



**South West Research Ltd**

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BRISTOL ENGLAND

**TECHNICAL  
MANUAL**

**DAMBUSTERS**

# OPERATING INSTRUCTIONS

There are several variable options that can be obtained on 'DAMBUSTERS'. These options can be selected by means of the test programme.

To enter the test mode the test switch on the inside of the machine (situated behind the coin door on the left) must be operated.

To go from one test procedure to the next this test switch must be pressed once each time. The full cycle entails 7 depressions of this switch.

At the first press of the switch the machine enters the test mode which is explained below:

1. 1st press of the test switch

## **CROSS HATCH**

This is displayed on the screen to enable the monitor to be set up correctly for convergence.

2. 2nd press of the test switch

## **TALLY AND HOURS OPERATED**

This display shows the amount of money the machine has taken since leaving South West Research Limited also the amount of time the machine has been switched on.

3. 3rd press of the test switch

## **DIP SWITCH – DESCRIPTION – STATUS**

This displays on the screen the current selection of the tiny 'Dual-in-line' switches located on the electronics board. Access to these can be gained via the back door.

The operation of these switches is explained as follows:

### **DIP SWITCH 1 – 2nd COUNTER**

This capability exists to change the 50p coin mechanism to accept 10p coins, and vice-versa, by operating switch number 1 on the 'dual-in-line' switches.

The 50p coin mechanism corresponds to the 2nd counter situated on the side wall near to the test switch. The 2nd counter is the one below the 1st counter.

### **DIP SWITCH 2 – GAME COST**

The game cost may be changed from 10p to 20p per game by operating switch number 2 on the 'dual-in-line' switches.

The ON column as shown on the screen is for 20p and the OFF column is for 10p. Operating switch number 2 will read on the right-hand side of the screen either ON or OFF.

3. **DIP SWITCHES – DESCRIPTION – STATUS** *(continued)*

**DIP SWITCHES 3 & 4 – HITS ALLOWED**

The number of lives lost per hit i.e. damage to aircraft, can be changed to vary game difficulty by operating switches numbered 3 & 4 on the 'dual-in-line' switches.

When operated these switches change the status on the far right of the screen to read ON or OFF.

Decide the number of lives the player is allowed to lose per game from the list of 3, 4, 5, 6. Operate switches 3 & 4 to read downwards to correspond with the number chosen reading from left to right. An example of this would be both switches in the ON position for a game allowing 6 lives to be lost, then the game will end.

**DIP SWITCH 5 – SPARE 1**

This switch is a game test switch and **MUST** be left in the OFF position.

**DIP SWITCH 6 – SPARE 2**

The Union Jack in the Attract mode can be removed by operating switch number 6 on the 'dual-in-line' switches. This facility can be used when the machine is situated in sensitive areas or countries.

The Union Jack will be displayed when the switch is in the OFF position. To remove the Union Jack the switch will need to be in the ON position.

4. 4th press of the test switch

**MAXIMUM GAME SELECTION**

This facility can be used to select the maximum amount of time allowed per game. Decide the number of minutes to be allowed from the Game Time List of 9 mins, 4.5 min, 2 mins, and 1.8 mins.

By moving the joystick upwards or downwards make the red brackets enclose the corresponding number in the option list of 1 to 5. Press the Bomb button to set and to print out the Current Selection.

5. 5th press of the test switch

**TEST – SCREEN ALIGNMENT**

When the test switch is pressed for the fifth time the machine enters into a Confidence Test of Electronics and will stop and display any faulty areas, if not it will continue up to the SCREEN ALIGNMENT display.

6. 6th press of the test switch

**COLOUR BARS**

This display shows colour bars for monitor alignment.

7. **SWITCH TEST ROUTINE**

This display allows you to test the fire buttons, the coin mechanisms, and the Joystick movements and Bomb button. When these are operated one at a time a

## 7. SWITCH TEST ROUTINE *(continued)*

red oblong will show against each description to indicate that they are functioning correctly.

