$            :CONTINUE IF NO ERROR
7185
7186 037074              ERRHRD  2,M.ISR2,ER.DMP    :'"INTERFACE STATUS ERROR ON CLEAR CMD"'
      037074 104456      TRAP   C$ERHRD
      037076 000002      .WORD  2
      037100 011572      .WORD  M.ISR2
      037102 015074      .WORD  ER.DMP
7187 037104 000443      BR    400$          :EXIT TEST
7188
7189 037106 012777 004000 143170 150$: MOV   #FS.F3,@A.FS    :SET FUNCTION BIT F3
7190 037114 017737 143170 002736    MOV   @A.IS,FP.ACT    :READ REGISTER
7191 037122 012777 000000 143154    MOV   #0,@A.FS       :CLEAR FS REGISTER
7192
7193 037130 012737 000210 002734 200$: MOV   #210,FP.EXP    :LOAD EXPECTED: IRV & AT3
7194 037136 032737 100000 002736    BIT   #IS.ATA,FP.ACT :TEST FOR ATA RESET
7195 037144 001413      BEQ   300$          :CONTINUE IF RESET
7196
7197 037146 013737 002420 002730      MOV   NA.IS,FP.NAM   :LOAD REGISTER NAME ADDRESS
7198 037154 013737 002450 002746      MOV   BA.IS,FP.TBL   :LOAD REGISTER EXPAND TABLE ADDRESS.
7199 037162              ERRHRD  3,M.SW5,ER.REG    :'"SW5 DOES NOT INIHIBIT AT3 BIT SET"'
      037162 104456      TRAP   C$ERHRD
      037164 000003      .WORD  3
      037166 012233      .WORD  M.SW5
      037170 015016      .WORD  ER.REG
7200 037172 000410      BR    400$          :EXIT TEST
7201
7202 037174 023737 002736 002734 300$: CMP   FP.ACT,FP.EXP  :COMPARE VALUE
7203 037202 001404      BEQ   400$          :IDENTICAL: EXIT TEST
7204
7205 037204              ERRHRD  4,M.ISR1,ER.DMP    :'"INTERFACE STATUS ERROR"'
      037204 104456      TRAP   C$ERHRD
      037206 000004      .WORD  4
      037210 011543      .WORD  M.ISR1
      037212 015074      .WORD  ER.DMP
7206
7207 037214 004737 015550      400$: JSR   PC,CLRTST    :AND CLEAR TEST DATA
7208
7209 037220              ENDTST
      037220              L10136:
      037220 104401      TRAP   C$ETST
  
```



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 200  
TEST 24: VERIFY SW6 DISABLES INTERFACE ABORT LOGIC

7211  
7212 037222

7213  
7214  
7215  
7216  
7217  
7218  
7219  
7220  
7221  
7222  
7223  
7224  
7225  
7226  
7227  
7228  
7229  
7230  
7231  
7232

7233 037222

7234  
7235 037222  
037222

7236  
7237 000033  
7238 000004  
7239  
7240 037222 013700 003010  
7241 037226 042700 000033  
7242 037232 022700 000004  
7243 037236 001402  
7244  
7245 037240  
037240 104432  
037242 000244  
7246  
7247 037244 004737 015274  
7248  
7249 037250 004737 015342  
7250 037254 005737 003030  
7251 037260 001405  
7252  
7253 037262  
037262 104455  
037264 000001  
037266 011650  
037270 015074  
7254 037272  
037272 104444

.SBTTL TEST 24: VERIFY SW6 DISABLES INTERFACE ABORT LOGIC  
STARS

\*\*\*\*\*

TEST DESCRIPTION:

VERIFY SW6 IN 'OFF' POSITION WILL DISABLE  
USER ATTENTION TRANSFER ABORT LOGIC

TEST STEPS:

IF AT03 ABORT DISABLED AND NOT REVA THEN:  
CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR  
ISSUE INTERFACE WRITE W/INT ENABLE & SET CYCLE REQUEST  
SET FS REGISTER FUNCTION BIT F3 AND WAIT FOR INTERRUPT  
READ REGISTERS, CHECK IRY SET AND WORD COUNT IS ZERO

ERROR CONDITIONS:

CONTROLLER NOT CLEARED BY MASSBUS INIT  
INTERFACE STATUS ERROR  
DATA LATE ERROR; ADJUST BANDWIDTH  
SW1-6 DOES NOT DISABLE AT3 TRANSFER ABORT LOGIC

STARS

\*\*\*\*\*

BGNTST

T24::

SELMASK = B.UPAR + B.BYTE + B.AT3 + B.ATO  
SELTEST = B.ABORT

MOV SELECT,RO ;READ SELECT WORD  
BIC #SELMASK,RO ;MASK DON'T CARE SELECT BITS  
CMP #SELTEST,RO ;COMPARE AND  
BEQ 50\$ ;BRANCH IF EQUAL

EXIT TST ;EXIT TEST  
TRAP C\$EXIT  
.WORD L10137-

50\$: JSR PC,SETISR ;SETUP ISR VECTOR

JSR PC,CLRMBBC ;CLEAR MASSBUS CONTROLLER  
TST MBCFLG ;TEST FLAG FOR ERROR  
BEQ 100\$ ;CONTINUE IF NO ERROR

ERRDF 1,M.MBC1,ER.DMP ;DEVICE FATAL  
TRAP C\$ERDF

.WORD 1  
.WORD M.MBC1  
.WORD ER.DMP

DOCLN ;CLEAN UP AND EXIT  
TRAP C\$DCLN

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 201  
 TEST 24: VERIFY SW6 DISABLES INTERFACE ABORT LOGIC

```

7256
7257 037274 012700 177750      100$:  MOV    #-30,R0      ;LOAD BLOCK SIZE OF 24 WORDS (RH70)
7258 037300 005737 003012      TST    CPUFLG      ;TEST FOR PDP-11/70
7259 037304 001002              BNE    120$        ;IF NE THEN YES
7260 037306 012700 177640      MOV    #-140,R0    ;LOAD BLOCK SIZE OF 96 WORDS (RH11)
7261
7262 037312 004737 015762      120$:  JSR    PC,WRTINI    ;AND INITIALIZE ADDRESS REGISTERS
7263 037316 012777 000161 142752  MOV    #WIE.CMD,@A.CS1 ;ISSUE WRITE COMMAND TO CS1
7264 037324 004737 016030      JSR    PC,SILODLY  ;WAIT FOR SILO TO FILL
7265 037330 012777 000020 142752  MOV    #IS.CYC,@A.IS ;SET CYCLE REQUEST
7266 037336 000240              NOP                    ;DELAY JUST
7267 037340 000240              NOP                    ;A FEW CYCLES
7268 037342 012777 004000 142734  MOV    #FS.F3,@A.FS ;SET FS REGISTER FUNCTION BIT F3
7269
7270 037350 004737 015444      200$:  JSR    PC,TSTINT   ;WAIT FOR INTERRUPT OR TIME OUT
7271 037354 004737 015606      JSR    PC,RDREG    ;READ REGISTERS
7272 037360 012777 000000 142716  MOV    #0,@A.FS    ;CLEAR FUNCTION / STATUS BITS
7273
7274 037366 122737 000210 002340  CMPB   #210,R.IS   ;TEST ISR
7275 037374 001420              BEQ    300$        ;IF EQ THEN OK
7276
7277 037376 013737 002340 002736  MOV    R.IS,FP.ACT ;LOAD ACTUAL VALUE
7278 037404 012737 100210 002734  MOV    #100210,FP.EXP ;EXPECTED: ATA,IRY & AT3
7279 037412 013737 002420 002730  MOV    NA.IS,FP.NAM ;LOAD REGISTER NAME ADDRESS
7280 037420 013737 002450 002746  MOV    BA.IS,FP.TBL ;LOAD REGISTER EXPAND TABLE ADDRESS
7281 037426              ERRHRD 2,M.ISR1,ER.REG ;"INTERFACE STATUS ERROR"
      037426 104456          TRAP  C$ERHRD
      037430 000002          .WORD 2
      037432 011543          .WORD M.ISR1
      037434 015016          .WORD ER.REG
7282
7283 037436 032737 100000 002336 300$:  BIT    #CS2.DLT,R.CS2 ;TEST FOR DATA LATE
7284 037444 001405              BEQ    400$        ;IF EQ THEN OK
7285
7286 037446              ERRHRD 3,M.DLT1,ER.DMP ;"DATA LATE ERROR; ADJUST BANDWIDTH"
      037446 104456          TRAP  C$ERHRD
      037450 000003          .WORD 3
      037452 007707          .WORD M.DLT1
      037454 015074          .WORD ER.DMP
7287 037456 000407              BR     500$
7288
7289 037460 005737 002330      400$:  TST    R.WC        ;TEST WORD COUNT
7290 037464 001404              BEQ    500$        ;IF WORD COUNT IS ZERO THEN OK
7291
7292 037466              ERRHRD 4,M.SW6,ER.DMP ;"SW1-6 DOES NOT DISABLE XFER ABORT"
      037466 104456          TRAP  C$ERHRD
      037470 000004          .WORD 4
      037472 012313          .WORD M.SW6
      037474 015074          .WORD ER.DMP
7293
7294 037476 004737 015324      500$:  JSR    PC,CLRISR   ;CLEAR ISR VECTOR
7295
7296 037502 004737 015550      JSR    PC,CLRTST   ;AND CLEAR TEST DATA
7297
7298 037506              ENDTST
      037506              L10137:
      037506 104401          TRAP  C$SETST

