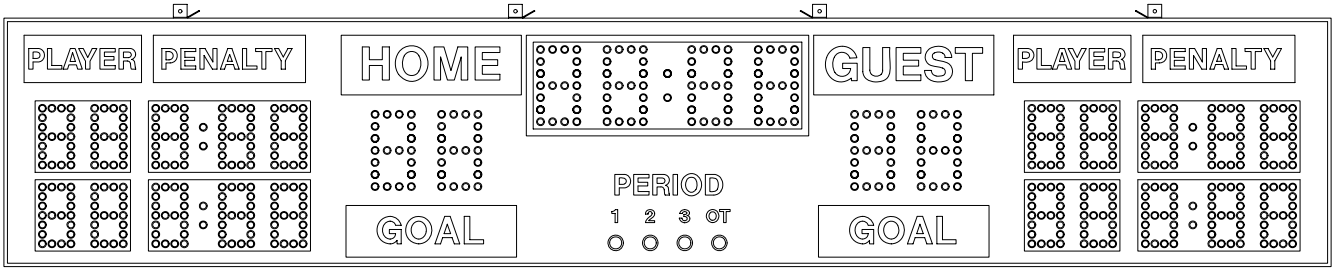
ALL AMERICAN SCOREBOARDS

A Product of Everbrite 401 S. Main St. Pardeeville, WI 53901 (608)429-2121 / (800)356-8146

OPERATING INSTRUCTIONS AND SERVICE MANUAL

HOCKEY SCOREBOARD

MODEL MP-3549 With MP-3000 CONTROL



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1. GENERAL INFORMATION

1.1 DESCRIPTION

Your All-American scoreboard has been carefully inspected and tested before leaving the factory. It is possible, however, that components may be loosened or forced out of adjustment in transit. If this occurs, follow the troubleshooting guide (section 4). If equipment then fails to operate, contact immediately:

ALL-AMERICAN Service Department
EVERBRITE LLC
P.O. Box 100
Pardeeville, WI 53954
Telephone: (608) 429-2121
Toll Free: 800-356-8146
E-mail: score@everbrite.com

Parts being returned for repair are to be sent to:

ALL-AMERICAN Service Department
EVERBRITE LLC
401 S. Main Street
Pardeeville, WI 53954

NOTE

If you need to send parts in for repair, please call the ALL AMERICAN department for a returned goods authorization (RGA) number.

1.2 Identification

ALL-AMERICAN uses a 4 digit serial number for scoreboard identification. The serial number tags are located on the back of the control console and the lower right hand corner on the face of the scoreboard display. When contacting the factory for assistance it is important that the model number and serial number are known.

1.3 Damage

Upon receipt, check for visible damage. If this occurs, or if damage is found after shipment has been accepted, follow the damage claim procedure.

1.4 Damage Claim Procedure

An instruction sheet is enclosed advising the consignee in case of damage in transit.

If damage is noted at the time of delivery, consignee must obtain an 'Inspection of Bad Order' from the delivering carrier. In order to process your claim, this must be properly filled out with a complete statement of all damage and it must be signed by the carrier.

If damage is discovered after delivery, you should call the delivery company. Have them make out a Concealed Damage Report. Fifteen days after delivery are allowed, so this should be done promptly or it is impossible to process this claim.

Advise EVERBRITE corporation of necessary replacement parts, or repairs. Consignee will be invoiced and then should file a claim with the carrier to recover charges. To file your claim follow this procedure:

(A) Cost of replacement parts, or repair charges, are invoiced to the carrier by the consignee.

(B) The following documents, properly filled out, plus invoice, are forwarded to the trucking company in support of your claim:

(a) Original bill of lading
(b) Original paid freight bill
(c) Certified copy of original invoice
(d) Standard form for presentation of loss and damage claim

2. INSTALLATION

2.1 General Information

Shipping papers accompany each scoreboard. Check carefully to see that you receive the following:

1 ea Hockey Display
1 ea Control Console
1 ea Service Manual
1 ea Mounting Hardware Package
1 ea Wall Junction Box
1 ea Trumpet Horn
? ft Control Cable (if ordered)

IMPORTANT!
The MP-41 cable supplied by ALL AMERICAN SCOREBOARDS for use on the Microprocessor based scoreboards is specifically designed for this system. Use of a substitute cable may void the warranty on the scoreboard!

2.2 Inspection

Inspect each unit and tighten all screws, lamps, and fittings that may have loosened in shipment.

2.3 Pre-Test

Before installing the scoreboard, pre-test all functions.

> NOTE
> A small length of rubber hose may be used as a lamp extractor. Simply taper the inside of the hose with a sharp knife to fit the lamp.

(A) Connect the scoreboard to three 20 AMP, 120 Volt AC circuits or one 40 AMP, 120 Volt AC circuit. Be sure to maintain polarity of the AC power.
(B) Plug the control console into the top of the scoreboard.
(C) Test operate all functions on the scoreboard according to operating instructions of this manual.
(D) When all the functions test out, disconnect the power and the control console before hanging the scoreboard.

2.4 Data Cable Installation

The MP-41 data cable carries only low voltage signals and therefore can be installed with or without conduit. consult section 6 for junction box and scoreboard wiring.

2.5 Electrical connections

This scoreboard requires three 120 V. 20 AMP AC circuits, or one 120 V. 40 AMP AC circuit, for the exclusive use of the scoreboard.

> **NOTE**
> To protect the MP-3000 control from damage, it is advisable that you disconnect the control and store in a dry secure area when not in use.

> **NOTE**
> This equipment is **ETL** (Electronics Testing Laboratories) **CSA** and **NRTL** approved and complies with the requirements in part 15 of the FCC rules for a class A computing device. Operation of this equipment in a residential area may cause unacceptable interference to radio and television reception, requiring the operator to take whatever steps are necessary to correct the interference.

3. CONTROL CONSOLE OPERATION

3.1 Scoreboard Power

Turn on the branch circuits to the scoreboard. The Home and Guest scores will show "0".

3.2 Console Display

The 2 line by 20 character Liquid Crystal Display module displays the scoreboard information entered from the keyboard. The following information is displayed continuously: Time, Home and Guest scores, Home and Guest Penalty Times, Period, Goal, Auto Horn Enable, and 1/10 Second Enable.

3.3 Console Power

Plug the control console cable into the wall junction box.

Push **ON/OFF** once to turn the console on.

Push **ON/OFF** a second time to shut the console off.

When first turned on; the console display should show as follows.

```
SCOREBOARD CONTROL
1991 VERSION 3.3
```

3.4 Time of Day Timer

To set the scoreboard for Time of Day; push **SET .**

The LCD display should read as follows:

```
** TIME OF DAY **
    TIME = 00
```

Push the keys for the current time, and then push **ENTER .**

The scoreboard will now display Time of Day. If desirable, you may disconnect the control console and put it away.

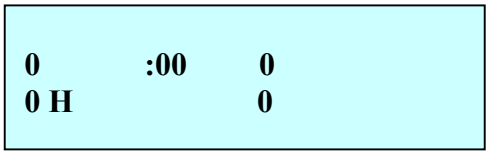
If at this time you want to use the scoreboard for a ball game, input the code and it will be set for the game. After the game, if you unplug the control, the scoreboard will again show the time of day.

3.5 To Use Scoreboard

Enter the two digit code (40) shown in the lower right corner of the keyboard as in the following example:

Push **CODE** **4** **0** **ENTER** .

When the proper code has been entered, the timer on the scoreboard will show ":00", and the console display will show as follows.



3.6 Time Setting and Control

To set an 8 minute period, Push: **SET** **8** **0** **0** **ENTER** .

Any time up up to 99:59 may be preset in a similar manner.

The **UP/DN** key determines the timer mode. When in the UP mode an arrow

up symbol is displayed next to the time on the LCD display. If in the DOWN mode there is no arrow displayed.

Switching the time toggle switch to the IN and OUT position, starts and stops the timer.

Push **RESET** to return the timer to the previously set value.

