



## MIDWAY MANUFACTURING COMPANY

3401 NORTH CALIFORNIA AVENUE • CHICAGO, ILLINOIS 60618 • 312/267-2240 • FAX 312/267-8435

AUGUST 16, 1989

SB12

### S E R V I C E B U L L E T I N

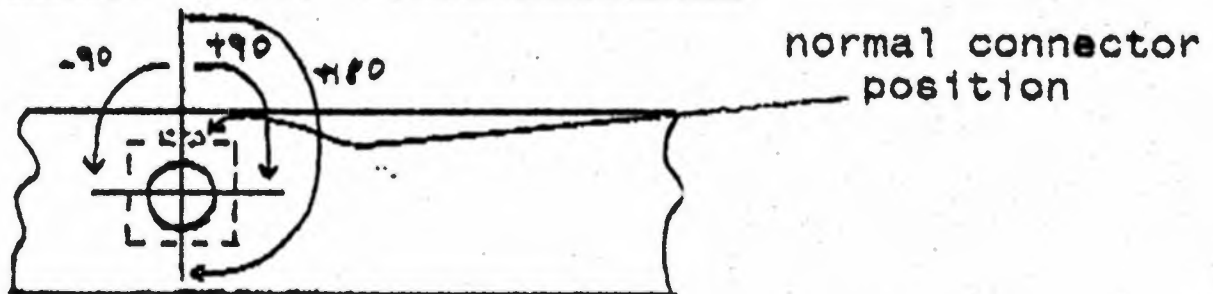
GAME: ARCH RIVALS (kit)

SUBJECT: JOYSTICK INSTALLATION

THE POSITIONING OF THE JOYSTICK ON THE ARCH RIVALS KIT CONTROL PANEL IS SUCH THAT THE CONNECTOR ON THE JOYSTICK PCB SHOULD POINT TOWARDS THE MONITOR (back of the game). IF YOUR CONTROL PANEL IS NOT WIDE ENOUGH TO DO IT THIS WAY, IT IS POSSIBLE TO MODIFY THE JOYSTICK PCB AND CABLING TO MAKE THE CONTROL WORK WHEN THE ASSEMBLY IS ROTATED.

THERE ARE 3 POSSIBLE ROTATIONS FOR THE JOYSTICK ASSEMBLIES, -90, +90, AND 180.

Control Panel  
View from the  
top side



FOR -90 ROTATION:  
MOVE THE WIRES IN THE CABLE HARNESS AT THE 12 PIN JOYSTICK CONNECTOR AS FOLLOWS:

OLD PIN	NEW PIN
2	6
3	7
4	8
5	9
6	4
7	3
8	2
9	5

THE FOLLOWING CUT AND JUMPER MUST ALSO BE DONE:  
ON THE OPTO PCB CUT THE TRACE GOING TO PIN 5 ON THE CONNECTOR. THEN RUN AN INSULATED JUMPER WIRE FROM PIN 5 OF THE CONNECTOR TO IC 1 PIN 3 ON THE OPTO PCB.

FOR +90 ROTATION  
 MOVE THE WIRES IN THE CABLE HARNESS AT THE 12 PIN JOYSTICK  
 CONNECTOR AS FOLLOWS:

OLD PIN	NEW PIN
2	8
3	7
4	6
5	9
6	2
7	3
8	4
9	5

THE FOLLOWING CUT AND JUMPER MUST ALSO BE DONE:  
 ON THE OPTO PCB CUT THE TRACE GOING TO PIN 9 ON THE CONNECTOR. THEN  
 RUN AN INSULATED JUMPER WIRE FROM PIN 9 ON THE CONNECTOR TO IC 1  
 PIN 10 ON THE OPTO PCB.

FOR +180 ROTATION  
 MOVE THE WIRES IN THE CABLE HARNESS AT THE 12 PIN JOYSTICK  
 CONNECTOR AS FOLLOWS:

OLD PIN	NEW PIN
2	4
3	3
4	2
5	5
6	8
7	7
8	6
9	9

THE FOLLOWING CUTS AND JUMPERS MUST ALSO BE DONE:  
 ON THE OPTO PCB CUT THE TRACE GOING TO PIN 5 OF THE CONNECTOR. THEN  
 RUN AN INSULATED JUMPER WIRE FROM PIN 5 OF THE CONNECTOR TO IC 1  
 PIN 3. YOU MUST ALSO CUT THE TRACE GOING TO PIN 9 OF THE CONNECTOR.  
 THEN RUN AN INSULATED JUMPER WIRE FROM PIN 9 OF THE CONNECTOR TO  
 IC 1 PIN 10.