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 202  
TEST 25: USER DATA WORD BLOCK TRANSFER

7300  
7301 037510

.SBTTL TEST 25: USER DATA WORD BLOCK TRANSFER  
STARS

\*\*\*\*\*

7302  
7303  
7304  
7305  
7306  
7307  
7308  
7309  
7310  
7311  
7312  
7313  
7314  
7315  
7316  
7317  
7318  
7319  
7320  
7321  
7322 037510

TEST DESCRIPTION:

PERFORM 64-WORD DMA DATA TRANSFERS, WITH USER SPECIFIED PATTERN  
COMPARE DATA READ AGAINST DATA WRITTEN

TEST STEPS:

IF NOT BYTE MODE AND DPFLG THEN:  
SETUP INTERRUPT SERVICE ROUTINE VECTOR  
GET DATA PATTERN FROM OPERATOR, AND SETUP BUFFER PATTERN  
EXECUTE SUBTEST 1 AND CLEAR INTERRUPT VECTOR  
TEST FOR OPERATOR CONTROL/C TO EXIT

ERROR CONDITIONS:

MASSBUS CONTROLLER ERROR STATUS  
DATA TRANSFER NOT COMPLETE  
NO INTERRUPT ON DATA TRANSFER COMPLETE  
DATA RECEIVED DOES NOT MATCH EXPECTED DATA

STARS

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7323  
7324 037510  
037510

BGNTST  
T25::

7325  
7326 000010  
7327  
7328 037510 005737 002242  
7329 037514 001002  
7330  
7331 037516  
037516 104432  
037520 000514  
7332  
7333 037522 013700 003010  
7334 037526 032700 000010  
7335 037532 001402  
7336  
7337 037534  
037534 104432  
037536 000476  
7338  
7339 037540 004737 015274  
7340 037544 012737 000000 002514  
7341 037552 012737 000100 002506  
7342 037560 012737 000200 002512  
7343  
7344 037566  
037566 104443  
037570 000406  
037572 002514  
037574 000032  
037576 014220

SELTEST = B.BYTE  
TST DPFLG ;TEST DP FLAG  
BNE 25\$ ;BRANCH IF SET  
EXIT TST ;FLAG NOT SET: EXIT TEST  
TRAP C\$EXIT  
.WORD L10140-.  
25\$: MOV SELECT,R0 ;READ SELECT WORD  
BIT #SELTEST,R0 ;AND TEST BYTE MODE BIT SET  
BEQ 50\$ ;BRANCH IF NOT SET  
EXIT TST ;BYTE MODE: EXIT TEST  
TRAP C\$EXIT  
.WORD L10140-.  
50\$: JSR PC,SETISR ;SETUP INTERRUPT SERVICE VECTOR  
MOV #0,D.WDP ;CLEAR USER DATA PATTERN  
MOV #100,D.BLOCK ;INITIALIZE BLOCK SIZE  
MOV #200,D.MAX ;INITIALIZE MAX DATA BUFFER INDEX  
100\$: GMANID Q.WDP,D.WDP,0,-1,0,177777,YES  
TRAP C\$GMAN  
BR 10000\$  
.WORD D.WDP  
.WORD T\$CODE  
.WORD Q.WDP



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 202-1  
 TEST 25: USER DATA WORD BLOCK TRANSFER

	037600	177777		.WORD	-1	
	037602	000000		.WORD	T\$LOLIM	
	037604	177777		.WORD	T\$HILIM	
	037606					
7345				10000\$:		
7346	037606		200\$:	GMANID	Q.WBL,D.BLOCK,D,-1,1,100,YES	
	037606	104443		TRAP	CSGMAN	
	037610	000406		BR	10001\$	
	037612	002506		.WORD	D.BLOCK	
	037614	000052		.WORD	T\$CODE	
	037616	014274		.WORD	Q.WBL	
	037620	177777		.WORD	-1	
	037622	000001		.WORD	T\$LOLIM	
	037624	000100		.WORD	T\$HILIM	
	037626			10001\$:		
7347						
7348	037626	013701	002506	MOV	D.BLOCK,R1	:LOAD USER BLOCK SIZE
7349	037632	006301		ASL	R1	:DOUBLE FOR ADDRESS INDEX
7350	037634	010137	002512	MOV	R1,D.MAX	:AND SAVE AS MAX INDEX
7351	037640	005437	002506	NEG	D.BLOCK	:COMPLEMENT
7352						
7353	037644	005002		LP.WDP:	CLR R2	:WORD PATTERN LOOP LABEL
7354	037646	013701	002514	MOV	D.WDP,R1	:LOAD DATA PATTERN
7355	037652	010137	002744	MOV	R1,FP.DPAT	:INITIALIZE DISPLAY PARM
7356						
7357	037656	010162	004054	250\$:	MOV R1,OBUF(R2)	:LOAD USER PATTERN INTO BUFFER
7358	037662	012762	000000	MOV	#0,IBUF(R2)	:CLEAR INPUT BUFFER
7359	037670	062702	000002	ADD	#2,R2	:AND BUMP INDEX
7360	037674	023702	002512	CMP	D.MAX,R2	:COMPARE WITH MAX BUFFER INDEX
7361	037700	003366		BGT	250\$	:CONTINUE UNTIL BUFFER INITIALIZED

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 203  
TEST 25: USER DATA WORD BLOCK TRANSFER

7363 037702

STARS

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7364  
7365  
7366  
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7379

SUBTEST 1:

CLEAR THE MASSBUS CONTROLLER AND CHECK FOR ERROR

INITIALIZE REGISTERS FOR WRITE W/INT ENABLE  
SET CYCLE REQUEST, DELAY AND READ REGISTERS  
CHECK FOR ERROR STATUS AND CHECK FOR INTERRUPT  
IF ERROR OR NO INTERRUPT THEN: EXIT SUBTEST

INITIALIZE REGISTERS FOR READ W/INT ENABLE  
SET CYCLE REQUEST, DELAY AND READ REGISTERS  
CHECK FOR ERROR STATUS AND CHECK FOR INTERRUPT  
IF ERROR OR NO INTERRUPT THEN: EXIT SUBTEST

COMPARE DATA READ AGAINST DATA WRITTEN

STARS

\*\*\*\*\*

7380 037702

7381

7382 037702

037702

104402

7383

7384 037704

004737

015342

7385 037710

005737

003030

7386 037714

001405

7387

7388 037716

037716

104455

037720

000001

037722

011650

037724

015074

7389 037726

037726

104444

7390

7391 037730

005002

7392

7393 037732

013700

002506

7394 037736

004737

015674

7395 037742

004737

015410

7396 037746

005737

003022

7397 037752

001005

7398

7399 037754

037754

104456

037756

000002

037760

010706

037762

015074

7400 037764

000407

7401

7402 037766

005737

003030

7403 037772

001404

7404

7405 037774

037774

104456

T25.1: BGNSUB

TRAP CSBSUB

JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER

TST MBCFLG ;TEST FLAG FOR ERROR

BEQ 100\$ ;CONTINUE IF NO ERROR

ERRDF 1,M.MBC1,ER.DMP ;DEVICE FATAL

TRAP C\$ERDF

.WORD 1

.WORD M.MBC1

.WORD ER.DMP

DOCLN ;CLEAN UP AND EXIT

TRAP C\$DCLN

100\$: CLR R2 ;CLEAR BUFFER INDEX REGISTER

200\$: MOV D.BLOCK,R0 ;LOAD BLOCK SIZE

JSR PC,WRTBLK ;WRITE BLOCK TO INTERFACE

JSR PC,TSTMBC ;READ REGISTERS AND TEST ERRORS

TST INTFLG ;TEST FOR INTERRUPT

BNE 250\$ ;BRANCH IF INTERRUPT RECEIVED

ERRHRD 2,M.INT1,ER.DMP ;'NOT INTERRUPT ON WORD XFER EBL'

TRAP C\$ERHRD

.WORD 2

.WORD M.INT1

.WORD ER.DMP

BR 300\$ ;EXIT SEGMENT

250\$: TST MBCFLG ;TEST FOR ERROR

BEQ 300\$ ;CONTINUE IF RESET

ERRHRD 3,M.WRD2,ER.DMP ;'WORD XFER ERROR ON INTERFACE WRITE'