To test the coin mechanism an appropriate coin must be dropped through when the door is open; the coin being collected in the hand. When the coin is going through the mechanism the red oblong will flash on the screen. Try this test a few times to double-check. The coin mechanism test can be done without incrementing coin counters or giving any credits.

To exit from the test programme press player one and player two buttons simultaneously.

In conjunction with the test programme and video display monitor can be set up. Brightness or brilliance, however, is best set up in the Attract mode. This is best adjusted when the pages are changing and the characters cannot be seen as a grey shadow before the vertical sweep of colour fills the screen.

All other adjustments are done in the test mode by cycling to the required test using the test switch.

## SOUND VOLUME

The volume of all sounds will be altered by a small potentiometer situated next to the 'dual-in-line' switches on the electronics board.

## SWEAR WORDS

The games board programme will automatically reject most swear-words on the high score 'Roll of Honour' display. However, if you find offensive words on the 'Roll of Honour' there is a key switch at the back of the machine near the bottom on the right which, when operated, will remove all the names and offensive words. It will, however, keep the actual high scores on the screen. If the key switch is inadvertently left in the ON position each page of the attract mode will quickly flash around. The operation of this key switch during a 'game play' will not interrupt the player, but it will clear the offensive words.

N.B. This switch is the only switch which is not tested in the test mode.

## INITIALISATION

This is done prior to the board or complete machine leaving the factory. It puts the coin counters, total taken and hours the machine is on back to zero, (test 2).

If the machine requires Initialisation at any time in the future please contact South West Research Limited.