3.7 Team Scores

The Home and Guest Scores can be changed in three different ways.

(A) To add 1 to the existing score: Push **+1** .

(B) To directly enter or correct a score: Push Home or Guest **SCORE** followed by the desired number, then **ENTER** .

Example: Present Home Score is 15. Change the score from 15 to 23.

Push: Home **SCORE** **2** **3** **ENTER** .

(C) To clear the score: Push **SCORE** **CLEAR** .

3.8 Horn

The horn will blow for 1/2 second each time **HORN** is pressed.

The horn will blow automatically at the end of each period for 2 seconds.

The automatic horn function may be disabled by using the **AUTO HORN** key.

An '**H**' is displayed on the LCD when this function is enabled.

3.9 Goal Indicators

Push Home or Guest **GOAL** to illuminate the appropriate goal indicator. A '<G' or 'G>' will be displayed when the goal is illuminated.

3.10 Period Indicators

Push **PERIOD** once to increment the period indicator. The LCD display will show the period directly below the time.

3.11 Timeout Period

An automatic timeout period of 1 minute is provided for "Time Outs" when the main timer is not running.

Push: **TIME OUT TIMER** to start the 1 minute timer. The LCD will show "**TIME OUT = 1:00**" and start to count down. When 1 minute has elapsed the internal beeper sounds, and the display returns to the current game time.

If you want to return to play before the Time Out Timer gets back to zero, push: **CLEAR** and the console will return to play mode.

3.12 Penalty Time Control

To set a penalty time, Push **PEN 1** or **PEN 2** followed by the time as in the following example for a 3 minute penalty for player no. 25.

Push: **PEN 1** **3** **0** **0** **ENTER** **2** **5** **ENTER**

To enable the penalty timers push **PEN ON**. This will start the penalty timer.

4. MAINTENANCE AND TROUBLESHOOTING

4.1 Introduction

This section gives maintenance and troubleshooting information. Included are troubleshooting guides for typical scoreboard malfunctions. If the cause of a problem cannot be determined, please contact the customer service department.

WARNING

120 VAC wires are exposed whenever the cover over the controller assembly is removed from the scoreboard. Use extreme caution during troubleshooting or repair. To avoid possible damage always remove power before removing the cover or replacing assemblies.

4.2 Test Equipment

A simple analog or digital voltmeter will be sufficient for all user repairable problems. Printed circuit boards requiring troubleshooting should be returned to the factory.

4.3 Troubleshooting

Whenever possible, follow the troubleshooting guides prior to contacting the customer service department. If a problem not described in the guides exists, contact the customer service department immediately. Refer to the diagrams provided for assistance in troubleshooting scoreboard malfunctions.

4.4 Troubleshooting Guides

(A) Scoreboard doesn't light and console doesn't work

(a) Check that the main power switch is turned on.
(b) Replace any defective or blown fuses.
(c) Check the power connections and voltages at the scoreboard.
(d) Contact the customer service department.

(B) Scoreboard digits don't light, but the console works

(a) With the main power switch "off"; remove the cover over the controller assembly.
(b) Check all connections.
(c) Turn the main power on.
(d) If the scoreboard still doesn't light, check the transformer voltage going to the receiver PCB (printed circuit board) assembly (blue wires) using a voltmeter set on the 12 VAC or higher scale.

If the voltage is less than 8 VAC contact the customer service department.

If the voltage is between 8-12 VAC see the replacement parts list for a receiver PCB assembly, and contact the customer service department.

(C) The scoreboard digits light but the console doesn't work

(a) Check for continuity between the scoreboard and the junction box.
(b) If an open circuit is found, the problem is either the cable or a cable connection.

(c) If the continuity test checks good, check the voltage between the green wire and the white wire in the junction box, using a voltmeter set on the 12 VAC or higher scale.

If the voltage is 0 VAC, see the controller parts list for a transformer assembly.

If the voltage is less than 8 VAC, consult the controller wiring diagram for instructions on long cable compensation.

If the voltage is between 8 VAC and 12 VAC contact the customer service department.

(D) The scoreboard digits light, the console works, but there is no control of the scoreboard.

(a) Check the voltage between the black and red wires in the junction box with a voltmeter set on the 3 VDC or higher scale. The voltage should read somewhere between 2-3 VDC when the console is working properly.
(b) If the voltage is 0 VDC contact the customer service department for assistance.
(c) If the voltage is correct, (2-3 VDC) check that this reading also appears at the scoreboard.
(d) If the correct voltage also appears at the scoreboard, see the replacement parts list for a receiver PCB assembly.

(E) The scoreboard works, but some lights stay on all the time

(a) With the main power "OFF", switch the plug from the bad digit with the plug for a Known good digit.

EXAMPLE: Plug "C" into "D" and "D" into "C" locations.

(b) Turn the power back on. If the same lamps remain lit all the time, the problem is a shorted lamp socket. If the lamps on a different digit now stay lit all the time, the problem is on the driver PCB assembly. See the replacement parts list for the proper replacement part.

(F) The scoreboard works, but some lights do not come on.

(a) Check for burned out lamps.

IMPORTANT !!!

In this scoreboard the 120 volt line is on the lamp socket all the time, and the common is switched to turn the lamps on and off. For this reason, to avoid damage to the equipment or personal injury, it is important to turn the main power off when changing the lamps.

(b) Check for a broken wire or bad connection on the 12 pin connector.
(c) See the replacement parts list for the proper replacement driver board.

5. REPLACEMENT PARTS LIST

5.1 Scoreboard Display Parts

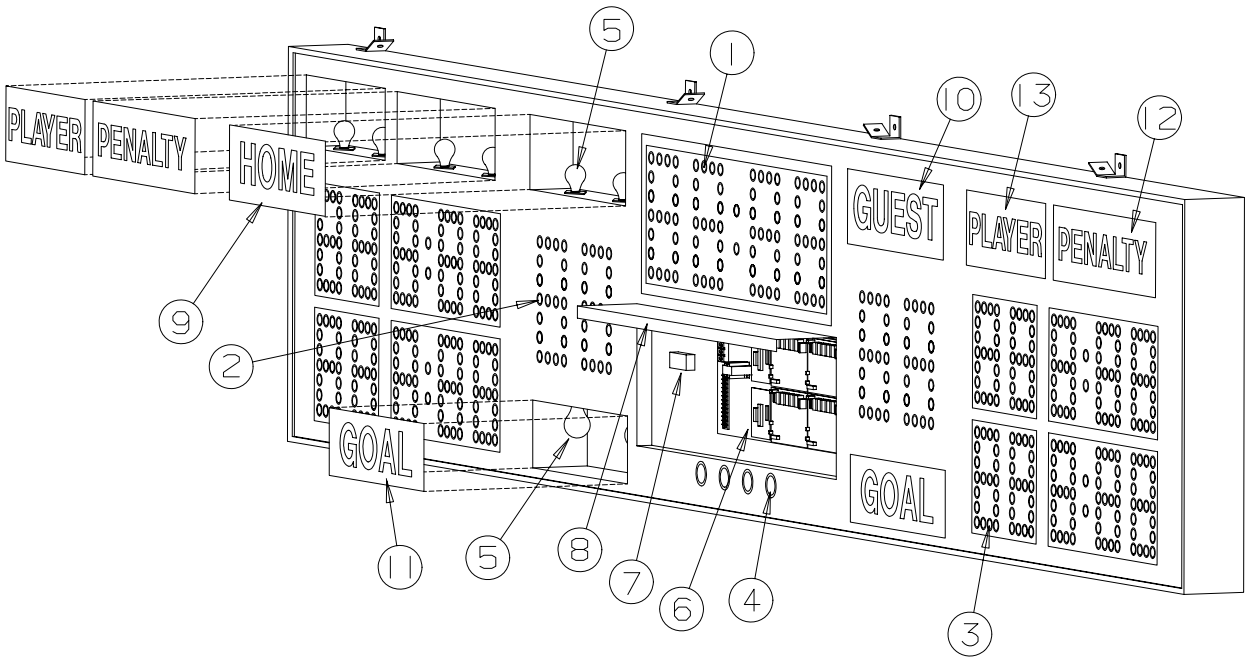


figure 1

DISPLAY ASSEMBLY

REPLACEMENT PARTS LIST (MP-3549 Hockey)