TRAP C\$ERHRD

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 203-1  
 TEST 25: USER DATA WORD BLOCK TRANSFER

	037776	000003		.WORD	3		
	040000	007324		.WORD	M.WRD2		
	040002	015074		.WORD	ER.DMP		
7406							
7407	040004	013700	002506	300\$:	MOV	D.BLOCK,R0	:LOAD BLOCK SIZE
7408	040010	004737	015642		JSR	PC,RDBLK	:READ BLOCK FROM INTERFACE
7409	040014	004737	015410		JSR	PC,TSTMBC	:READ REGISTERS AND TEST ERRORS
7410	040020	005737	003022		TST	INTFLG	:TEST FOR INTERRUPT
7411	040024	001005			BNE	350\$	:BRANCH IF INTERRUPT RECEIVED
7412							
7413	040026				ERRHRD	4,M.INT1,ER.DMP	: 'NOT INTERRUPT ON WORD XFER EBL'
	040026	104456			TRAP	C\$ERHRD	
	040030	000004			.WORD	4	
	040032	010706			.WORD	M.INT1	
	040034	015074			.WORD	ER.DMP	
7414	040036	000407			BR	400\$	:EXIT SEGMENT
7415							
7416	040040	005737	003030	350\$:	TST	MBCFLG	:TEST FOR ERROR
7417	040044	001404			BEQ	400\$	:CONTINUE IF RESET
7418							
7419	040046				ERRHRD	5,M.WRD3,ER.DMP	: 'WORD XFER ERROR ON INTERFACE READ'
	040046	104456			TRAP	C\$ERHRD	
	040050	000005			.WORD	5	
	040052	007373			.WORD	M.WRD3	
	040054	015074			.WORD	ER.DMP	



ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 204  
 TEST 25: USER DATA WORD BLOCK TRANSFER

```

7421
7422 040056 005002          400$: CLR      R2          ;CLEAR BUFFER INDEX REGISTER
7423 040060 005037 003026  CLR      ERRFLG      ;CLEAR ERROR COUNT
7424
7425 040064 026262 003054 004054 425$: CMP      IBUF(R2),OBUF(R2) ;COMPARE DATA
7426 040072 001427          BEQ      475$         ;IDENTICAL: CONTINUE
7427
7428 040074 005737 003026          TST      ERRFLG      ;TEST ERROR COUNT
7429 040100 001004          BNE      450$         ;BRANCH IF NOT FIRST ERROR
7430
7431 040102          ERRHRD  6,M.WRD4,ER.DATA ;'DATA COMPARISON ERROR'
      040102 104456      TRAP    C$ERHRD
      040104 000006      .WORD  6
      040106 007441      .WORD  M.WRD4
      040110 015172      .WORD  ER.DATA
7432
7433 040112 005237 003026          450$: INC      ERRFLG      ;BUMP ERROR COUNT
7434 040116 022737 000010 003026  CMP      #8,ERRFLG   ;COMPARE WITH MAX ERROR COUNT
7435 040124 002412          BLT      475$         ;BRANCH IF MAX LESS THAN COUNT
7436
7437 040126 010237 002742          MOV      R2,FP.NDX   ;SAVE DATA INDEX
7438 040132 016237 003054 002736  MOV      IBUF(R2),FP.ACT ;SAVE RECEIVED DATA
7439 040140 016237 004054 002734  MOV      OBUF(R2),FP.EXP ;SAVE DATA SENT
7440 040146 004737 016374          JSR      PC,DSPDATA  ;AND DISPLAY DATA
7441
7442 040152 062702 000002          475$: ADD      #2,R2      ;BUMP INDEX
7443 040156 023702 002512          CMP      D.MAX,R2    ;COMPARE WITH MAX BUFFER INDEX
7444 040162 003340          BGT      425$         ;CONTINUE UNTIL INDEX EQUALS MAX
7445
7446 040164 005737 003026          500$: TST      ERRFLG      ;TEST NUMBER ERRORS
7447 040170 001414          BEQ      600$         ;BRANCH IF NO ERRORS
7448
7449 040172          PRINTX  #F.ERCNT,ERRFLG ;PRINT SUBTEST ERROR COUNT
      040172 013746 003026  MOV      ERRFLG,-(SP)
      040176 012746 013304  MOV      #F.ERCNT,-(SP)
      040202 012746 000002  MOV      #2,-(SP)
      040206 010600          MOV      SP,R0
      040210 104415          TRAP    C$PNTX
      040212 062706 000006  ADD      #6,SP
7450 040216 005237 003004          INC      ERRCNT      ;ADD TO TEST ERROR COUNT
7451
7452 040222          600$: ENDSUB
      040222          L10141: TRAP    C$ESUB
      040222 104403
7453
7454 040224          BREAK
      040224 104422          TRAP    C$BRK      ;TEST FOR CONTROL/C
7455
7456 040226 000606          BR      LP.WDP       ;LOOP BACK
7457
7458 040230 004737 015550          700$: JSR      PC,CLRTST ;AND CLEAR TEST DATA
7459
7460 040234          ENDTST
      040234          L10140: TRAP    C$ETST
      040234 104401

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 205  
TEST 26: USER DATA BYTE BLOCK TRANSFER

7462  
7463 040236

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7470  
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7473  
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7475  
7476  
7477  
7478  
7479  
7480  
7481  
7482  
7483

7484 040236

7485  
7486 040236  
040236

7487  
7488 000010  
7489  
7490 040236 005737 002242  
7491 040242 001002

7492  
7493 040244  
040244 104432  
040246 000536

7494  
7495 040250 013700 003010  
7496 040254 032700 000010  
7497 040260 001002

7498  
7499 040262  
040262 104432  
040264 000520

7500  
7501 040266 004737 015274  
7502 040272 012737 000000 002516  
7503 040300 012737 000100 002506  
7504 040306 012737 000100 002512

7505  
7506 040314  
040314 104443  
040316 000406  
040320 002516  
040322 000032  
040324 014246

.SBTTL TEST 26: USER DATA BYTE BLOCK TRANSFER

STARS

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TEST DESCRIPTION:

PERFORM 64-BYTE DMA DATA TRANSFERS, WITH USER SPECIFIED PATTERN  
COMPARE DATA READ AGAINST DATA WRITTEN

TEST STEPS:

IF BYTE MODE AND DPFLG THEN:  
SETUP INTERRUPT SERVICE ROUTINE VECTOR  
GET DATA PATTERN FROM OPERATOR, AND SETUP BUFFER PATTERN  
EXECUTE SUBTEST 1 AND CLEAR INTERRUPT VECTOR  
TEST FOR OPERATOR CONTROL/C TO EXIT

ERROR CONDITIONS:

MASSBUS CONTROLLER ERROR STATUS  
DATA TRANSFER NOT COMPLETE  
NO INTERRUPT ON DATA TRANSFER COMPLETE  
DATA RECEIVED DOES NOT MATCH EXPECTED DATA

STARS

\*\*\*\*\*

T26:: BGNTST

SELTEST = B.BYTE

TST DPFLG ;TEST DP FLAG  
BNE 25\$ ;BRANCH IF SET

EXIT TST ;FLAG NOT SET: EXIT TEST  
TRAP C\$EXIT  
.WORD L10142-

25\$: MOV SELECT,RO ;READ SELECT WORD  
BIT #SELTEST,RO ;AND TEST BYTE MODE BIT SET  
BNE 50\$ ;BRANCH IF SET

EXIT TST ;BYTE MODE: EXIT TEST  
TRAP C\$EXIT  
.WORD L10142-

50\$: JSR PC,SETISR ;SETUP INTERRUPT SERVICE VECTOR  
MOV #0,D.BDP ;RESET USER DATA PATTERN  
MOV #100,D.BLOCK ;INITIALIZE BLOCK SIZE  
MOV #100,D.MAX ;INITIALIZE MAX DATA BUFFER INDEX

100\$: GMANID Q.BDP,D.BDP,0,-1,0,377,YES  
TRAP C\$GMAN  
BR 10000\$  
.WORD D.BDP  
.WORD T\$CODE  
.WORD Q.BDP

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 205-1  
 TEST 26: USER DATA BYTE BLOCK TRANSFER

	040326	177777			.WORD	-1		
	040330	000000			.WORD	T\$LOLIM		
	040332	000377			.WORD	T\$HILIM		
	040334			10000\$:				
7507								
7508	040334	005001			CLR	R1		;CLEAR REGISTER
7509	040336	113701	002516		MOVB	D.BDP,R1		;LOAD BYTE PATTERN
7510	040342	000301			SWAB	R1		;SWAP BYTES
7511	040344	050137	002516		BIS	R1,D.BDP		;SETUP HIGH BYTE
7512								
7513	040350			200\$:	GMANID	Q.BBL,D.BLOCK,D,-1,10,100,YES		
	040350	104443			TRAP	CSGMAN		
	040352	000406			BR	10001\$		
	040354	002506			.WORD	D.BLOCK		
	040356	000052			.WORD	T\$CODE		
	040360	014314			.WORD	Q.BBL		
	040362	177777			.WORD	-1		
	040364	000010			.WORD	T\$LOLIM		
	040366	000100			.WORD	T\$HILIM		
	040370			10001\$:				
7514								
7515	040370	013701	002506		MOV	D.BLOCK,R1		;LOAD USER BLOCK SIZE
7516	040374	042701	000001		BIC	#1,R1		;INSURE NUMBER OF BYTES IS EVEN
7517	040400	010137	002512		MOV	R1,D.MAX		;SAVE AS MAX INDEX
7518	040404	006201			ASR	R1		;DIVIDE BY TWO
7519	040406	005401			NEG	R1		;COMPLEMENT
7520	040410	010137	002506		MOV	R1,D.BLOCK		;AND RESTORE
7521								
7522	040414	005002		LP.BDP:	CLR	R2		;WORD PATTERN LOOP LABEL
7523	040416	013701	002516		MOV	D.BDP,R1		;LOAD DATA PATTERN
