INSTRUCTION
MANUAL

Serial Number _____

8060 SC/MPII DEBUGGING TEST FIXTURE

067-0909-99

COMPANY CONFIDENTIAL

8060 SC/MPII DEBUGGING TEST FIXTURE

DESCRIPTION AND OPERATING INSTRUCTIONS

067-0909-99

The purpose of this test fixture is to assist in debugging the 8060 SC/MPII by permitting the operator to verify data by halting the microprocessor at a selected address or by single-stepping it through any portion of the program. Connections to the microprocessor are achieved through a 40-pin dip-clip. A BNC connector on the rear panel of the test fixture provides a break point trigger output for use with a test scope.

The four-digit display on the left indicates the 16 bit address (displayed in hexidecimal) at which the 8060 is halted. The two-digit display on the right shows the data present on the bus (in hexidecimal), at the indicated address. The two LED's on the right, labeled "R" and "W", indicate whether the microprocessor is on a read or write cycle. The four LED's on the left, labeled "R", "I", "D" and "H", indicate I/O Status flag conditions.

The sixteen toggle switches, labeled "0" through "15", are used to select (in binary) the 16-bit, break point halt address desired. 0 is the LSB and 15 is the MSB.

The test fixture is enabled when the DEBUG/NORMAL switch is in the DEBUG position. When switched to NORMAL, the test fixture is disabled and the 8060 is allowed to run uninterrupted.

The SINGLE CYCLE/B.P.H. switch determines whether the microprocessor stops on every cycle, or only the break point halt address selected.

The STEP pushbutton causes the microprocessor to run, in single-cycle steps, or to the selected break point halt address, as determined by the SINGLE CYCLE/B.P.H. switch.

The RESET pushbutton returns the 8060 to address 0001.

To use the test fixture, connect the 40-pin dip-clip to the 8060 microprocessor in the 1900. Observe polarity - pin 1 is marked on the dip-clip.

To single-step the microprocessor through its program, place the DEBUG/NORMAL switch in the DEBUG position, the SINGLE CYCLE/B.P.H. switch in the SINGLE CYCLE position and press the RESET button. The address displayed should be 0001. The 8060 can now be single-stepped by pressing the STEP button.

If you wish to verify data at a particular address, rather than single-step through the program, enter the desired address on the sixteen toggle switches, set the SINGLE CYCLE/B.P.H. switch to the B.P.H. position, press RESET and STEP. When you press STEP, the 8060 will begin running and will halt only when it reaches the selected B.P.H. address. Once it has stopped, you can make the microprocessor continue running the program by pressing the STEP button again, or you can set the SINGLE CYCLE/B.P.H. switch to the SINGLE CYCLE position and use the STEP button to single-step it through the program from the selected B.P.H. address.

Please note, that when using the B.P.H. mode, if the selected address occurs
in a loop in the program, the microprocessor will continue when you press
the STEP button, but will halt again when it loops back to that particular
address. This will continue, until the conditions of the loop have been met
and the microprocessor moves on to the rest of the program, or you select
another B.P.H. address.

SC/MPII Debugging Test Fixture Verification Procedure

The following procedure will be used to verify proper operation of the debugger. This procedure will not be a totally comprehensive check of the debugger, but will be helpful up to a point, in verifing proper operation of the SC/MPII dubugging unit. If after using this quick procedure to check out the operation of the debugging unit and a problem is still thought to be in the debugging unit, a more indepth check of the debugger will have to be performed. Needless to say, if you are checking the operation of the debugger, be sure to use a known good 1900 Digital Generator.

Equipment Required: 1900 Digital Generator
SC/MPII Debugging Test Fixture (067-0909-99)
Copy of program (Source Listing)

1. Turn 1900 power off
2. Connect 40 pin clip to 1900 Digital Generator
3. Have normal, debug switch set to Debug. Have Single cycle-B.P.H. (Break Point Halt) switch set to B.P.H. Have all address comparator switches set to 0 (down position).
4. Turn 1900 power on. This also applies power to debugging test fixture.
5. Set address comparator switch #1 to 1 (up position). Push reset button. Push step button. Address readout on debugging fixture should read 0002. Data readout should match program source listing sheet.
6. Set address comparator switch #1 to 0 (down position). Set address comparator switch #2 to 1. Push reset button. Push step button. Address readout should be 0004. Data readout should match program source listing sheet.
7. Set address comparator switch #2 to 0, switch #3 to 1. Push reset button, push step button. Address readout should be 0008. Data readout should match source listing.
8. Set address comparator switch #3 to 0, switch #4 to 1. Push reset button, push step button. Address readout should be 0010. Data readout should match source listing.
9. Set address comparator switch #4 to 0, switch #5 to 1. Push reset button, pust step button. Address readout should be 0020. Data readout should match source listing.
10. Set address comparator switch #5 to 0, switch #6 to 1. Push reset button, push step button. Address readout should be 0040. Data readout should match source listing.

