LED BASKETBALL SCOREBOARDS

INSTALLATION/MAINTENANCE MANUAL

All Sport® is a registered trademark of Daktronics Inc.

Model Numbers:
BB-1013L, BB-1013LB, BB-1813L
BB-1713L, BB-1713LB, BB-1813LB

ED#8819
Product#1150
Rev. 4 - 15Oct97

DAKTRONICS, INC.
Setting New Standards Worldwide
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Reference Drawings: Model ID, BB-1013L, -1013LB, -1713L, -1713LB . . **Drawing A-73588**
Model Identification, BB-1813L . . . . . **Drawing A-78309**

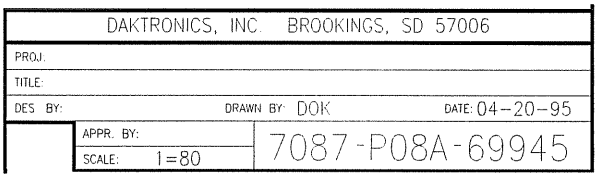
1.1 How To Use This Manual

This manual is designed to explain installation of Daktronics LED Basketball scoreboards. Details for display maintenance are also given. For questions regarding the safety, installation, operation or service of this system, please refer to the telephone numbers listed on the cover page of this manual.

Important Safeguards:

1. Read and understand these instructions before installing.
2. Do not drop the control console or allow it to get wet.
3. **Disconnect power to the scoreboard when it is not in use.**
4. **Disconnect power when servicing the scoreboard.**
5. Do not modify the scoreboard structure or attach any panels or coverings to the scoreboard without the express written consent of Daktronics, Inc.

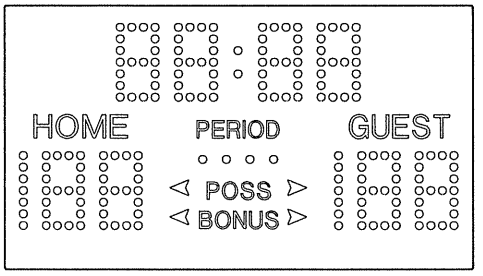
The box below is an illustration of Daktronics drawing numbering system. The drawing number "7087-P08A-69945" is how Daktronics identifies individual drawings. This number is located in the bottom right corner of the title box in the lower right corner of the drawing. The manual will refer to drawings by calling out the last five digits and the letter preceding them. In the example, the drawing would be referred to as "Drawing A-69945". All drawings referred to as such will be inserted at the *end of each section.*



1.2 Scoreboard Overview

Your Daktronics Basketball Scoring System is one of a family of display systems designed to offer simple installation, easy readability, and reliability. Microprocessor control assures consistent operation and accuracy.

Drawings A-73588 (models 1013, 1713) and **A-78309** (model 1813) show the basic display models covered in this manual. These display configurations contain 13" LED digits. Dimensions and weight of each display are also listed in the drawings. Display model number and electrical requirements are found on a label to the left of the period indicator lights on the front of the display.

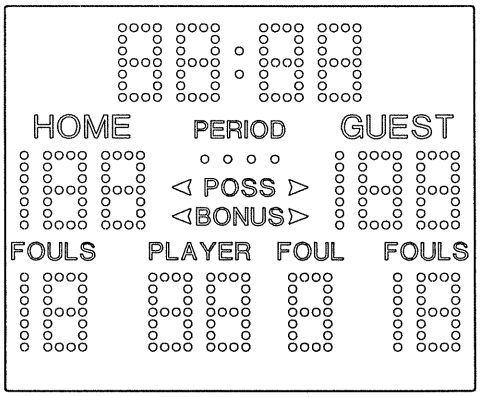


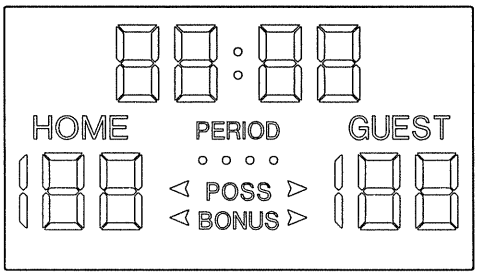
Model No: BB-1013L

Height: 45.25 in. (1149 mm)
Width: 80.76 in. (2051 mm)
Depth: 6 in. (153 mm)
Weight: 65 lbs. (30 kg)