7524	040422	010137	002744		MOV	R1,FP.DPAT		;INITIALIZE DISPLAY PATTERN
7525								
7526	040426	010162	004054	003054	250\$:	MOV	R1,OBUF(R2)	;LOAD USER PATTERN INTO BUFFER
7527	040432	012762	000000		MOV	#0,IBUF(R2)		;CLEAR INPUT BUFFER
7528	040440	062702	000002		ADD	#2,R2		;AND BUMP INDEX
7529	040444	023702	002512		CMP	D.MAX,R2		;COMPARE WITH MAX BUFFER INDEX
7530	040450	003366			BGT	250\$		;CONTINUE UNTIL BUFFER INITIALIZED





ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 206-1  
 TEST 26: USER DATA BYTE BLOCK TRANSFER

	040546	003003		.WORD	3		
	040550	007533		.WORD	M.BYT2		
	040552	015074		.WORD	ER.DMP		
7575							
7576	040554	013700	002506	300\$:	MOV	D.BLOCK,R0	:LOAD BLOCK SIZE
7577	040560	004737	015642		JSR	PC,RDBLK	:READ BLOCK FROM INTERFACE
7578	040564	004737	015410		JSR	PC,TSTMBC	:READ REGISTERS AND TEST ERRORS
7579	040570	005737	003022		TST	INTFLG	:TEST FOR INTERRUPT
7580	040574	001005			BNE	350\$	:BRANCH IF INTERRUPT RECEIVED
7581							
7582	040576			ERRHRD	4,M.INT1,ER.DMP		: 'NOT INTERRUPT ON WORD XFER EBL'
	040576	104456		TRAP	C\$ERHRD		
	040600	000004		.WORD	4		
	040602	010706		.WORD	M.INT1		
	040604	015074		.WORD	ER.DMP		
7583	040606	000407		BR	400\$		:EXIT SEGMENT
7584							
7585	040610	005737	003030	350\$:	TST	MBCFLG	:TEST FOR ERROR
7586	040614	001404			BEQ	400\$	:CONTINUE IF RESET
7587							
7588	040616			ERRHRD	5,M.BYT3,ER.DMP		: 'WORD XFER ERROR ON INTERFACE READ'
	040616	104456		TRAP	C\$ERHRD		
	040620	000005		.WORD	5		
	040622	007602		.WORD	M.BYT3		
	040624	015074		.WORD	ER.DMP		

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 207  
 TEST 26: USER DATA BYTE BLOCK TRANSFER

7590											
7591	040626	005002			400\$:	CLR	R2				:CLEAR BUFFER INDEX REGISTER
7592	040630	005037	003026			CLR	ERRFLG				:CLEAR ERROR COUNT
7593											
7594	040634	026262	003054	004054	425\$:	CMP	IBUF(R2),OBUF(R2)				:COMPARE DATA
7595	040642	001427				BEQ	475\$				:IDENTICAL: CONTINUE
7596											
7597	040644	005737	003026			TST	ERRFLG				:TEST ERROR COUNT
7598	040650	001004				BNE	450\$				:BRANCH IF NOT FIRST ERROR
7599											
7600	040652					ERRHRD	6,M.BYT4,ER.DATA				: 'DATA COMPARISON ERROR'
	040652	104456				TRAP	C\$ERHRD				
	040654	000006				.WORD	6				
	040656	007650				.WORD	M.BYT4				
	040660	015172				.WORD	ER.DATA				
7601											
7602	040662	005237	003026		450\$:	INC	ERRFLG				:BUMP ERROR COUNT
7603	040666	022737	000010	003026		CMP	#8,,ERRFLG				:COMPARE WITH MAX ERROR COUNT
7604	040674	002412				BLT	475\$				:BRANCH IF MAX LESS THAN COUNT
7605											
7606	040676	010237	002742			MOV	R2,FP.NDX				:SAVE DATA INDEX
7607	040702	016237	003054	002736		MOV	IBUF(R2),FP.ACT				:SAVE RECEIVED DATA
7608	040710	016237	004054	002734		MOV	OBUF(R2),FP.EXP				:SAVE DATA SENT
7609	040716	004737	016374			JSR	PC,DSPDATA				:AND DISPLAY DATA
7610											
7611	040722	062702	000002		475\$:	ADD	#2,R2				:BUMP INDEX
7612	040726	023702	002512			CMP	D.MAX,R2				:COMPARE WITH MAX BUFFER INDEX
7613	040732	003340				BGT	425\$				:CONTINUE UNTIL INDEX EQUALS MAX
7614											
7615	040734	005737	003026		500\$:	TST	ERRFLG				:TEST NUMBER ERRORS
7616	040740	001414				BEQ	600\$				:BRANCH IF NO ERRORS
7617											
7618	040742					PRINTX	#F.ERCNT,ERRFLG				:PRINT SUBTEST ERROR COUNT
	040742	013746	003026			MOV	ERRFLG,-(SP)				
	040746	012746	013304			MOV	#F.ERCNT,-(SP)				
	040752	012746	000002			MOV	#2,-(SP)				
	040756	010600				MOV	SP,R0				
	040760	104415				TRAP	C\$PNTX				
	040762	062706	000006			ADD	#6,SP				
7619	040766	005237	003004			INC	ERRCNT				:ADD TO TEST ERROR COUNT
7620											
7621	040772				600\$:	ENDSUB					
	040772				L10143:						
	040772	104403				TRAP	C\$ESUB				
7622											
7623	040774					BREAK					:TEST FOR CONTROL/C
	040774	104422				TRAP	C\$BRK				
7624											
7625	040776	000606				BR	LP.BDP				:LOOP BACK
7626											
7627	041000	004737	015550		700\$:	JSR	PC,CLRTST				:AND CLEAR TEST DATA
7628											
7629	041004					ENDTST					:END OF TEST
	041004				L10142:						
	041004	104401				TRAP	C\$ETST				



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TEST 27: ADJUST TRANSFER BANDWIDTH

7631  
7632 041006

.SBTTL TEST 27: ADJUST TRANSFER BANDWIDTH  
STARS

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7642  
7643  
7644  
7645 041006

TEST DESCRIPTION:

MANUAL TEST FOR ADJUSTING SCLK PERIOD  
LOOP ON 64 WORD WRITE

TEST STEPS:

IF BWFLG SET THEN: REPEAT  
CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR  
INITIALIZE REGISTERS FOR READ W/INT ENABLE  
SET CYCLE REQUEST, DELAY AND READ REGISTERS

STARS

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7646  
7647 041006  
041006

BGNTST

T27::

7648  
7649 041006 005737 002244  
7650 041012 001002  
7651  
7652 041014  
041014 104432  
041016 000110

TST BWFLG ;TEST BW FLAG  
BNE 50\$ ;BRANCH IF SET  
  
EXIT TST ;FLAG NOT SET: EXIT TEST  
TRAP C\$EXIT  
.WORD L10144-

7653  
7654 041020 004737 015342  
7655 041024 005737 003030  
7656 041030 001405  
7657  
7658 041032  
041032 104455  
041034 000001  
041036 011650  
041040 015074  
7659 041042  
041042 104444

50\$: JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER  
TST MBCFLG ;TEST FLAG FOR ERROR  
BEQ 100\$ ;CONTINUE IF NO ERROR  
  
ERRDF 1,M.MBC1,ER.DMP ;DEVICE FATAL  
TRAP C\$ERDF  
.WORD 1  
.WORD M.MBC1  
.WORD ER.DMP  
DOCLN ;CLEAN UP AND EXIT  
TRAP C\$DCLN

7660  
7661 041044 012737 177700 002506 100\$  
7662 041052 004737 015274  
7663  
7664 041056  
041056 012746 013544  
041062 012746 000001  
041066 010600  
041070 104414  
041072 062706 000004

MOV #-100,D.BLOCK ;INITIALIZE FOR 64 WORD BLOCKS  
JSR PC,SETISR ;SETUP ISR VECTOR  
  
PRINTB #F.BW ;PRINT MESSAGE AND BEGIN LOOP  
MOV #F.BW,-(SP)  
MOV #1,-(SP)  
MOV SP,R0  
TRAP C\$PNTR  
ADD #4,SP

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 209  
 TEST 27: ADJUST TRANSFER BANDWIDTH

7666								
7667	041076	013700	002506	200\$:	MOV	D.BLOCK,R0		:LOAD BLOCK SIZE
7668	041102	004737	015674		JSR	PC,WRTBLK		:WRITE BLOCK TO INTERFACE
7669	041106	004737	015410		JSR	PC,TSTMBC		:READ REGISTERS