11. Set address comparator switch #6 to 0, switch #7 to 1. Push reset button, push step button. Address readout should be 0080. Data readout should match source listing.

12. Set address comparator switch #7 to 0, switches #4 and #8 to 1. Push reset button, push step button. Address readout should be 0110. Data readout should match source listing.

> NOTE: Care has to be taken when picking B.P.H.'s. If you set up a B.P.H. and it happens to all in a portion of the program which is not being accessed, you will not get a readable address or data readout.
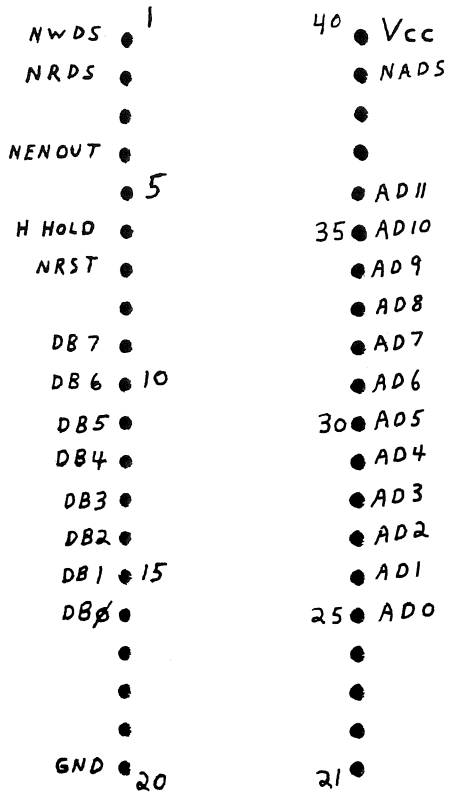
Summary of Checks:

Address Readout	Data Readout
0001	*
0002	*
0004	*
0008	*
0010	*
0020	*
0040	*
0080	*
0110	*

* Should match program source listing. Since different memory chips can be used in the 1900 Digital Generator, it is not possible to give an exact readout in this procedure because different memory chips will give a different data readout for the same address readout. You will have to look up what data information should be at the data readout for a particular address from a program source listing.
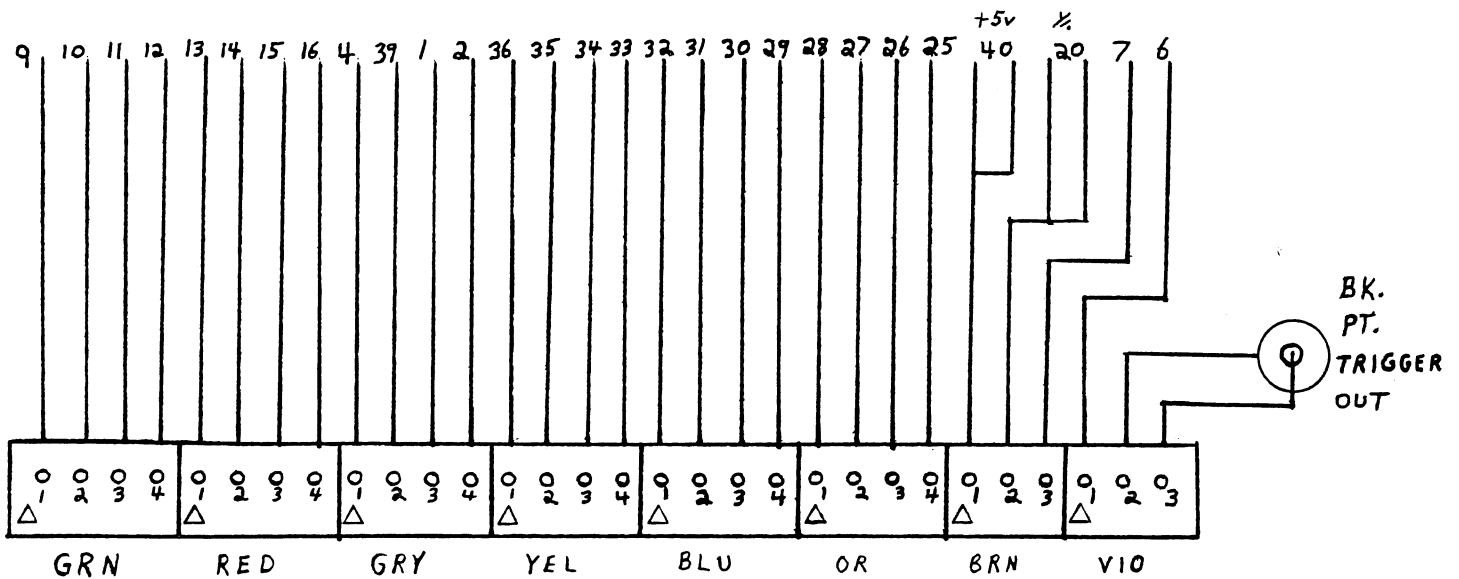
Due to the possibility of using various memory chips, it is not possible in this procedure to cover further checks. If after making the above checks you still feel that the debugging fixture has a problem, you will have to go to the program source listing sheet and decide what other checks must be made to verify that the debugging unit is operating properly.