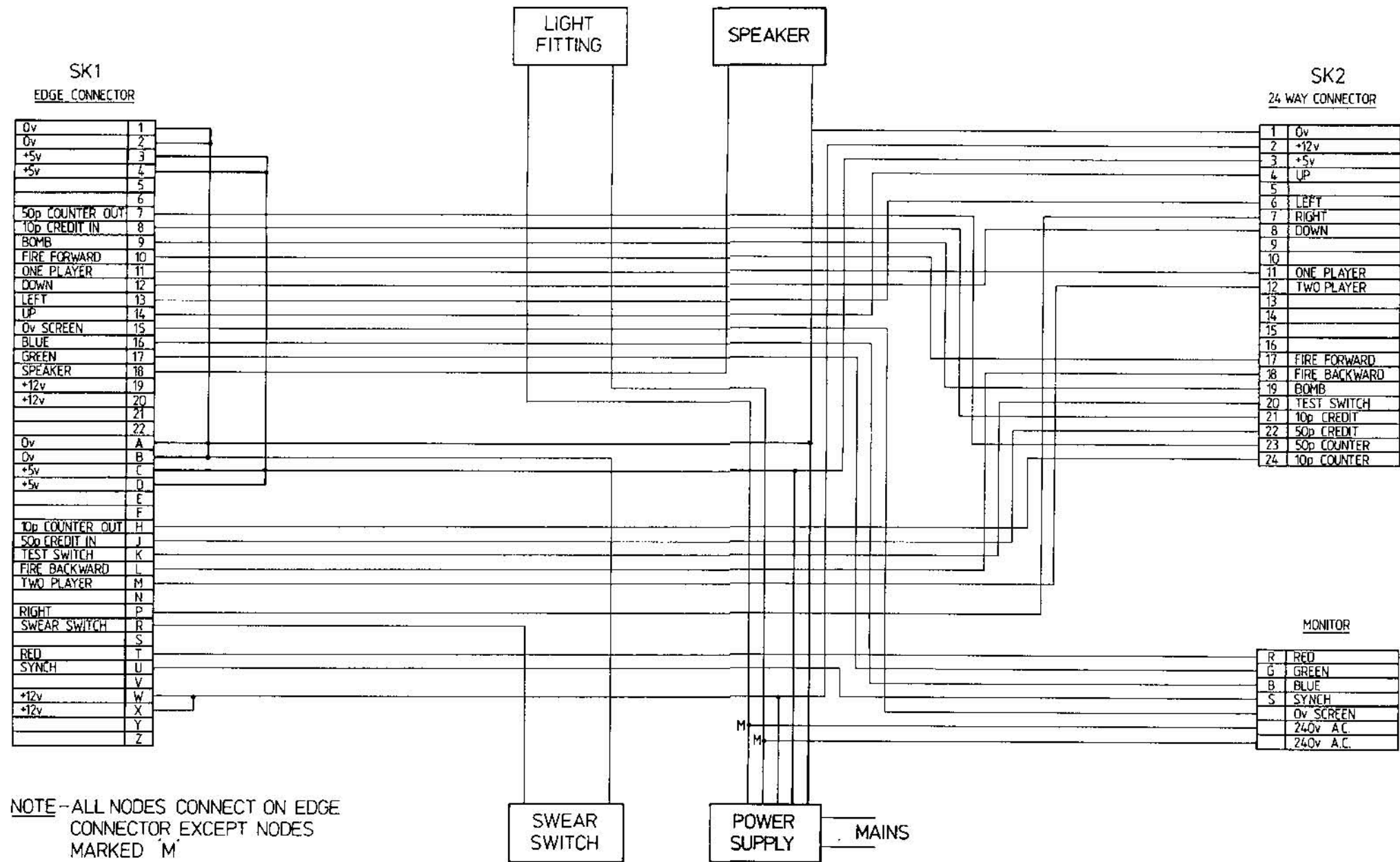
## DAMBUSTERS EDGE CONNECTOR PIN-OUT

ALL SWITCH TO 0 VOLTS

THE COUNTERS RETURN TO + 12 VOLTS

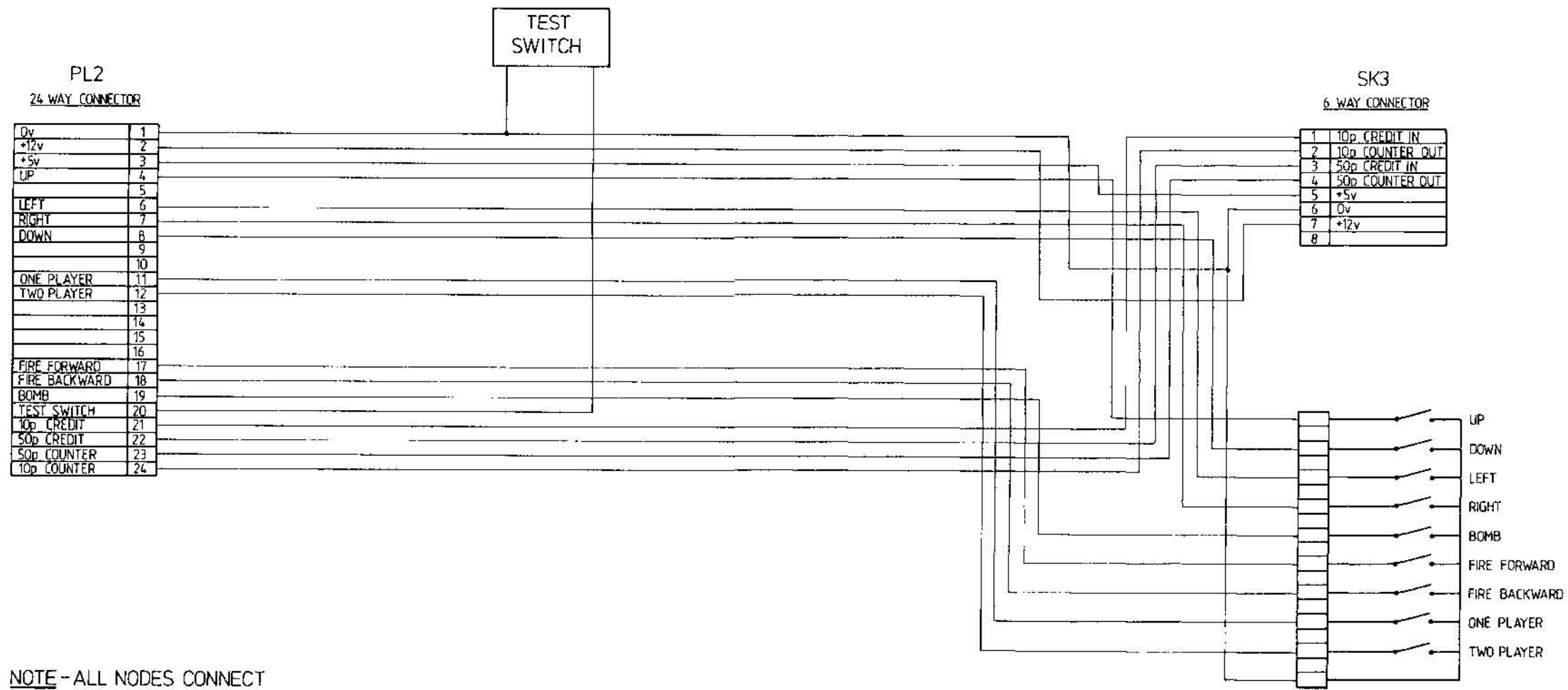
0 Volts	A	1	0 Volts
0 Volts	B	2	0 Volts
+ 5v + - 2%	C	3	+ 5v + - 2%
+ 5v + - 2%	D	4	+ 5v + - 2%
N/C	E	5	N/C
N/C	F	6	N/C
50p/10p Count	H	7	10p only counter
50p/10p Credit	J	8	10p only credit
Test Switch	K	9	Bomb
Fire Rear	L	10	Fire Forward
2 Plyr (pilot) St	M	11	1 Plyr (pilot) St
N/C	N	12	Down Descend
Right (Increase throttle)	P	13	Left (Throttle back)
Swear Word Key Switch	R	14	Up Climb
N/C (Ov SCN)	S	15	0v SCRN
Red	T	16	Blue
Synch	U	17	Green
N/C	V	18	Sound
+ 12v	W	19	+ 12v
+ 12v	X	20	+ 12v
0 Volts	Y	21	0 Volts
0 Volts	Z	22	0 Volts