7670								
7671	041112				BREAK			:CHECK FOR OPERATOR CNTRL/C
	041112	104422			TRAP	C\$BRK		
7672								
7673	041114	000770			BR	200\$		:AND REPEAT
7674								
7675	041116	004737	015324	400\$:	JSR	PC,CLRISR		:CLEAR VECTOR
7676								
7677	041122	004737	015550		JSR	PC,CLRTST		:AND CLEAR TEST DATA
7678								
7679	041126				ENDTST			
	041126			L10144:				
	041126	104401			TRAP	C\$ETST		
7680								
7681	041130				ENDMOD			

7683

.SBTTL



7686  
7697  
7698  
7726  
7727 041130  
7728  
7729 041130

.SBTTL HARDWARE PARAMETER CODING SECTION

BGNMOD

STARS

\*\*\*\*\*

P-TABLE PARAMETER CODING:

OFFSET	DESCRIPTION
0	DEVICE CSR ADDRESS
2	INTERRUPT VECTOR ADDRESS
4	BUS REQUEST PRIORITY
6	DRIVE/UNIT NUMBER

STARS

\*\*\*\*\*

7730  
7731  
7732  
7733  
7734  
7735  
7736  
7737  
7738  
7739 041130

7740  
7741 041130  
041130 000022  
041132

BGNHRD  
.WORD L10145-LSHARD/2

LSHARD::

7742  
7743 041132  
041132 000031  
041134 041176  
041136 000000  
041140 177776

GPRMA	PQ.CSR,0,0,0,177776,YES	:DEVICE BASE ADDRESS
.WORD	T\$CODE	
.WORD	PQ.CSR	
.WORD	T\$LOLIM	
.WORD	T\$HILIM	

7744  
7745 041142  
041142 001031  
041144 041216  
041146 000000  
041150 000776

GPRMA	PQ.VEC,2,0,0,776,YES	:INTERRUPT VECTOR ADDRESS
.WORD	T\$CODE	
.WORD	PQ.VEC	
.WORD	T\$LOLIM	
.WORD	T\$HILIM	

7746  
7747 041152  
041152 002052  
041154 041236  
041156 177777  
041160 000000  
041162 000006

GPRMD	PQ.PRI,4,D,-1,0,6,YES	:BUS REQUEST PRIORITY
.WORD	T\$CODE	
.WORD	PQ.PRI	
.WORD	-1	
.WORD	T\$LOLIM	
.WORD	T\$HILIM	

7748  
7749 041164  
041164 003052  
041166 041256  
041170 177777  
041172 000000  
041174 000007

GPRMD	PQ.DRI,6,D,-1,0,7,YES	:DRIVE SELECT
.WORD	T\$CODE	
.WORD	PQ.DRI	
.WORD	-1	
.WORD	T\$LOLIM	
.WORD	T\$HILIM	

7750  
7751 041176

ENDHRD  
.EVEN

041176  
7752

L10145:

ZDRMAD DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 212  
HARDWARE PARAMETER CODING SECTION

7754  
7755 041176

STARS  
:\*\*\*\*\*

7756  
7757  
7758 041176

:  
: P-TABLE QUESTION STORAGE  
STARS  
:\*\*\*\*\*

7759  
7760  
7761

.NLIST BEX

7762 041176 104 105 126 PQ.CSR:

.ASCIZ /DEVICE ADDRESS/  
.EVEN

7763  
7764 041216 126 105 103 PQ.VEC:

.ASCIZ /VECTOR ADDRESS/  
.EVEN

7765  
7766 041236 120 122 111 PQ.PRI:

.ASCIZ /PRIORITY /  
.EVEN

7767  
7768 041256 104 122 111 PQ.DRI:

.ASCIZ /DRIVE /  
.EVEN

.LIST BEX

7773  
7774  
7775 041276

.SBTTL SOFTWARE P-TABLE PARAMETER CODING

STARS  
:\*\*\*\*\*

7776  
7777  
7778  
7779  
7780  
7781  
7782  
7783  
7784  
7785  
7786  
7787  
7788 041276

SOFTWARE P-TABLE PARAMETER CODING:

OFFSET DESCRIPTION

0 DR70 REV "A"  
2 SWITCH 4 ATO ATTN DISABLE  
4 SWITCH 5 AT3 ATTN DISABLE  
6 SWITCH 6 AT3 ABORT LOGIC DISABLE  
8 SWITCH 7 BYTE MODE TRANSFER  
10 SWITCH 8 USER PARITY ENABLE  
12 ADJUST TRANSFER BANDWIDTH

STARS  
:\*\*\*\*\*

7789  
7790 041276 000030  
041276  
041300

BGNSFT  
.WORD L10146-L\$SOFT/2

L\$SOFT::

7791  
7792 041300 000130  
041300 041360  
041302 000001  
041304

GPRML SQ.REV,0,1,YES ;ASK FOR REV INFO  
.WORD T\$CODE  
.WORD SQ.REV  
.WORD 1

7793  
7794 041306 001130  
041306 041410  
041310 000001  
041312

GPRML SQ.SW4,2,1,YES ;ASK FOR ATO ATTN DISABLE  
.WORD T\$CODE  
.WORD SQ.SW4  
.WORD 1

7795  
7796 041314 002130  
041314 041450  
041316 000001  
041320

GPRML SQ.SW5,4,1,YES ;ASK FOR AT3 ATTN DISABLE  
.WORD T\$CODE  
.WORD SQ.SW5  
.WORD 1

7797  
7798 041322 003130  
041322 041510  
041324 000001  
041326

GPRML SQ.SW6,6,1,YES ;ASK FOR AT3 XFER ABORT DISABLE  
.WORD T\$CODE  
.WORD SQ.SW6  
.WORD 1

7799  
7800 041330 004130  
041330 041562  
041332 000001  
041334

GPRML SQ.SW7,10,1,YES ;ASK FOR BYTE MODE TRANSFER  
.WORD T\$CODE  
.WORD SQ.SW7  
.WORD 1

7801  
7802 041336 005130  
041336 041622  
041340 000001  
041342

GPRML SQ.SW8,12,1,YES ;ASK FOR USER PARITY ENABLE  
.WORD T\$CODE  
.WORD SQ.SW8  
.WORD 1

7803  
7804 041344 006130  
041344 041666  
041346 000001  
041350

GPRML SQ.DP,14,1,YES ;ASK IF USER DATA PATTERN TEST  
.WORD T\$CODE  
.WORD SQ.DP  
.WORD 1



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 213-1  
SOFTWARE P-TABLE PARAMETER CODING

7805

7806 041352  
041352 007130  
041354 041726  
041356 000001

GPRML SQ.BW,16,1,YES  
.WORD T\$CODE  
.WORD SQ.BW  
.WORD 1

;ASK IF ADJUST TRANSFER BANDWIDTH

7807

7808 041360

ENDSFT  
.EVEN

041360

L10146:

7809

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 214  
SOFTWARE P-TABLE PARAMETER CODING

7811  
7812 041360

STARS  
:\*\*\*\*\*

7813  
7814  
7815 041360

SOFTWARE P-TABLE QUESTION STORAGE  
STARS  
:\*\*\*\*\*

7816  
7817

.NLIST BEX

7818  
7819 041360

122

105

126

SQ.REV:

.ASCIZ /REVISION 'A' INTERFACE/  
.EVEN

7820  
7821 041410

101

124

060

SQ.SW4:

.ASCIZ /ATO ATTN DISABLED [SW4 'OFF']/  
.EVEN

7822  
7823 041450

101

124

063

SQ.SW5:

.ASCIZ /AT3 ATTN DISABLED [SW5 'OFF']/  
.EVEN

7824  
7825 041510

101

124

063

SQ.SW6:

.ASCIZ /AT3 TRANSFER ABORT DISABLED [SW6 'OFF']/  
.EVEN

7826  
7827 041562

102

131

124

SQ.SW7:

.ASCIZ /BYTE MODE OPERATION [SW7 'ON']/  
.EVEN

7828  
7829 041622

111

116

120

SQ.SW8:

.ASCIZ /INPUT PARITY DISABLED [SW8 'OFF']/  
.EVEN

7830  
7831 041666

117

120

105

SQ.DP:

.ASCIZ /OPERATOR SPECIFIED DATA PATTERN/  
.EVEN

7832  
7833 041726

101

104

112

SQ.BW:

.ASCIZ /ADJUST TRANSFER BANDWIDTH/  
.EVEN

7834  
7835  
7836  
7837

.LIST BEX

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 215  
SOFTWARE P-TABLE PARAMETER CODING

7839

7840 041760

7841

7842 041760

7843

7844 042060

042060 042100

042062 000006

042064

7845

\$PATCH::

.BLKW 40 ;32 WORD PATCH AREA

LASTAD

.EVEN

.WORD T\$FREE

.WORD T\$SIZE

L\$LAST::



ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 216  
SETUP P-TABLE SECTION

7847  
7848  
7849 042064  
  
7850  
7851  
7852 042064  
  
7853  
7854 042064  
7855  
7856 042064 000000  
042066 000004  
042070  
  
7857  
7858 042070 172440  
7859 042072 000224  
7860 042074 000005  
7861 042076 000000  
7862  
7863 042100  
042100  
  
7864  
7865 042100  
7866  
7867 042100  
7868  
7869 000001