fig.& index	MFG PART NUMBER	DESCRIPTION	REF DES	VENDOR PART #
1-	150389X	Display Assembly		150389X
1-1	850001	Lamp, 7C7/125V White		7C7/W
1-2	850002	Lamp, 7C7/125V Amber		7C7/A
1-3	850000	Lamp, 7C7/125V Red		7C7/R
1-4	850024	Lamp, 25W/130V Red		25A19 RED
1-5	850029	Lamp, 25W/130V IF		25A19 IF
1-6	SU608600	Controller Assembly	A2	SU608600
		*****SEE FIGURE 2*****		
1-7	119337	Line Filter, Mallory		20VB1
1-8	120363	Service Door		120363
1-9	150036	Placard, Home		150036
1-10	150037	Placard, Guest		150037
1-11	150038	Placard, Goal		150038
1-12	150075	Placard, Penalty		150075
1-13	150393	Placard, Player		150393
1-14	700102	Resistor, 2 OHM 10 WATT		HLM-10-10Z
1-15	702623	Connector, 2C Fem. AB (HORN)	J5	S3302AB
	SU4450	Control Console		SU4450
	HB005500	Slipsheet Pair		HB005500
	HB002300	Transmitter PCB Assembly	A1	HB002300
	SW005100	Toggle Switch,	S1	SW005100
	702785	Connector, 5 Pin Male Cable	P1	RM12BPG5P
	EL053000	LCD Display, 2 Line 20 Character		
	HB002400	Keyboard Assembly,		HB002400
	WH009100	Ribbon Cable Assembly, 14C 8"		WH009100
	122763	Enclosure,		
	150204	Wall Junction Box, Single		150204
	150205	Wall Junction Box, Dual		150205
	702786	Connector, 5 Pin Female	J1-J3	RM12BRD5S
	150500	Cable, MP-41 Control		8723
	700618	Diode, 1N457A	D1/D2	1N457A
	118044	Horn, #55 Trumpet		118044

5.2 Scoreboard Controller Assembly Parts

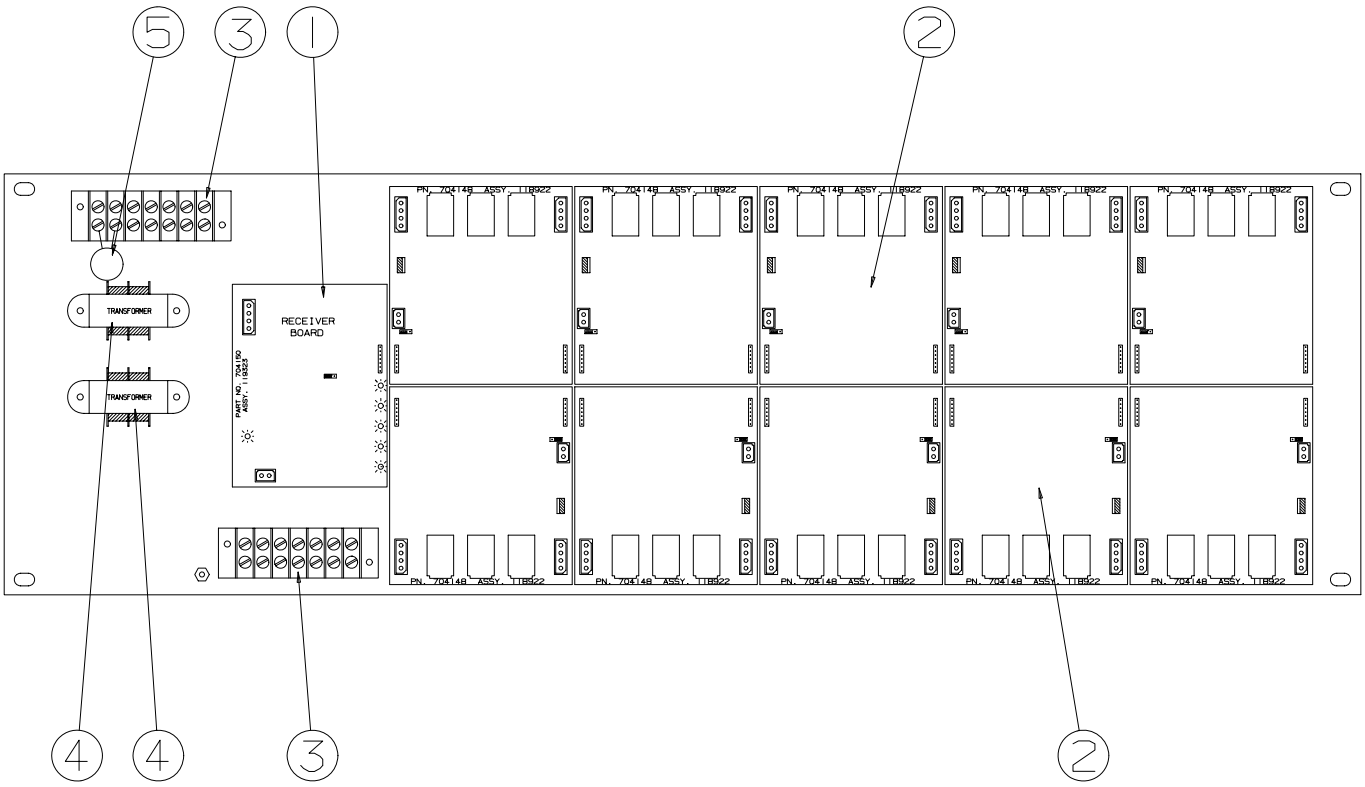


figure 2

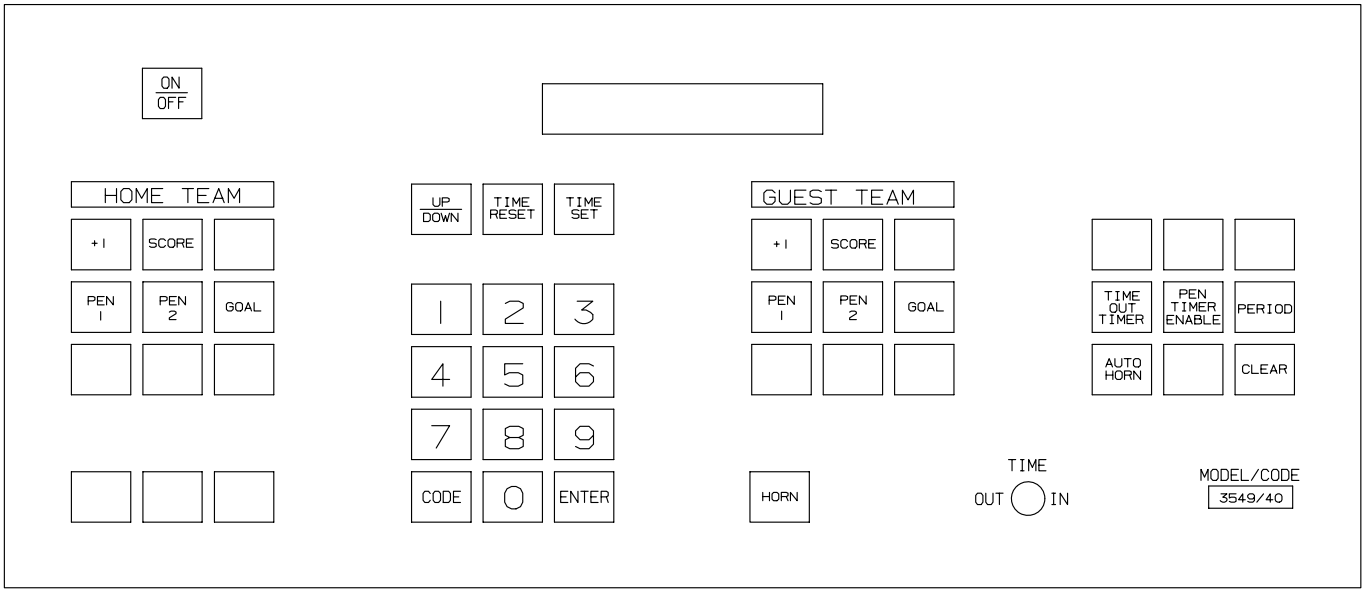
CONTROLLER ASSEMBLY

REPLACEMENT PARTS LIST (MP-3549 Controller Assembly)

fig.& index	MFG PART NUMBER	DESCRIPTION	REF DES	VENDOR PART #
2-	SU608600	Controller Assembly	A2	SU608600
2-1	119323	Receiver Board	A3	119323
2-2	118922	Driver Board, 3 Position #1-#10	A4-A13	118922
2-3	701137	Terminal Block, 7C		670-7
2-4	703719	Transformer Assy, 8V/18V	T1/T2	CS-697
2-5	700520	Varistor,		ERZ-C20DK201U
2-6	705723	Spacer, P.C. Board		LCBS-6-01