N.B. All 0 volts connection must be wired together  
 All + 5v connection must be wired together  
 due to currents drawn.



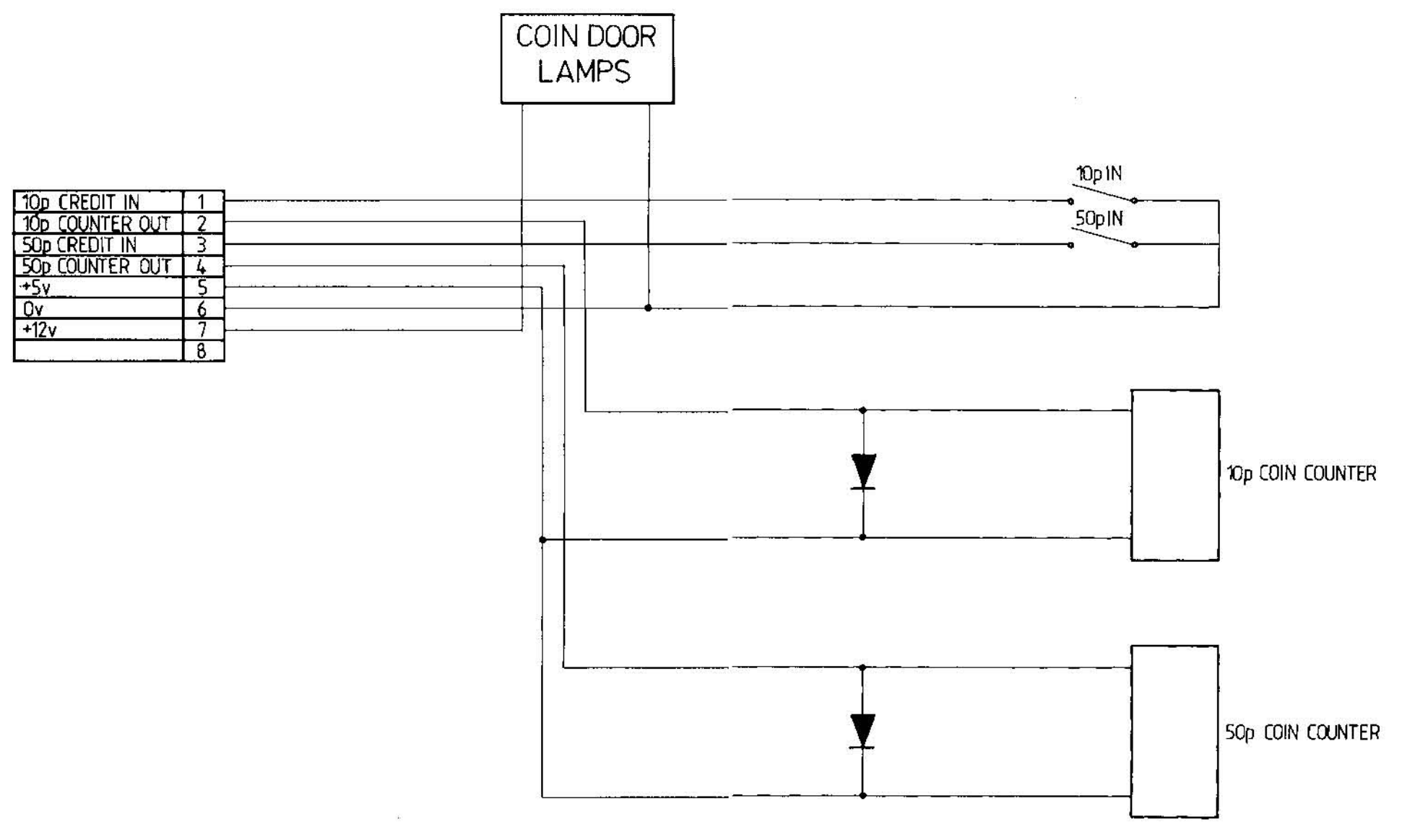
NOTE - ALL NODES CONNECT ON EDGE CONNECTOR EXCEPT NODES MARKED 'M'