```
.SBTTL SETUP P-TABLE SECTION
STARS
:*****
:
:
:      INITIALIZE P-TABLE FOR ONE UNIT
STARS
:*****
      BGNSETUP      1
      BGNPTAB
      .WORD 0
      .WORD L10151-./2-1
L10147:
      .WORD CSRADR      :DEFAULT CSR ADDRESS
      .WORD VECADR      :DEFAULT VECTOR ADDRESS
      .WORD BRPRI       :DEFAULT BR PRIORITY
      .WORD 0           :DEFAULT DRIVE/CONTROLLER
      ENDPTAB
L10151:
      ENDSETUP
      ENDMOD
      .END
```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 216-1  
SYMBOL TABLE

ABOFLG	002234	G	BIT5	=	000040	G	CS2.PG=	002000	G	CSSVEC=	000037	ESEND	=	002100		
ADR	=	000020	G	BIT6	=	000100	G	CS2.UP=	020000	G	CSTPRI=	000013	ESLOAD=	000035		
ASSEMB=	000010		BIT7	=	000200	G	CS2.U0=	000001	G	DIAGMC=	000000	FP.ACT	002736	G		
ATOFLG	002230	G	BIT8	=	000400	G	CS2.U1=	000002	G	DLY	016042	G	FP.ADR	002732	G	
AT3FLG	002232	G	BIT9	=	001000	G	CS2.U2=	000004	G	DMACNT	003034	G	FP.BIT	002750	G	
A.AS	002314	G	BLK	=	000040		CS2.WC=	040000	G	DMADLY	016016	G	FP.DPA	002744	G	
A.BA	002302	G	BOE	=	000400	G	C\$AU	=	000052	DPFLG	002242	G	FP.EXP	002734	G	
A.BAE	002322	G	BRPRI	=	000005	G	C\$AUTO=	000061		DRIFLG	003032	G	FP.NAM	002730	G	
A.CS1	002276	G	BWFLG	002244	G	C\$BRK	=	000022	DRIVE	003000	G	FP.NDX	002742	G		
A.CS2	002306	G	BYTFLG	002236	G	C\$BSEG=	000004		DSPBIT	017006	G	FP.TBL	002746	G		
A.CS3	002324	G	B.ABOR=	000004	G	C\$BSUB=	000002		DSPDAT	016374	G	FP.XOR	002740	G		
A.DT	002320	G	B.AS	006064	G	C\$CEFG=	000045		DSPDPA	016510	G	FS.F0	=	000400	G	
A.FS	002304	G	B.ATO	=	000001	G	C\$CLCK=	000062		DSPFIL	016536	G	FS.F1	=	001000	G
A.IB	002312	G	B.AT3	=	000002	G	C\$CLEA=	000012		DSPREG	016054	G	FS.F2	=	002000	G
A.IS	002310	G	B.BIT	006134	G	C\$CLOS=	000035		DSPSTA	016164	G	FS.F3	=	004000	G	
A.OB	002316	G	B.BYTE=	000010	G	C\$CLP1=	000006		D.AS	002264	G	FS.F4	=	010000	G	
A.SIZ	=	000030	G	B.CS1	005512	G	C\$CVEC=	000036		D.BA	002252	G	FS.F5	=	020000	G
A.TBL	002276	G	B.CS2	005702	G	C\$DCLN=	000044		D.BAE	002272	G	FS.F6	=	040000	G	
A.WC	002300	G	B.FS	005602	G	C\$DODU=	000051		D.BDP	002516	G	FS.F7	=	100000	G	
BA.AS	002454	G	B.IS	005776	G	C\$DRPT=	000024		D.BLOC	002506	G	FS.ST0=	000001	G		
BA.BA	002442	G	B.REVA=	000200	G	C\$DU	=	000053	D.CS1	002246	G	FS.ST1=	000002	G		
BA.BAE	002462	G	B.UPAR=	000020	G	C\$EDIT=	000003		D.CS2	002256	G	FS.ST2=	000004	G		
BA.CS1	002436	G	CBLFLG	003050	G	C\$ERDF=	000055		D.CS3	002274	G	FS.ST3=	000010	G		
BA.CS2	002446	G	CLRDR1	015464	G	C\$ERHR=	000056		D.DT	002270	G	FS.ST4=	000020	G		
BA.CS3	002464	G	CLRISR	015324	G	C\$ERRO=	000060		D.FILP	002504	G	FS.ST5=	000040	G		
BA.DT	002460	G	CLRMBC	015342	G	C\$ERSF=	000054		D.FIL1	014371	G	FS.ST6=	000100	G		
BA.FS	002444	G	CLRTRA	015264	G	C\$ERSO=	000057		D.FIL2	014437	G	FS.ST7=	000200	G		
BA.IB	002452	G	CLRTST	015550	G	C\$ESCA=	000010		D.FS	002254	G	F\$AU	=	000015		
BA.IS	002450	G	CLR.CM=	000011	G	C\$ESEG=	000005		D.IB	002262	G	F\$AUTO=	000020			
BA.OB	002456	G	CPUFLG	003012	G	C\$ESUB=	000003		D.IS	002260	G	F\$BGN	=	000040		
BA.SIZ=	000030	G	CPUID	=	177764	G	C\$ETST=	000001		D.LPCN	002510	G	F\$CLEA=	000007		
BA.TBL	002436	G	CR	=	000015		C\$EXIT=	000032		D.MAX	002512	G	F\$DU	=	000016	
BA.WC	002440	G	CSRADR=	172440	G	C\$GETB=	000026		D.OB	002266	G	F\$END	=	000041		
BFR	005054	G	CSRFLG	003042	G	C\$GETW=	000027		D.SIZ	=	000030	G	F\$HARD=	000004		
BFRSIZ=	001000	G	CS1.A1=	001000	G	C\$GMAN=	000043		D.TBL	002246	G	F\$HW	=	000013		
BITCNT	003006	G	CS1.DV=	004000	G	C\$GPHR=	000042		D.WC	002250	G	F\$INIT=	000006			
BIT0	=	000001	G	CS1.F0=	000002	G	C\$GPLO=	000030		D.WDP	002514	G	F\$JMP	=	000050	
BIT00	=	000001	G	CS1.F1=	000004	G	C\$GPRI=	000040		EF.CON=	000036	G	F\$MOD	=	000000	
BIT01	=	000002	G	CS1.F2=	000010	G	C\$INIT=	000011		EF.NEW=	000035	G	F\$MSG	=	000011	
BIT02	=	000004	G	CS1.F3=	000020	G	C\$INLP=	000020		EF.PWR=	000034	G	F\$PROT=	000021		
BIT03	=	000010	G	CS1.F4=	000040	G	C\$MANI=	000050		EF.RES=	000037	G	F\$PWR	=	000017	
BIT04	=	000020	G	CS1.G0=	000001	G	C\$MEM	=	000031	EF.STA=	000040	G	F\$RPT	=	000012	
BIT05	=	000040	G	CS1.IE=	000100	G	C\$MESSG	=	000023	EOL	005350	G	F\$SEG	=	000003	
BIT06	=	000100	G	CS1.MC=	020000	G	C\$OPEN=	000034		ERRBLK	005174	G	F\$SOFT=	000005		
BIT07	=	000200	G	CS1.PS=	002000	G	C\$PNTB=	000014		ERRCNT	003004	G	F\$SRV	=	000010	
BIT08	=	000400	G	CS1.RD=	000200	G	C\$PNTF=	000017		ERRFLG	003026	G	F\$SUB	=	000002	
BIT09	=	001000	G	CS1.SC=	100000	G	C\$PNTS=	000016		ERRMSG	005172	G	F\$SW	=	000014	
BIT1	=	000002	G	CS1.TR=	040000	G	C\$PNTX=	000015		ERRNBR	005170	G	F\$TEST=	000001		
BIT10	=	002000	G	CS2.BA=	000010	G	C\$QIO	=	000377	ERRNDX	003002	G	F.ADR1	012626	G	
BIT11	=	004000	G	CS2.CL=	000040	G	C\$RDBU=	000007		ERRRNDX	003002	G	F.ADR2	012650	G	
BIT12	=	010000	G	CS2.DL=	100000	G	C\$REFG=	000047		ERRTYP	005166	G	F.BITS	014210	G	
BIT13	=	020000	G	CS2.IR=	000100	G	C\$RESE=	000033		ER.ADR	014452	G	F.BW	013544	G	
BIT14	=	040000	G	CS2.MD=	000400	G	C\$REVI=	000003		ER.DAT	015172	G	F.CBL	013464	G	
BIT15	=	100000	G	CS2.MX=	001000	G	C\$RFLA=	000021		ER.DMP	015074	G	F.CRLF	014214	G	
BIT2	=	000004	G	CS2.NE=	010000	G	C\$RPT	=	000025	ER.INI	014640	G	F.CSR	013660	G	
BIT3	=	000010	G	CS2.OR=	000200	G	C\$SEFG=	000046		ER.REG	015016	G	F.DAT1	013166	G	
BIT4	=	000020	G	CS2.PA=	000020	G	C\$SPRI=	000041		EVL	=	000004	G	F.DAT2	013244	G



ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 216-2  
SYMBOL TABLE

F.DMP1	012664	G	IN.OB	002376	G	LSDEPO	002011	G	L10014	020212	L10105	031170
F.DMP2	012716	G	IN.SIZ=	000030	G	LSDESC	005226	G	L10015	020226	L10106	031254
F.DMP3	012750	G	IN.TBL	002356	G	LSDESP	002076	G	L10016	020232	L10107	031546
F.DMP4	013020	G	IN.WC	002360	G	LSDEVP	002060	G	L10017	020236	L10110	031434
F.DPAT	013624	G	ISR =	000100	G	LSDISP	002124	G	L10020	020554	L10111	031534
F.ERCN	013304	G	IS.ATA=	100000	G	LSDLY	002116	G	L10021	020406	L10112	033542
F.MODE	013340	G	IS.ATO=	000001	G	LSDTP	002040	G	L10022	020546	L10113	032154
F.NAM	012607	G	IS.AT1=	000002	G	LSDTYP	002034	G	L10023	020700	L10114	032524
F.NED	013732	G	IS.AT2=	000004	G	LSDU	020230	G	L10024	021426	L10115	033114
F.PERR	013412	G	IS.AT3=	000010	G	LSDUT	002072	G	L10025	021006	L10116	033516
F.PWR	014000	G	IS.CYC=	000020	G	LSDVTY	005176	G	L10026	021054	L10117	034246
F.REG1	013056	G	IS.ERO=	002000	G	LSEF	002052	G	L10027	021232	L10120	034002
F.REG2	013132	G	IS.ERR=	040000	G	LSENV1	002044	G	L10030	021420	L10121	034234
F.RPT1	014074	G	IS.ICP=	001000	G	LSERRT	005166	G	L10031	022214	L10122	034766
F.RPT2	014164	G	IS.IDP=	000400	G	LSETP	002102	G	L10032	021574	L10123	034514
F.UNIT	014036	G	IS.IP =	010000	G	LSEXP1	002046	G	L10033	021642	L10124	034754
F.VAL	012616	G	IS.IRY=	000200	G	LSEXP4	002064	G	L10034	022020	L10125	035334
GSCNTO=	000200		IS.XAB=	004000	G	LSEXP5	002066	G	L10035	022206	L10126	035170
G\$DELM=	000372		IXE =	004000	G	LSHARD	041132	G	L10036	023004	L10127	035322
G\$DISP=	000003		ISAU =	000041		LSHIME	002120	G	L10037	022340	L10130	036604
G\$EXCP=	000400		ISAUTO=	000041		LSHPCP	002016	G	L10040	022406	L10131	035634
G\$HILI=	000002		ISCLN =	000041		LSHPTP	002022	G	L10041	022572	L10132	036104
G\$LOLI=	000001		ISDU =	000041		LSHW	002214	G	L10042	022776	L10133	036346
G\$NO =	000000		ISHRD =	000041		LSICP	002104	G	L10043	023324	L10134	036572
G\$OFFS=	000400		ISINIT=	000041		LSINIT	017322	G	L10044	023170	L10135	037012
G\$OF SI=	000376		ISMOD =	000041		LSLADP	002026	G	L10045	023306	L10136	037220
G\$PRMA=	000001		ISMSG =	000041		LSLAST	042064	G	L10046	023674	L10137	037506
G\$PRMD=	000002		ISPROT=	000040		LSLOAD	002100	G	L10047	023504	L10140	040234