**HANTAREX<sup>®</sup> CORPORATION OF AMERICA, LTD.**  
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8/3/89

**SUBJECT: ARCH RIVAL KIT USING HANTAREX MTC 9000 19" MONITOR**

**ENGINEERING HAS CONFIRMED THE VERTICAL SYNC SIGNAL FROM THE GAME BOARD IS SLIGHTLY INCOMPATIBLE WITH THE VERTICAL CHIP USED ON THE MONITOR.**

**THE FOLLOWING MODIFICATION IS ADVISED TO COMPENSATE FOR THIS CONDITION:**

**A CERAMIC CAPACITOR VALUED AT .22 MF 50V CAN BE PLACED IN PARALLEL WITH C8 LOCATED ON THE MOTHER BOARD OF THE MONITOR. PLEASE NOTE, USING A CAPACITANCE OF HIGHER OR LOWER VALUE WILL NOT BE AS EFFECTIVE.**



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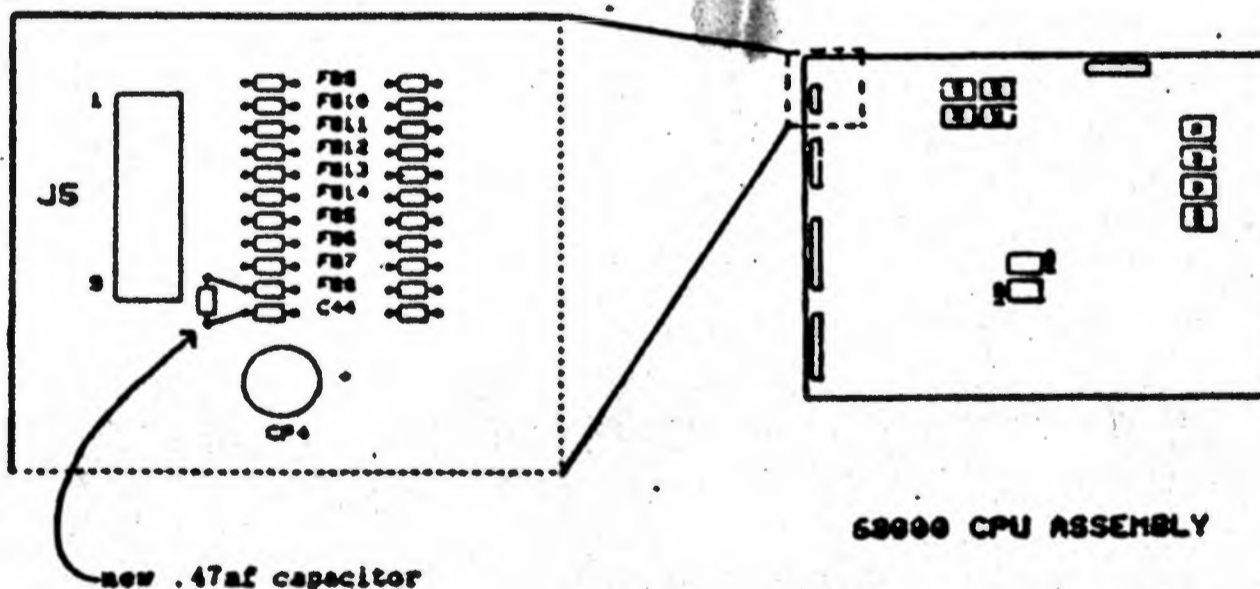
AUGUST 3, 1989

### SERVICE BULLETIN

GAME: ARCH RIVALS (kit)

SUBJECT: MONITOR SYNC MODIFICATION

IF YOU EXPERIENCE MONITOR SYNC PROBLEMS, SUCH AS VERTICAL JITTER, TRY CONNECTING A .47mf CAPACITOR ACROSS FB8 AND C44 ON THE 68000 VIDEO GAME BOARD AS SHOWN BELOW. SOME ADJUSTMENT OF THE MONITOR'S SYNC CONTROLS MAY BE NECESSARY AND YOU MUST HAVE YOUR MONITOR'S VIDEO SIGNAL CABLE HOOKED UP DIRECTLY TO J-5 ON THE GAME BOARD.



IF YOU ARE HAVING A MONITOR SYNC PROBLEM WITH A HANTAREX MONITOR PLEASE REFER TO THE ATTACHED BULLETIN FROM HANTAREX.

**Bally/MIDWAY**  
T.M.



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**MIDWAY MANUFACTURING COMPANY**

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AUGUST 1, 1989

**S E R V I C E B U L L E T I N**

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**GAME: ARCH RIVALS (kit)**

**SUBJECT: COIN SWITCH WIRING**

WHEN INSTALLING THE ARCH RIVALS KIT INTO YOUR CABINET IT IS IMPORTANT THAT YOU CHECK YOUR COIN SWITCH WIRING. REMEMBER, ARCH RIVALS HAS 2 COIN SWITCH INPUT LINES TO THE VIDEO GAME BOARD. IF THE COIN SWITCHES IN YOUR GAME ARE WIRED SO THAT THE WIRES GOING TO THE GAME BOARD (not the ground) ARE CONNECTED AND YOU STILL HAVE BOTH INPUT LINES GOING INTO THE VIDEO GAME BOARD YOUR GAME WILL GET 2 CREDITS PER QUARTER. IF YOU WANT BOTH SWITCHES WIRED TOGETHER, MAKE SURE AND USE ONLY 1 OF THE COIN INPUT LINES. AS ALWAYS BE SURE TO PUT THE GAME INTO SWITCH TEST AND CHECK TO MAKE SURE IT IS WORKING PROPERLY BEFORE YOU PUT IT ON LOCATION. THEN AS A FINAL CHECK TAKE THE GAME OUT OF TEST, CLOSE THE COIN DOOR AND RUN SOME COINS THROUGH THE COIN SLOTS.