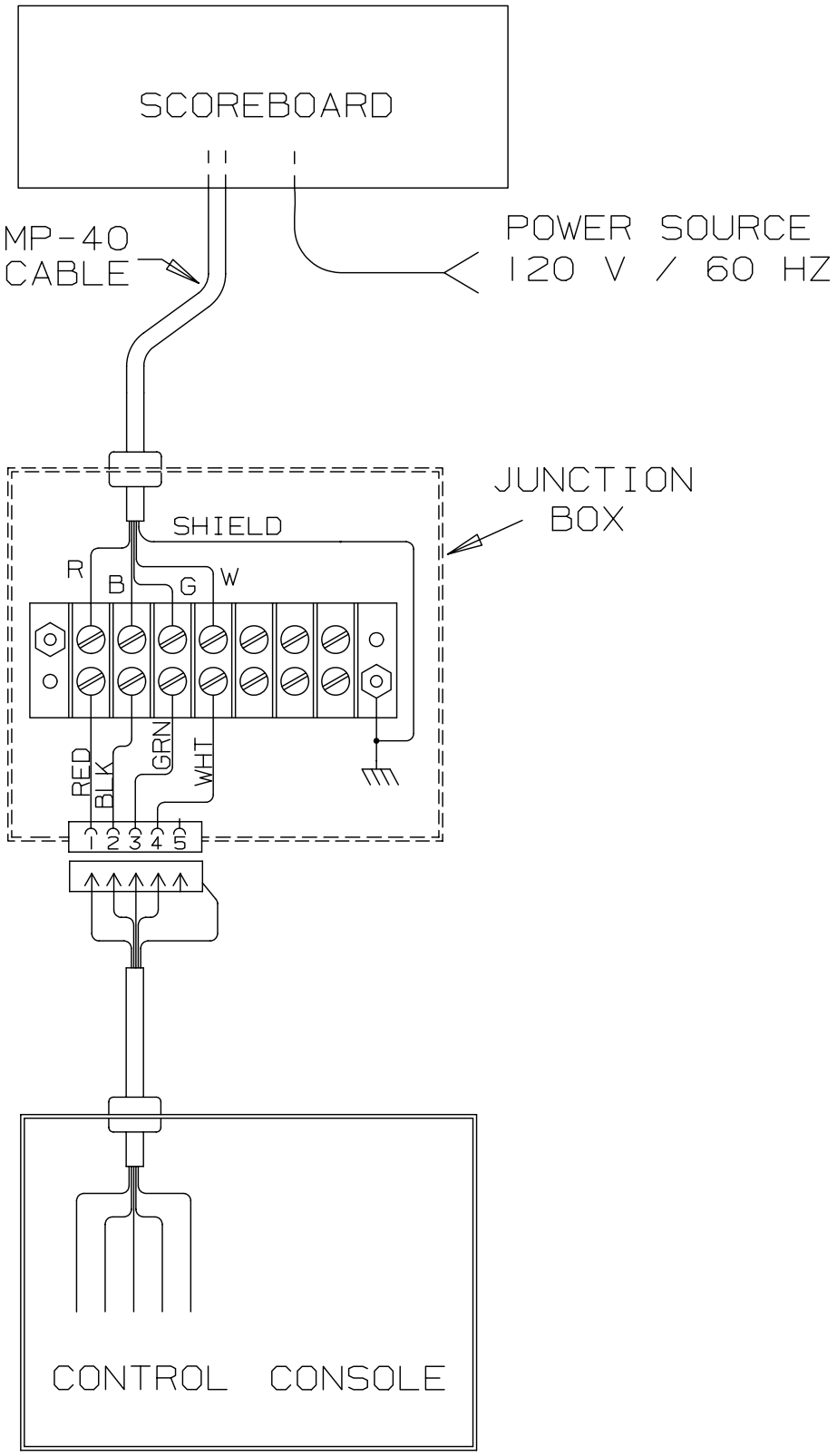
6. DIAGRAMS

6.1 Control Console Keyboard and Slipsheet Layout

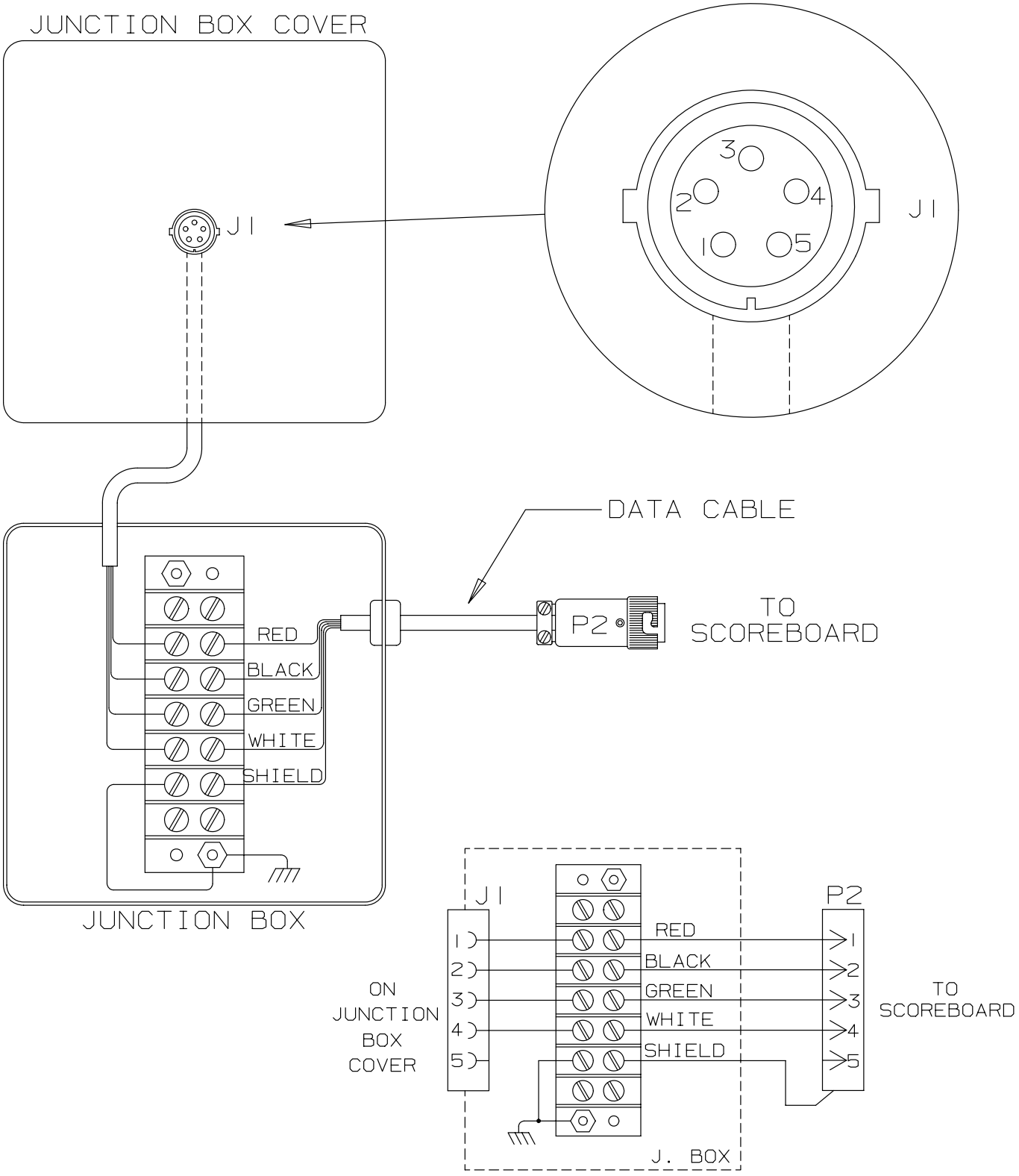


CONSOLE KEYBOARD

6.2 Scoreboard System Layout

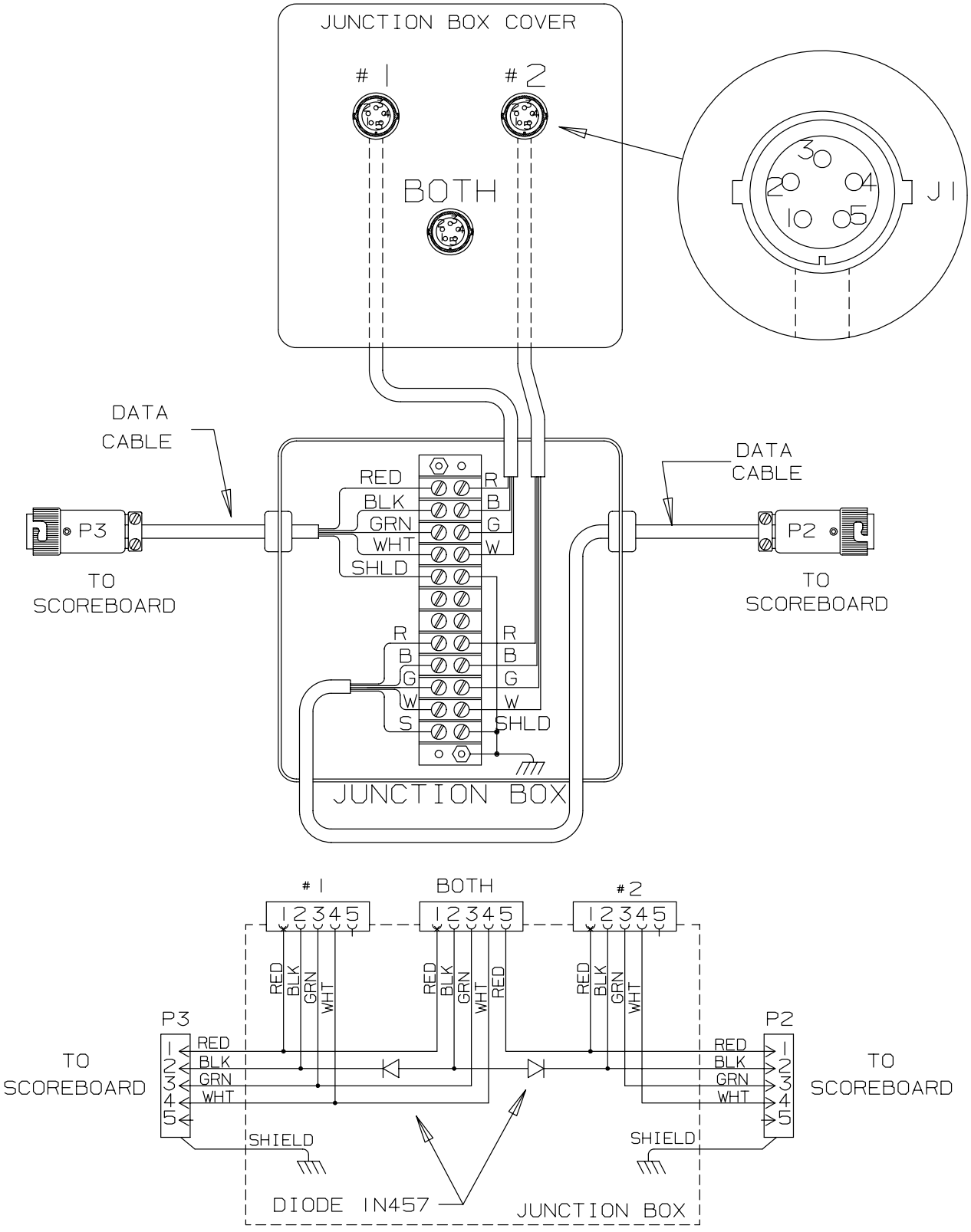


6.3 Single Wall Junction Box Wiring



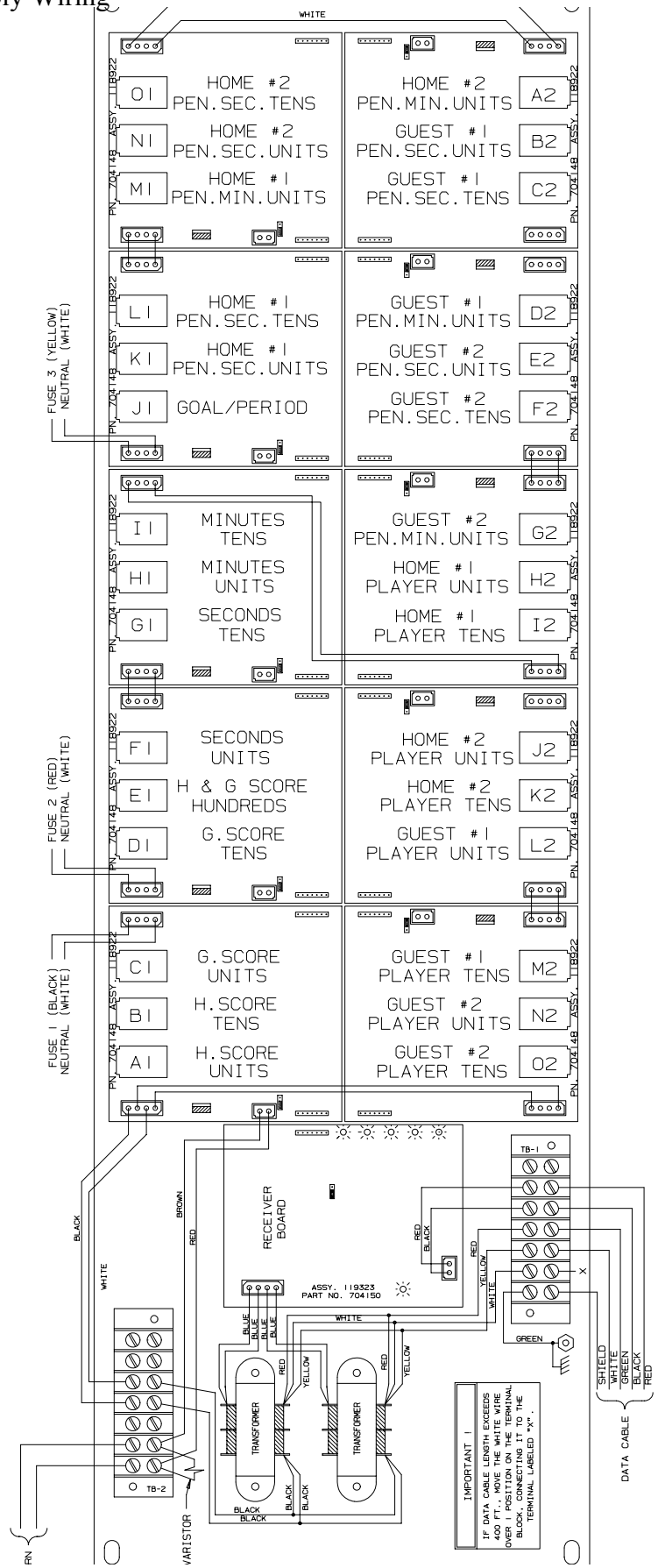
SINGLE JUNCTION BOX WIRING

6.4 Dual Wall Junction Box Wiring