WIRING DIAGRAM FOR 1900 DE-BUGGER

CLIP PINS

NWDS	• 1	40 • Vcc	
NRDS	•	• NADS	
	•	•	
NENOUT	•	•	
	• 5	• AD11	
H HOLD	•	35 • AD10	
NRST	•	• AD9	
	•	• AD8	
DB7	•	• AD7	
DB6	• 10	• AD6	
DB5	•	30 • AD5	
DB4	•	• AD4	
DB3	•	• AD3	
DB2	•	• AD2	
DB1	• 15	• AD1	
DB∅	•	25 • AD0	
	•	•	
	•	•	
	•	•	
GND	• 20	21 •	

WIRING FROM CLIP TO HARMONICAS

9 10 11 12 13 14 15 16 4 39 1 2 36 35 34 33 32 31 30 29 28 27 26 25 +5v 40 ½ 20 7 6

GRN   RED   GRY   YEL   BLU   OR   BRN   VIO

BK.
PT.
TRIGGER
OUT

DIRECTIONS ON HOW TO BUILD CABLE FOR DEBUGGER
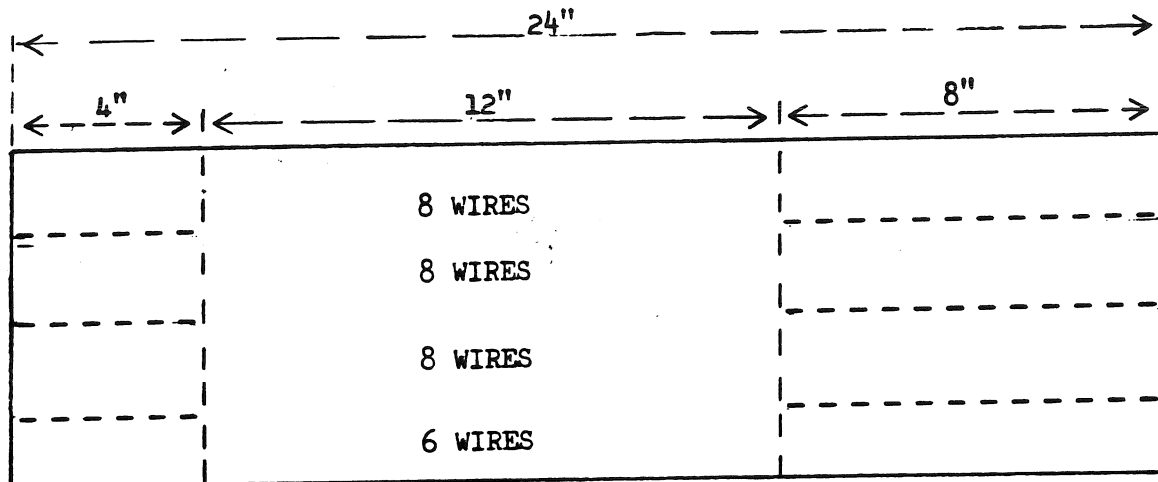

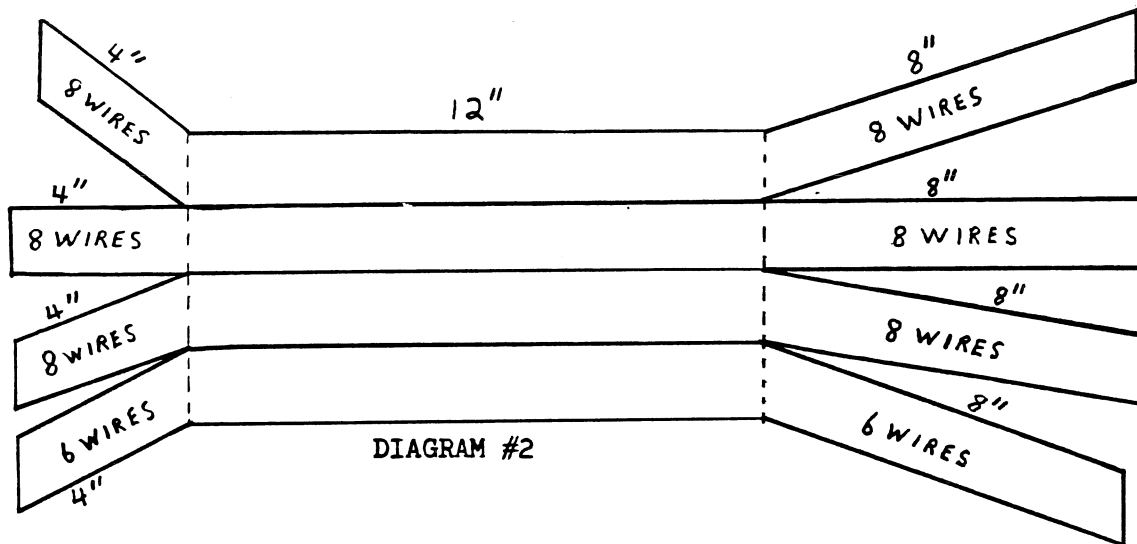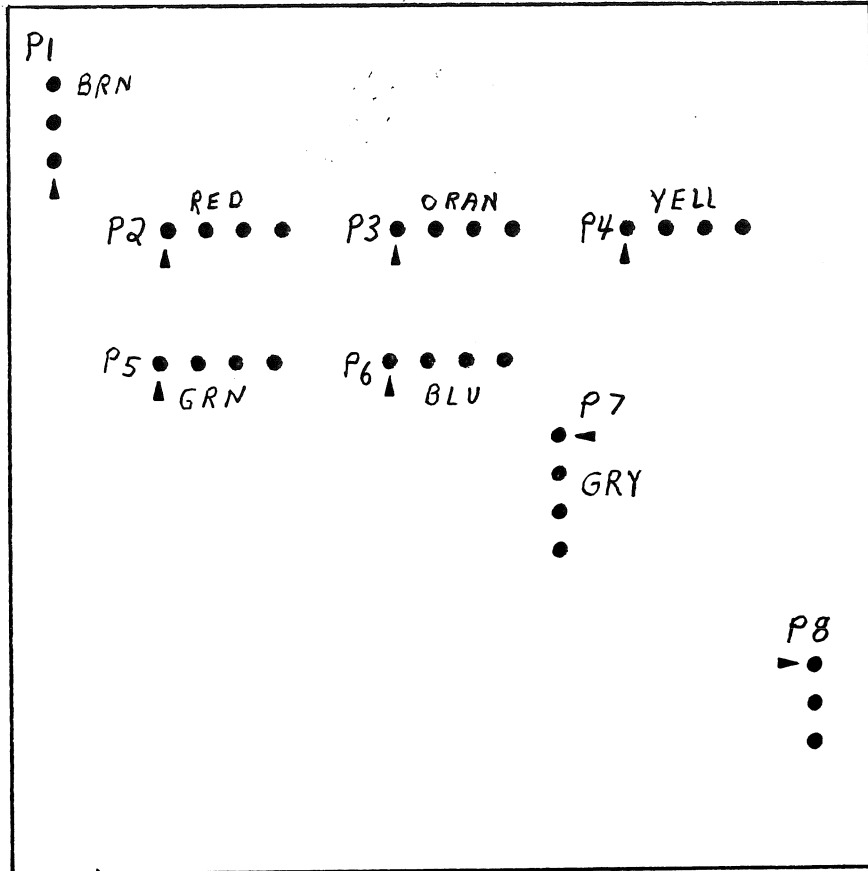DIAGRAM #1

TO 40 PIN CLIP

TO DEBUGGER

DIAGRAM #2

1. Cable when ordered will come with 34 conductors.
2. Cut 24" piece of cable off, take exacto knife and cut 6 conductors off from side away from conductor #1 (marked in red on cable).
3. Mark 4" back from one end of cable (Diagram #1).
4. Mark 8" back from other end of cable (Diagram #2).
5. Go to diagram #2 and cut cable to match diagram.
6. Go to wiring diagram and using your old cable, connect cable to 40 pin clip.
7. Feed cable into debugger and put wires into harmonicas.
8. Connect harmonicas to pins in debugger. (SEE DIAGRAM# 3)