G\$PRML=	000000		ISPTAB=	000041		LSLUN	002074	G	L10050	023666	L10141	040222
G\$RADA=	000140		ISPWR =	000041		LSMREV	002050	G	L10051	024050	L10142	041004
G\$RADB=	000000		ISRPT =	000041		LSNAME	002000	G	L10052	023776	L10143	040772
G\$RADL=	000040		ISSEG =	000041		LSPRIO	002042	G	L10053	024042	L10144	041126
G\$RADL=	000120		ISSETU=	000041		LSPROT	017314	G	L10054	024516	L10145	041176
G\$RADO=	000020		ISSFT =	000041		LSPRT	002112	G	L10055	024164	L10146	041360
G\$XFER=	000004		ISSRV =	000041		LSREPP	002062	G	L10056	024240	L10147	042070
G\$YES =	000010		ISSUB =	000041		LSREV	002010	G	L10057	024360	L10151	042100
HELP =	000000		ISTST =	000041		LSRPT	017172	G	L10060	024510	MAXTST=	000033 G
HLPFLG	003016	G	JSJMP =	000167		LS\$SOFT	041300	G	L10061	025036	MBCFLG	003030 G
HOE =	100000	G	LF =	000012		LS\$SPC	002056	G	L10062	024650	M.ABT1	006375 G
HRDTBL	002772	G	LINBUF	005260	G	LS\$PCP	002020	G	L10063	024740	M.ABT2	006447 G
IBE =	010000	G	LINE	005256	G	LS\$PTP	002024	G	L10064	025024	M.ABT3	006520 G
IBUF	003054	G	LOE =	040000	G	LSSTA	002030	G	L10065	025316	M.ABT4	006572 G
IDU =	000040	G	LOGUNI	002774	G	LS\$SW	002226	G	L10066	025204	M.ADR1	006234 G
IER =	020000	G	LOT =	000010	G	L\$TEST	002114	G	L10067	025304	M.ADR2	006263 G
INIFLG	003014	G	LP.BDP	040414		L\$TIML	002014	G	L10070	027532	M.ASB1	006314 G
INTFLG	003022	G	LP.BXF	031606		LSUNIT	002012	G	L10071	025776	M.ATA1	006643 G
INTSRV	015226	G	LP.UAT	023054		L10000	002224		L10072	026412	M.ATA2	006706 G
IN.AS	002374	G	LP.WDP	037644		L10001	002246		L10073	027044	M.ATA3	006740 G
IN.BA	002362	G	LP.WXF	025364		L10002	014636		L10074	027506	M.ATA4	007005 G
IN.BAE	002402	G	LSACP	002110	G	L10003	015014		L10075	030232	M.ATA5	007060 G
IN.CS1	002356	G	LSAPT	002036	G	L10004	015072		L10076	027766	M.ATA6	007135 G
IN.CS2	002366	G	LSAU	020234	G	L10005	015170		L10077	030220	M.BYT1	007500 G
IN.CS3	002404	G	LSAUT	002070	G	L10006	015216		L10100	030746	M.BYT2	007533 G
IN.DT	002400	G	LSAUTO	020212	G	L10007	015224		L10101	030474	M.BYT3	007602 G
IN.FS	002364	G	L\$CCP	002106	G	L10010	015232		L10102	030734	M.BYT4	007650 G
IN.IB	002372	G	L\$CLEA	020214	G	L10011	017312		L10103	031266	M.CSR1	007210 G
IN.IS	002370	G	L\$CO	002032	G	L10013	020210		L10104	031100	M.CSR2	007237 G



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SYMBOL TABLE

M.DLT1	007707	G	N.BAE	005472	G	REG1	002754	G	TRAP4	015220	G	T10.2	024652
M.ERO1	007751	G	N.CS1	005352	G	REG2	002756	G	TRPFLG	003024	G	T10.3	024742
M.ERO2	010017	G	N.CS2	005412	G	REG3	002760	G	TSTINT	015444	G	T11	025040 G
M.ERR1	010064	G	N.CS3	005502	G	REG4	002762	G	TSTMBC	015410	G	T11.1	025106
M.ERR2	010116	G	N.DT	005462	G	REG5	002764	G	TSARGC=	000001		T11.2	025206
M.FSR1	010163	G	N.FS	005402	G	REG6	002766	G	TSCODE=	007130		T12	025320 G
M.ICP1	010450	G	N.IB	005432	G	REG7	002770	G	TSERRN=	000001		T12.1	025364
M.ICP2	010535	G	N.IS	005422	G	REVFLG	002226	G	TSEXCP=	000000		T12.2	026000
M.ICP3	010623	G	N.OB	005452	G	RIE.CM=	000171	G	TSFLAG=	000040		T12.3	026414
M.IDP1	010215	G	N.SIZ =	000140	G	RIE2.C=	000177	G	TSFREE=	042100		T12.4	027046
M.IDP2	010277	G	N.TBL	005352	G	RP.ERR	002620	G	TSGMAN=	000000		T13	027534 G
M.IDP3	010365	G	N.WC	005362	G	RP.PAS	002520	G	TSHILI=	000007		T13.1	027572
M.INT1	010706	G	OBUF	004054	G	RP.SIZ=	000100	G	TSLAST=	000001		T13.2	027770
M.INT2	010761	G	ONEFIL=	000001		R.AS	002344	G	TSLOLI=	000000		T14	030234 G
M.IRY1	011034	G	OSAPTS=	000000		R.BA	002332	G	TSLSYM=	010000		T14.1	030272
M.IRY2	011102	G	OSAU =	000000		R.BAE	002352	G	TSLTNO=	000033		T14.2	030476
M.IRY3	011162	G	OSBGNR=	000001		R.CS1	002326	G	TSNEST=	177777		T15	030750 G
M.IRY4	011246	G	OSBGNS=	000001		R.CS2	002336	G	TSNS0 =	000000		T15.1	031016
M.IRY5	011320	G	OSDU =	000000		R.CS3	002354	G	TSNS1 =	000005		T15.2	031102
M.IRY6	011363	G	OSERRT=	000000		R.DT	002350	G	TSNS2 =	000002		T15.3	031172
M.IRY7	011426	G	OSGNSW=	000001		R.ERR	002470	G	TSPCNT=	000000		T16	031270 G
M.IRY8	011500	G	OSPOIN=	000001		R.FS	002334	G	TSPTAB=	010150		T16.1	031336
M.ISR1	011543	G	OSSETU=	000001		R.IB	002342	G	TSPTHV=	000001		T16.2	031436
M.ISR2	011572	G	PARFLG	002240	G	R.IS	002340	G	TSPTNU=	000001		T17	031550 G
M.MBC1	011650	G	PERFLG	003052	G	R.MAX	002466	G	TSSAVL=	177777		T17.1	031606
M.MBC2	011717	G	PNT =	001000	G	R.OB	002346	G	TSSEGL=	177777		T17.2	032156
M.RDY1	011750	G	PQ.CSR	041176		R.SAD	002474	G	TSSIZE=	000006		T17.3	032526
M.RDY2	012024	G	PQ.DRI	041256		R.SDR	002502	G	TSSUBN=	000000		T17.4	033116
M.REG1	012076	G	PQ.PRI	041236		R.SIN	002476	G	TSTAGL=	177777		T18	033544 G
M.REG2	012134	G	PQ.VEC	041216		R.SIZ =	000030	G	TSTAGN=	010152		T18.1	033606
M.SW4	012153	G	PRI =	002000	G	R.SRH	002500	G	TSTEMP=	000000		T18.2	034004
M.SW5	012233	G	PRI00 =	000000	G	R.SST	002472	G	TSTEST=	000033		T19	034250 G
M.SW6	012313	G	PRI01 =	000040	G	R.TBL	002326	G	TSTSTM=	177777		T19.1	034312
M.TRE1	012371	G	PRI02 =	000100	G	R.WC	002330	G	TSTSTS=	000001		T19.2	034516
M.UAT1	012454	G	PRI03 =	000140	G	SELECT	003010	G	TSSAU =	010017		T2	020556 G
M.UAT2	012531	G	PRI04 =	000200	G	SELMAS=	000033		TSSAUT=	010014		T20	034770 G
M.WRD1	007271	G	PRI05 =	000240	G	SELTES=	000010		TSSCLE=	010015		T20.1	035026
M.WRD2	007324	G	PRI06 =	000300	G	SETISR	015274	G	TSSDAT=	010151		T20.2	035172
M.WRD3	007373	G	PRI07 =	000340	G	SETRAP	015234	G	TSSDU =	010016		T21	035336 G
M.WRD4	007441	G	PS =	177776	G	SILOCN	003040	G	TSSHAR=	010145		T21.1	035374
NA.AS	002424	G	PT.CSR	002720	G	SILODL	016030	G	TSSHW =	010000		T21.2	035636
NA.BA	002412	G	PT.DRI	002726	G	SQ.BW	041726		TSSINI=	010013		T21.3	036106
NA.BAE	002432	G	PT.PRI	002724	G	SQ.DP	041666		TSSMSG=	010006		T21.4	036350
NA.CS1	002406	G	PT.VEC	002722	G	SQ.REV	041360		TSSPC =	000001		T22	036606 G
NA.CS2	002416	G	PWRFLG	003046	G	SQ.SW4	041410		TSSPRO=	010012		T23	037014 G
NA.CS3	002434	G	Q.BBL	014314	G	SQ.SW5	041450		TSSPTA=	010150		T24	037222 G
NA.DT	002430	G	Q.BDP	014246	G	SQ.SW6	041510		TSSRPT=	010011		T25	037510 G
NA.FS	002414	G	Q.HLP1	014334	G	SQ.SW7	041562		TSSSOFF=	010146		T25.1	037702
NA.IB	002422	G	Q.HLP2	014402	G	SQ.SW8	041622		TSSSRV=	010010		T26	040236 G
NA.IS	002420	G	Q.WBL	014274	G	SVCGBL=	000000		TSSSUB=	010143		T26.1	040452
NA.OB	002426	G	Q.WDP	014220	G	SVCINS=	000000		TSSSW =	010001		T27	041006 G
NA.SIZ=	000030	G	RDBLK	015642	G	SVCISJB=	000000		TSSSTES=	010144		T3	020702 G
NA.TBL	002406	G	RDINI	015726	G	SVCTAG=	000000		T1	020240	G	T3.1	020742
NA.WC	002410	G	RDREG	015606	G	SVCTST=	000000		T1.1	020240		T3.2	021010
NEDFLG	003044	G	RD.CMD=	000071	G	S\$LSYM=	010000		T1.2	020410		T3.3	021056
N.AS	005442	G	RD2.CM=	000077	G	TAB =	000011		T10	024520	G	T3.4	021234
N.BA	005372	G	REG0	002752	G	TABFLG	003020	G	T10.1	024566		T4	021430 G

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 SYMBOL TABLE

T4.1	021470	T5.4	022574	T8.1	023736	UAM	=	000200	G	WR.CMD	=	000061	G
T4.2	021576	T6	023006	T8.2	024000	UNITPO		002776	G	WR2.CM	=	000067	G
T4.3	021644	T6.1	023054	T9	024052	VECADR	=	000224	G	XSALWA	=	000000	
T4.4	022022	T6.2	023172	T9.1	024052	WIE.CM	=	000161	G	XSFALS	=	000040	
T5	022216	T7	023326	T9.2	024166	WIE2.C	=	000167	G	X\$OFFS	=	000400	
T5.1	022274	T7.1	023366	T9.3	024242	WRTBLK		015674	G	X\$TRUE	=	000020	
T5.2	022342	T7.2	023506	T9.4	024362	WRTINI		015762	G	\$PATCH		041760	G
T5.3	022410	T8	023676										

. ABS. 042100 000  
 ERRORS DETECTED: 0

VIRTUAL MEMORY USED: 28461 WORDS ( 112 PAGES)  
 DYNAMIC MEMORY: 17282 WORDS ( 66 PAGES)  
 ELAPSED TIME: 00:07:01  
 ZDRMA0.BIN/DS:GBL/EN:ABS:AMA,ZDRMA0/-SP/CR=SVC33/ML,ZDRMA0.P11