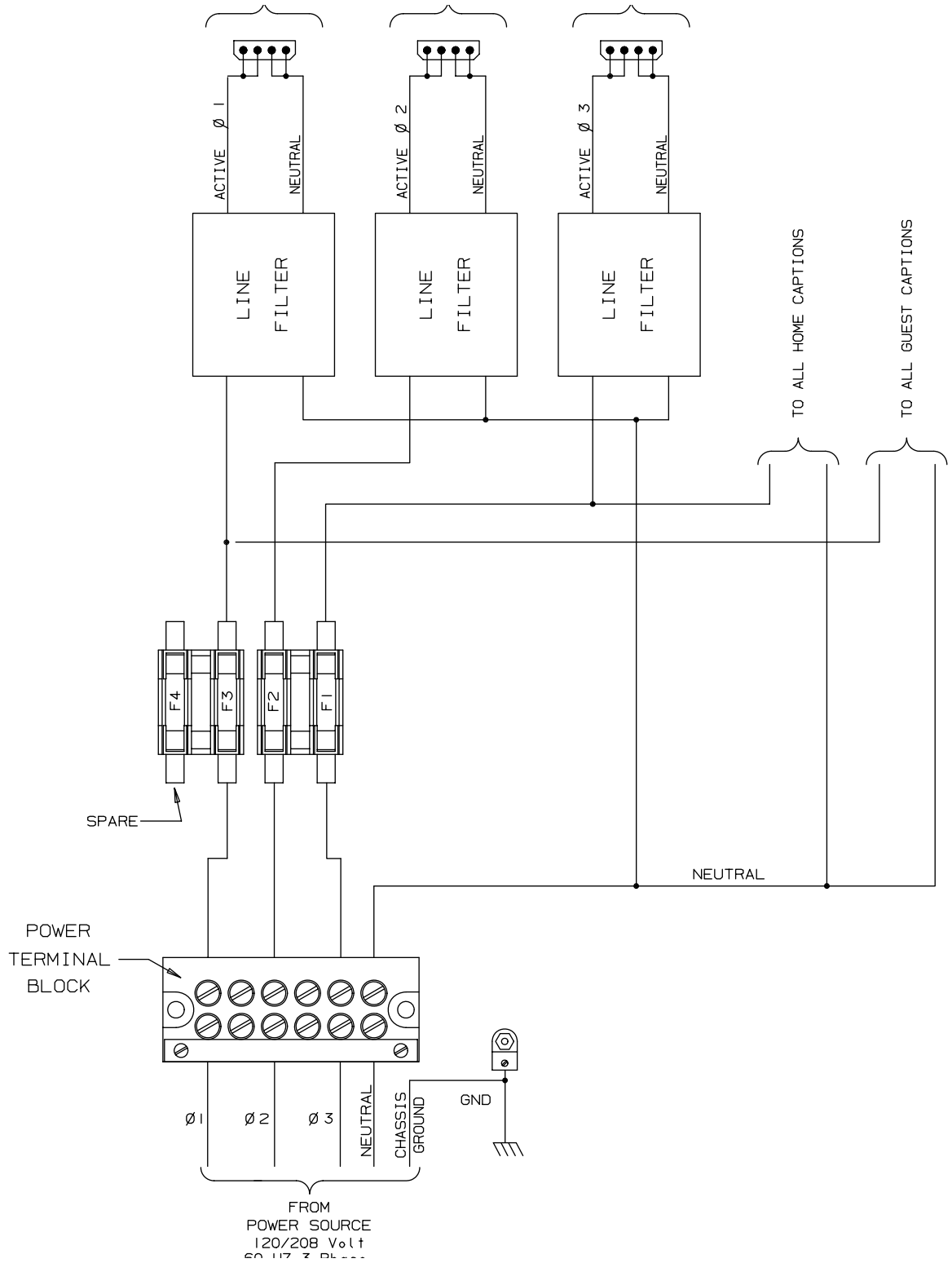


DUAL WALL JUNCTION BOX

6.5 Controller Assembly Wiring

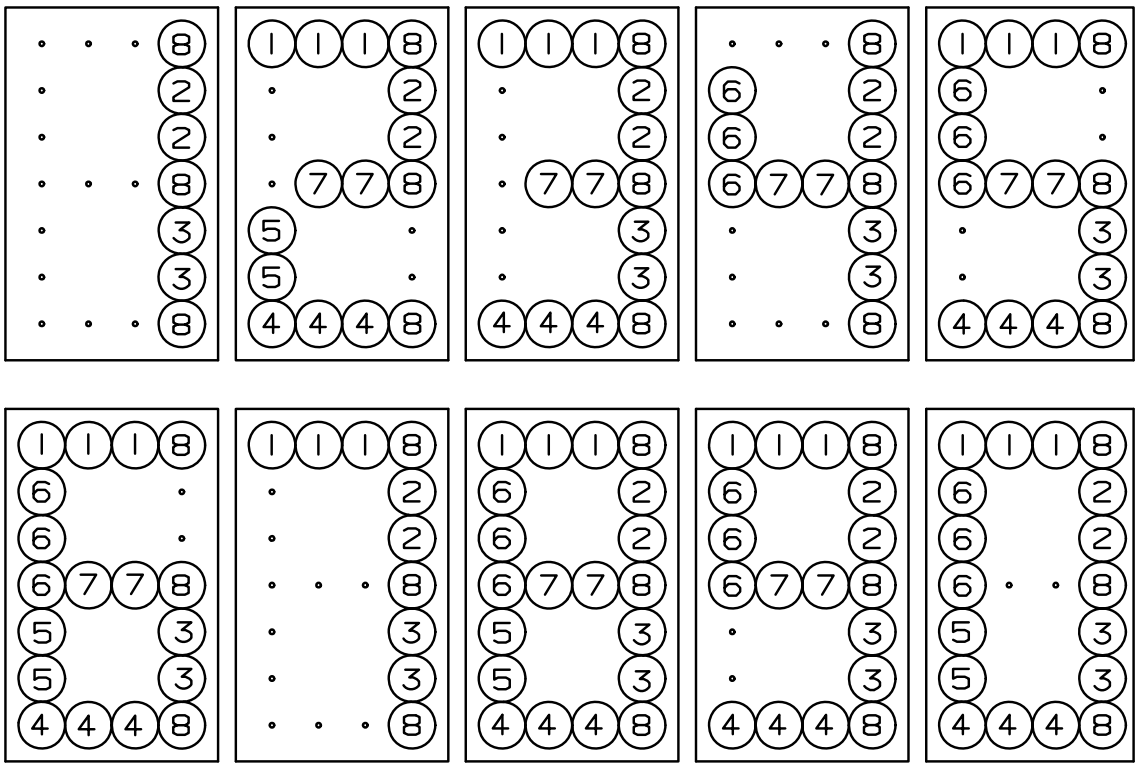


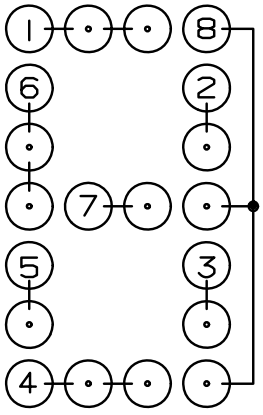
6.6 Power Wiring Diagram



POWER WIRING

6.7 Microprocessor 4 X 7 Lamp Pattern (8 Bit)



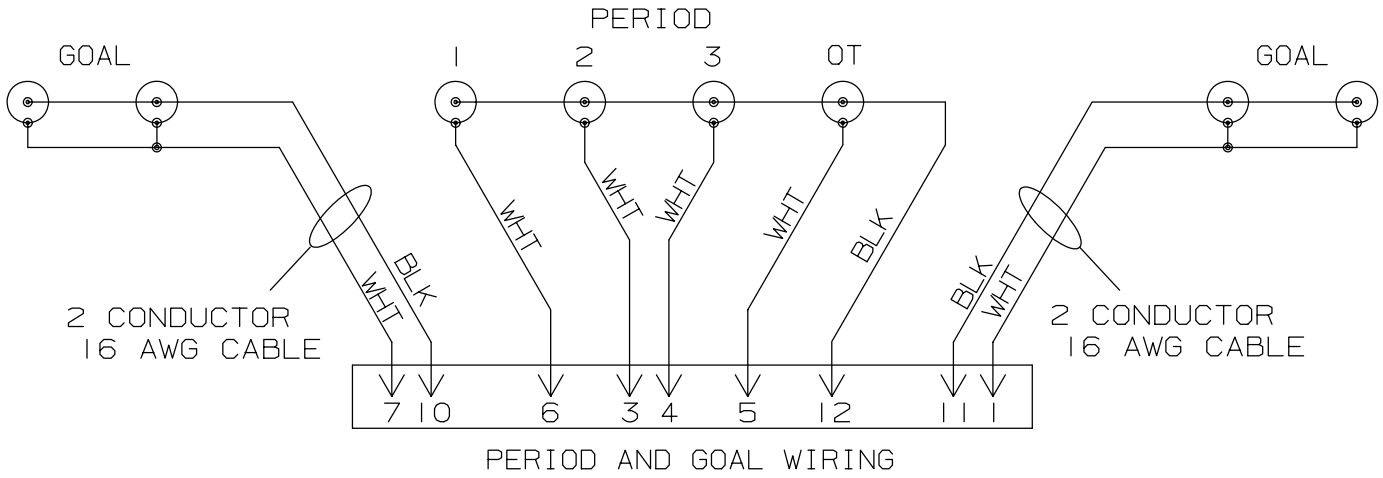


NUMERALS

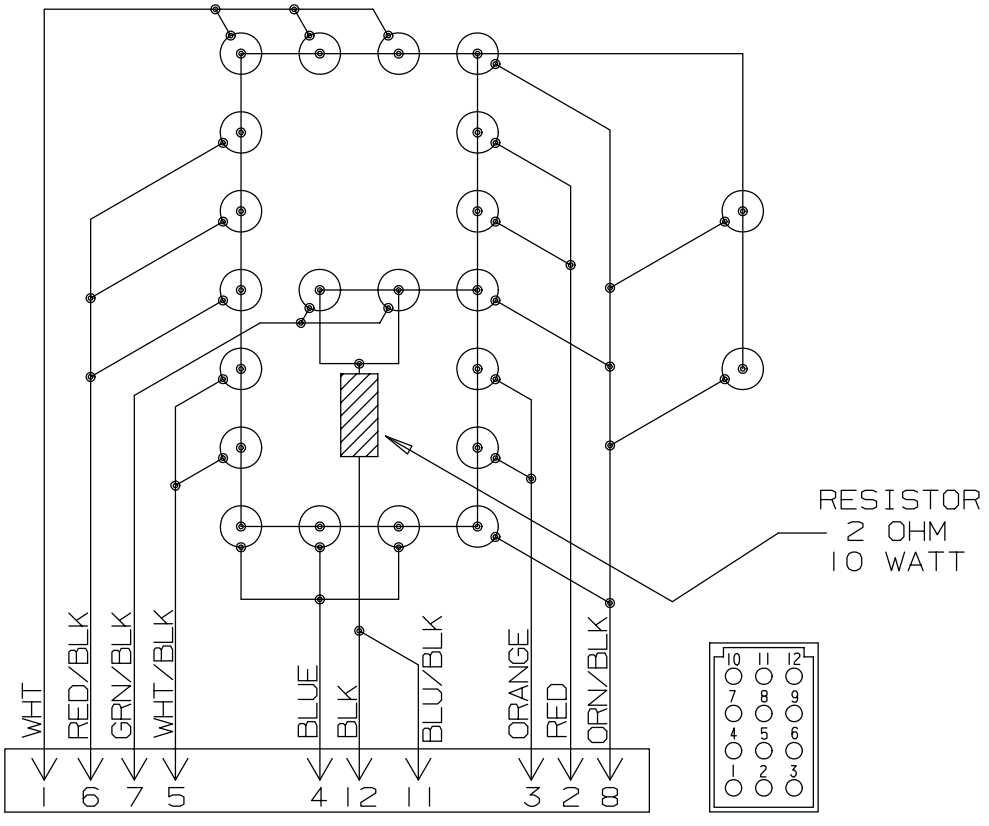
BIT NUMBERS	0	1	2	3	4	5	6	7	8	9
1	0	.	2	3	.	5	6	7	8	9
2	0	1	2	3	4	.	.	7	8	9
3	0	1	.	3	4	5	6	7	8	9
4	0	.	2	3	.	5	6	.	8	9
5	0	.	2	.	.	.	6	.	8	.
6	0	.	.	.	4	5	6	.	8	9
7	.	.	2	3	4	5	6	.	8	9
8	0	1	2	3	4	5	6	7	8	9

MICROPROCESSOR 4 X 7 (8 BIT) LAMP PATTERN

6.8 Figuregram Wiring



PERIOD AND GOAL WIRING



0-9 FIGUREGRAM WIRING

8 BIT FIGUREGRAM WIRING

6.9 Jumper Location on 3 Position System

All of the 3 position drivers and receivers are identical except for the jumper on each board. Make sure the jumpers are set for the model of scoreboard you are installing them into.

(A) On the receiver board (refer to figure); Jumper pins 2 & 3 for models MP-3385, MP-3312, MP-3529, and MP-3549. Jumper pins 1 & 2 for all other models.

(B) On the driver board (refer to figure); Jumper pins 1 & 2 for use of a horn. Jumper pins 2 & 3 for all others.