LOCATION OF PLUGS

DIAGRAM# 3

P1

● BRN
●
●
▲

P2 ● RED ● ● ●
▲

P3 ● ORAN ● ● ●
▲

P4 ● YELL ● ● ●
▲

P5 ● ● ● ●
▲ GRN

P6 ● ● ● ●
▲ BLU

P7
●◄
● GRY
●
●

P8
►●
●
●

NOTE: TO ORDER CABLE - part # is 175-1084-00

TO ORDER CLIP - part # is 003-0381-00

HARDWARE FOR DE-BUGGER

QTY	PART NUMBER	DESCRIPTION
1	No Part Number	Chassis, DWG #2-1900-0089
1	No Part Number	CKT BOARD, VD 136X
1	No Part Number	1/4" x 1/4" x 7/8" ALUMINUM POST FOR CABLE CLAMP
32	131-0707-00	CONNECTORS
1	162-0532-00	1/2" SHRINK FIT INSULATION 1 1/2" PIECE
28	162-0607-00	1/8" SHRINK FIT INSULATION 1/2" PIECES
1	175-0529-00	9" PIECE 9-N#26 WIRE
1	177-0345-00	9" PEICE 9-O #26 WIRE
1	210-0255-00	3/8" SOLDER LVG.
22	210-0583-00	NUT 1/4-32 x 5/16"
1	210-0863-00	CABLE CLAMP WASHER
20	210-0940-00	1/4" FLAT WASHER
17	211-0214-00	4-40 x 1/4" TRUSSHEAD SCREW
2	211-0537-00	6-32 x 3/8" TRUSSHEAD SCREW
1	343-0136-00	.234 DIA. CALBE CLAMP
1	343-0549-00	CABLE TIEWRAP
1	348-0442-00	3/8" PLASTIC BUSHING
4	348-0502-00	FEET, PLASTIC STICK-ON
1	352-0161-01	3 PIN HARMONICA HOUSING - BROWN
1	352-0161-07	3 PIN HARMONICA HOUSING - VIOLET
1	352-0162-02	4 PIN HARMONICA HOUSING - RED
1	352-0162-03	4 PIN HARMONICA HOUSING - ORANGE
1	352-0162-04	4 PIN HARMONICA HOUSING - YELLOW
1	352-0162-05	4 PIN HARMONICA HOUSING - GREEN
1	352-0162-06	4 PIN HARMONICA HOUSING - BLUE
1	352-0162-08	4 PIN HARMONICA HOUSING - GRAY
1	352-0171-00	1 PIN HARMONICA HOUSING - BLACK
1	352-0171-09	1 PIN HARMONICA HOUSING - WHITE
18	361-0412-00	SPACER 1/4" x 1/8"
5	385-0149-00	5/8" x 1/4" NYLON POST

PARTS LIST FOR DE-BUGGER

QTY	PART NUMBER	DESCRIPTION
INTERGRATED CKTS		
2	156-0382-00	74LS00
1	156-0385-00	74LS04
1	156-0388-00	74LS74
3	156-0539-00	DM8136N
1	156-0913-00	74LS377
4	156-0916-00	DM81LS97
RESISTORS		
2	315-0203-00	20k ohm
1	315-0222-00	2.2k ohm
7	315-0331-00	330 ohm
19	315-0472-00	4.7k ohm
CAPACITORS		
6	283-0111-00	.1μF
1	283-0167-00	10μF, 15v
LEDS		
6	150-1013-00	LED
6	150-1014-00	HEX **DISPLAY**
CONNECTORS		
32	131-0608-00	BERG PINS
1	131-0955-00	
SWITCHES		
2	260-1285-00	SPST PB P.T.
18	260-1335-00	SPST P.C. M.T.

QTY.	PART NUMBER	DESCRIPTION
SOCKETS		
3	136-0260-02	16 PIN SOCKET DIP
4	136-0269-02	14 PIN SOCKET
6	136-0494-00	14 PIN DIP W/WIRE WRAP TAILS
12	136-0613-00	AMP SOCKET
5	136-0634-00	20 PIN SOCKET DIP
CLIP		
1	003-0801-00	40 PIN DIPCLIP
CABLE		
1	175-1084-00	24" PIECE FLAT CABLE, 34 CONDUCTOR, #28 WIRE

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