DRAWN	S SIMPSON	SOUTH WEST RESEARCH LTD	
CHECKED	<i>C. A. [Signature]</i>	2-12 MILL LANE, BEDMINSTER, BRISTOL, ENGLAND.	
ENGINEER	<i>[Signature]</i>	TITLE	DAMBUSTERS MAIN LOOM
APPROVED	<i>[Signature]</i>	DRAWING No	SWR 0103 (SHEET 1 OF 3)
SCALE			
DATE	10 DECEMBER 81		



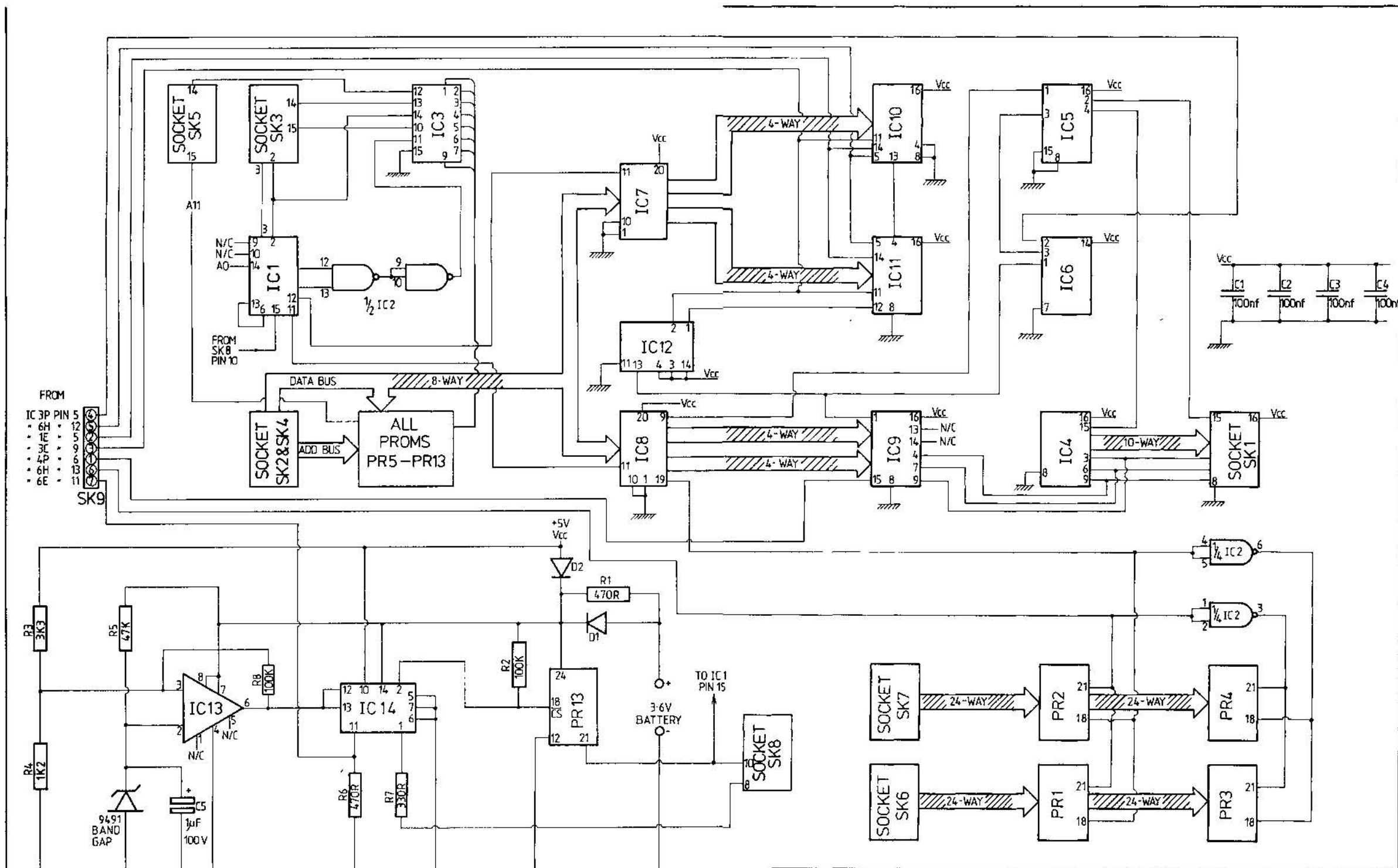
NOTE - ALL NODES CONNECT ON EDGE CONNECTORS

DRAWN	S SIMPSON	SOUTH WEST RESEARCH LTD 2-12 MILL LANE, BEDMINSTER, BRISTOL, ENGLAND.
CHECKED	<i>[Signature]</i>	
ENGINEER	<i>[Signature]</i>	TITLE DAMBUSTERS SECONDARY LOOM
APPROVED	<i>[Signature]</i>	DRAWING No SWR 0103 (SHEET 2 OF 3)
SCALE		
DATE	14 DECEMBER 81	