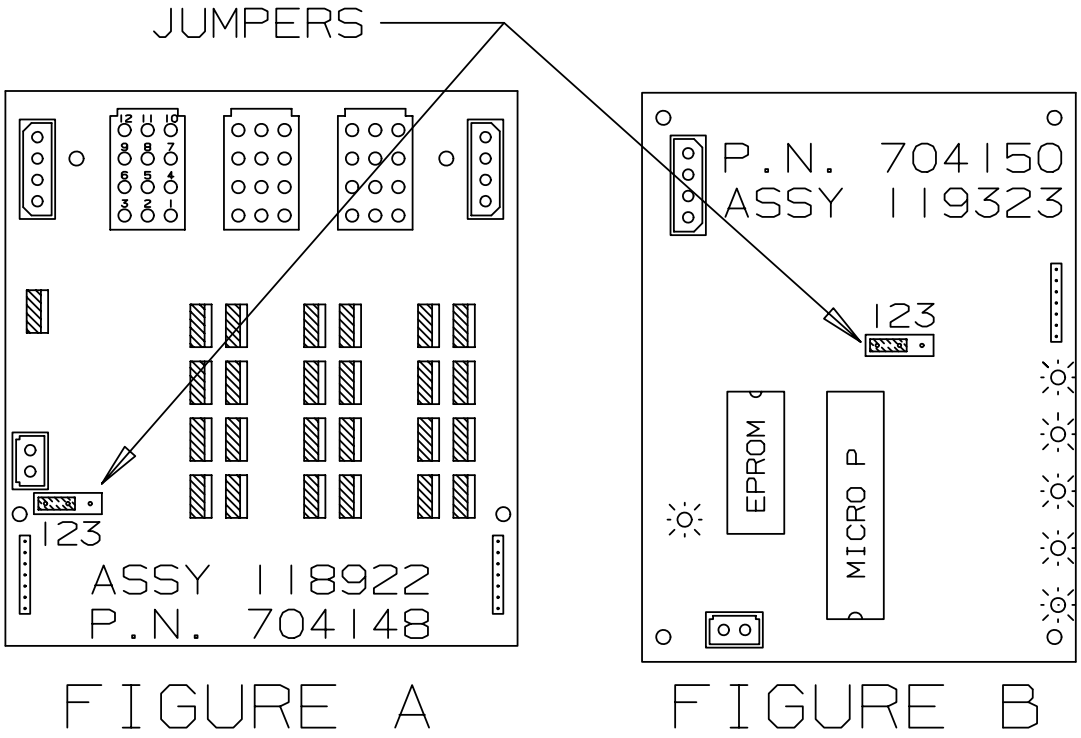
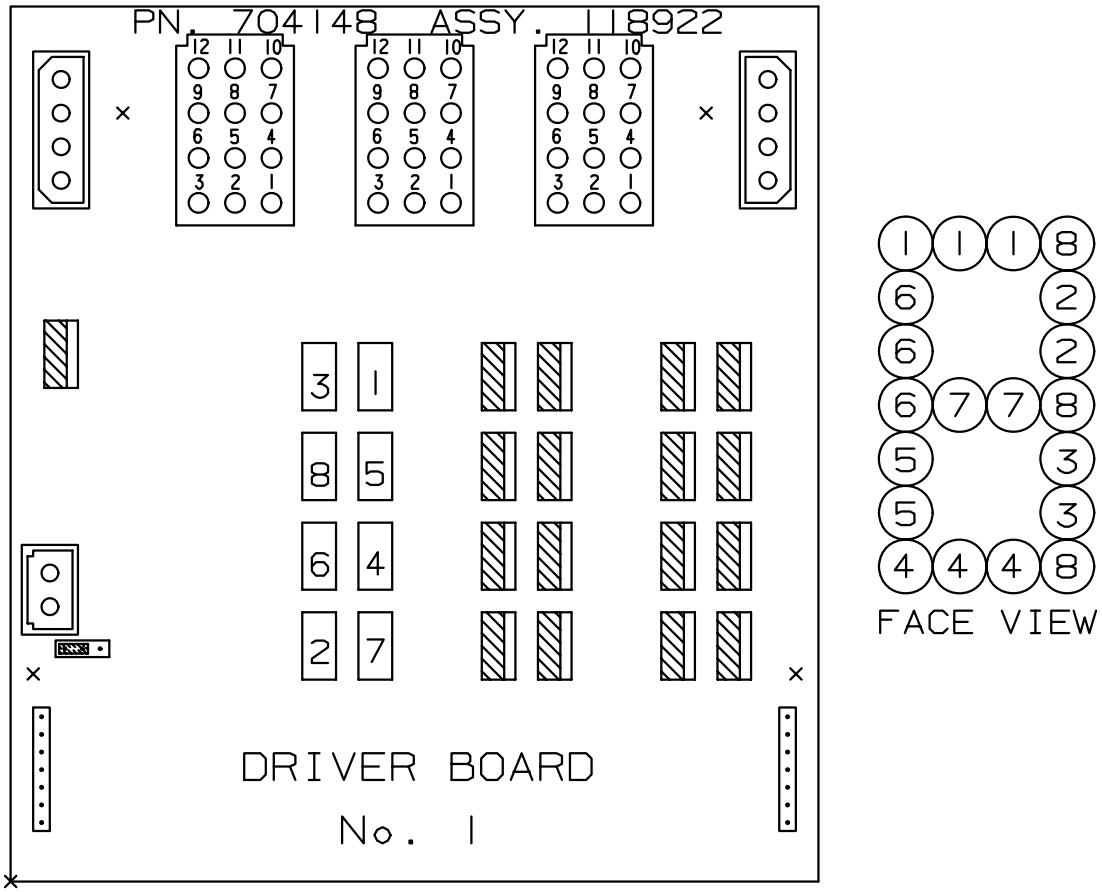


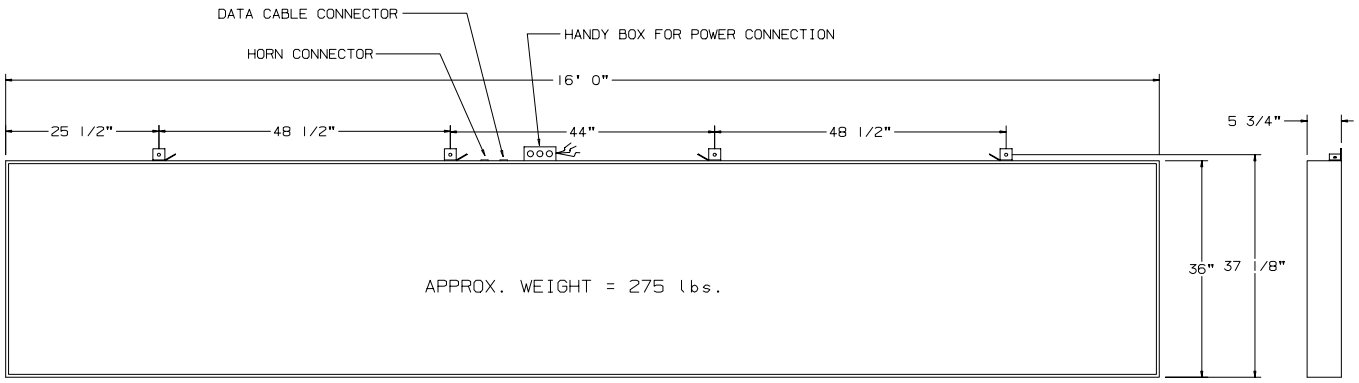
FIGURE A FIGURE B

6.10 Triac Placement

The triac is the switch that controls the figuregram lamps. The triacs for any given figuregram are adjacent to the twelve pin connector on the driver board that controls that figuregram. Shown below is the triac placement and bit designation relative to the figuregram bit pattern.



6.11 Installation Drawing



USE 1/2" DIA. HARDWARE (NOT FURNISHED)
FOR MOUNTING THE SCOREBOARD DISPLAY

INSTALLATION DRAWING

TO CONVERT MP-2509 TO MP-3549 REMARK PLUGS AS FOLLOWS:

5P	to	3P
A		A1
B		B1
C		C1
D		D1
E		E1
G		F1
H		G1
I		H1
J		I1
K		J1

EFFECT. 9/17/84 TO CONVERT MP-2529 TO MP-3549 REMARK PLUGS AS FOLLOWS:

5P	to	3P
A1		I1
B1		C1
C1		D1
D1		A1
E1		B1
G1		K1
H1		L1
I1		M1
J1		N1
K1		O1
L1		A2
A2		E1
B2		J1
C2		F1
D2		G1
E2		H1
G2		B2
H2		C2
I2		D2
J2		E2
K2		F2
L2		G2

EFFECT. 1/1/93 TO CONVERT MP-2529 TO MP-3549 REMARK PLUGS AS FOLLOWS:

5P	to	3P
A1		I1
B1		C1
C1		D1
D1		A1
E1		B1
F1		K1
G1		L1
H1		M1
I1		N1
J1		O1
K1		A2
A2		E1
B2		J1
C2		F1
D2		G1
E2		H1
F2		B2
G2		C2
H2		D2
I2		E2
J2		F2
K2		G2

TO CONVERT MP-2549 TO MP-3549 REMARK PLUGS AS FOLLOWS:

5P	to	3P
A1		I1
B1		C1
C1		D1
D1		A1
E1		B1
G1		K1
H1		L1
I1		M1
J1		N1
K1		O1
M1		A2
N1		H2
O1		I2
P1		J2
R1		K2
A2		E1
B2		J1
C2		F1
D2		G1
E2		H1
G2		B2
H2		C2
I2		D2
J2		E2
K2		F2
M2		G2
N2		L2
O2		M2
P2		N2
R2		O2

5P	to	3P
A1		D1
B1		E1
C1		B1
D1		C1
E1		A2
F1		C2
G1		D2
H1		E2
I1		A1
J1		B2
K1		G1
L1		H1
D2		I1
E2		J1
F2		K1
G2		L1
H2		G2
I2		H2
J2		I2
K2		J2
L2		K2
M2		L2