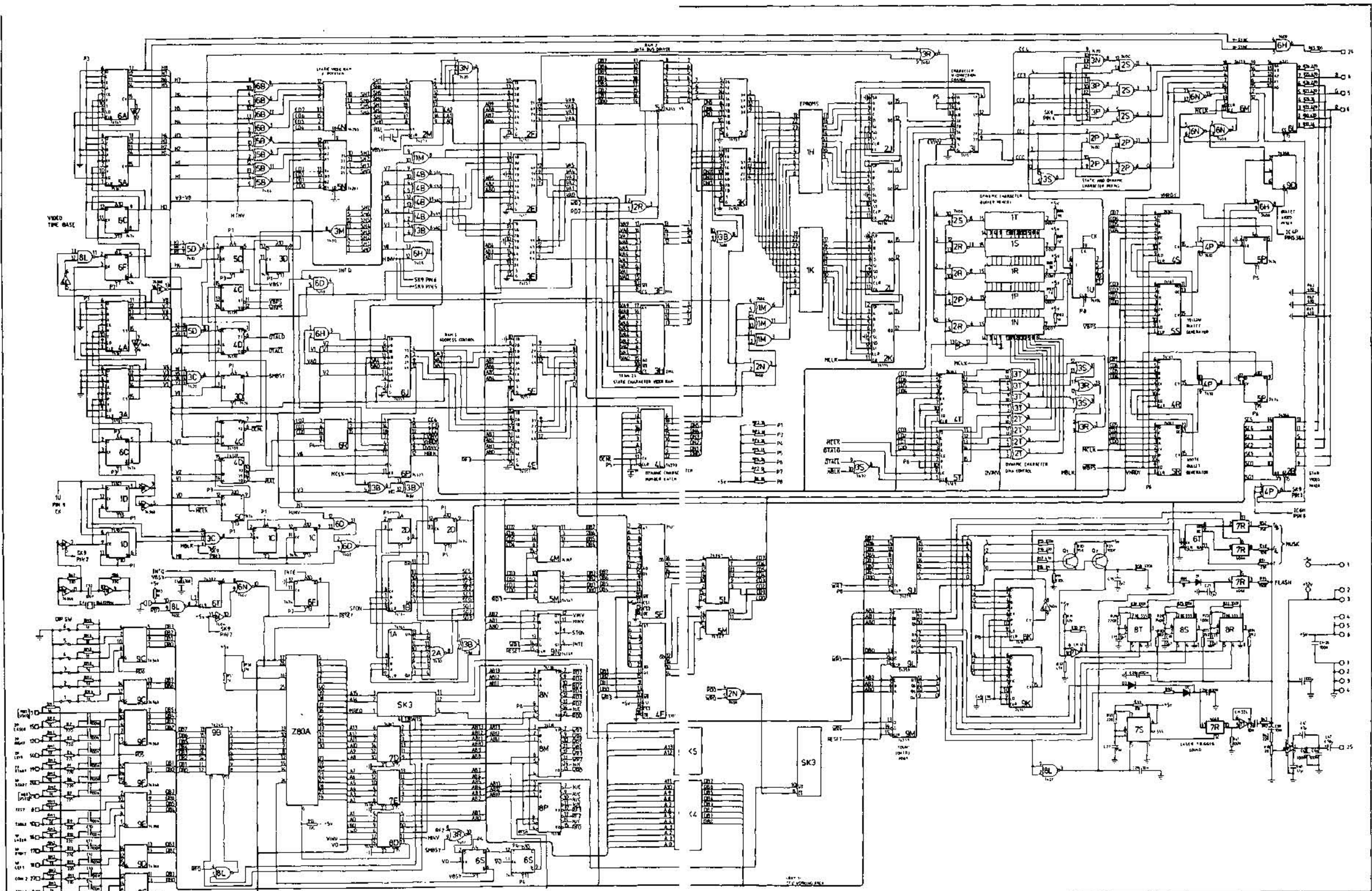


DRAWN	S SIMPSON	SOUTH WEST RESEARCH LTD 2-12 MILL LANE, BEDMINSTER, BRISTOL, ENGLAND.	
CHECKED	<i>E.A. Packer</i>		
ENGINEER	<i>P. Sest</i>	TITLE	DAMBUSTERS COIN DOOR LOOM
APPROVED	<i>[Signature]</i>	DRAWING No	SWR 0103 (SHEET 3 OF 3)
SCALE	---		
DATE	14 DECEMBER 81		





DRAWN	S SIMPSON	SOUTH WEST RESEARCH LTD	
CHECKED	<i>[Signature]</i>	2-12 MILL LANE, BEDMINSTER, BRISTOL, ENGLAND.	
ENGINEER	F J STONE	TITLE	DAMBUSTERS DAUGHTER BOARD
APPROVED	<i>[Signature]</i>	DRAWING No	SWR 0100
SCALE			
DATE	8 DECEMBER 81		



DRAWN	S SIMPSON	SOUTH WEST RESEARCH LTD
CHECKED		
ENGINEER		7-12 HILL LANE, BROMFORD, BRISTOL, ENGLAND
APPROVED		
SCALE		TITLE VIDEO GAME BOARDS
DATE	19 JANUARY 1982	DRAWING No SWR 0104