Model No: BB-1713L

Height: 66.25 in. (1683 mm)
Width: 80.76 in. (2051 mm)
Depth: 6 in. (153 mm)
Weight: 103 lbs. (47 kg)



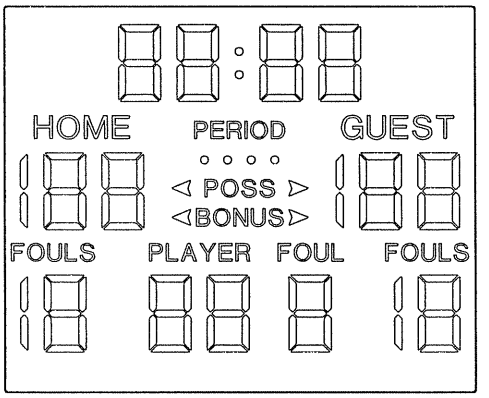


Model No: BB-1013LB

Height: 45.25 in. (1149 mm)
Width: 80.76 in. (2051 mm)
Depth: 6 in. (153 mm)
Weight: 65 lbs. (30 kg)

Model No: BB-1713LB

Height: 66.25 in. (1683 mm)
Width: 80.76 in. (2051 mm)
Depth: 6 in. (153 mm)
Weight: 103 lbs. (47 kg)



REV.	DATE	DESCRIPTION	BY	APPR.
1	01MAR96	ADDED MODELS BB-1013LB AND BB-1713LB	AVB	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: LED BASKETBALL SCOREBOARDS

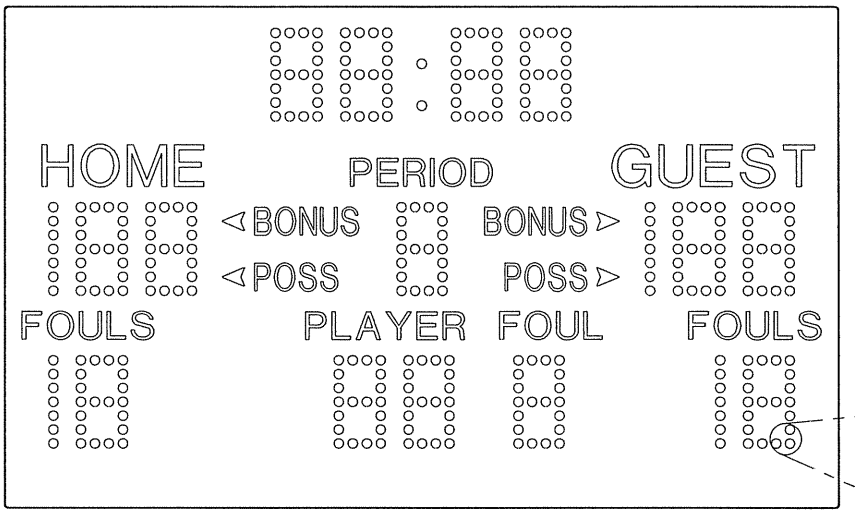
TITLE: MODEL ID, BB-1013L, -1013LB, -1713L, -1713LB

DES. BY: DRAWN BY: NJA DATE: 8 AUG 95

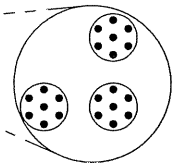
REVISION APPR. BY:

SCALE: 1=30

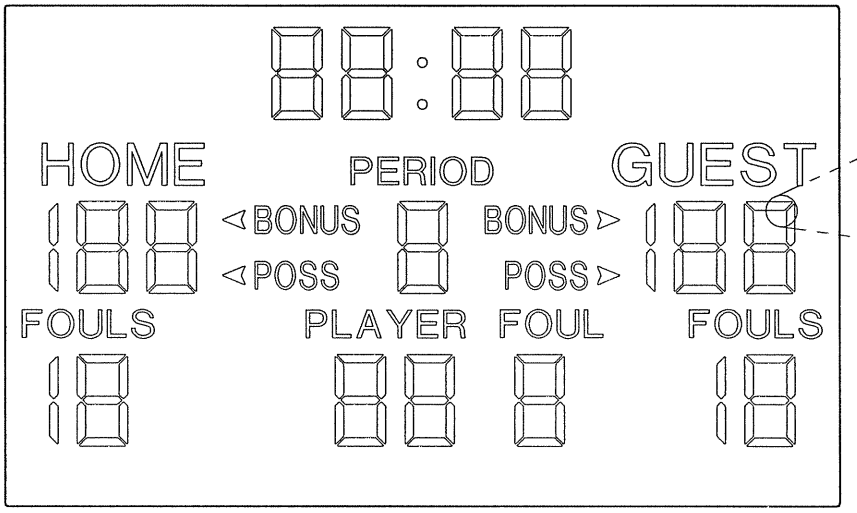
1150-R08A-73588

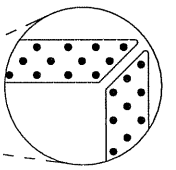


FOR MODEL BB-1813L, EACH DIGIT "DOT" IS MADE UP OF SEVEN SUPERBRIGHT LEDS.



MODEL BB-1813L





FOR MODEL BB-1813LB, EACH DIGIT "SEGMENT" IS MADE UP OF APPROXIMATELY 20 SUPERBRIGHT LEDS.

MODEL BB-1813LB

SPECIFICATIONS FOR BOTH MODELS:

Height: 72.00 in. (1829 mm)
Width: 120.00 in. (3048 mm)
Depth: 6 in. (153 mm)
Weight: Approx. 150 lbs. (70 kg)
Power consumption: Approx. 150 Watts max.

REV.	DATE	DESCRIPTION	BY	APPR.
1	17FEB96	ADDED MODEL BB-1813LB	AVB	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: LED BASKETBALL SCOREBOARDS
TITLE: MODEL IDENTIFICATION, BB-1813L
DES. BY: AVB DRAWN BY: JMOEN DATE: 18 JAN 96
REVISION APPR. BY:
SCALE: 1=20

1152-R08A-78309

SECTION 2: MECHANICAL/ELECTRICAL INSTALLATION

Reference Drawings: Scoreboard Mounting . . . . . **Drawing A-26861**
Single/Dual Display Installation . . . . . **Drawing A-67460**

2.1 Mounting Details

Refer to **Drawing A-26861** . Angles for lifting the display and holes for attaching the display to the wall are provided on the frame.

Due to the variety of wall materials used in sports facilities, Daktronics cannot anticipate all needs and provide a mounting bolt or anchor suitable for installation. The required mounting hardware may be purchased at a local hardware store. Bolts with expansion or toggle anchors are available for a variety of wall materials. Be sure that the chosen method of installation is adequate to safely support the weight of the display.

Use the lifting angles on the top of the frame to lift the display. Secure the display to the wall with the holes in the back. Refer to **Drawing A-26861** . Two holes at the bottom of the display are provided to secure the bottom of the display to the wall in a similar manner.

Refer to following table for the mounting hole locations:

	BB-1013L	BB-1713L	BB-1813L
Width (inches)	66.25	66.25	105.50
Height (inches)	44.10	65.10	70.50

2.2 Electrical Installation

Electrical installation involves the routing of power and control signal wiring through separate conduit or wire ways. Control signal cable is not provided as part of this system and can be purchased locally or from Daktronics.

2.2.1 Power

Each display is equipped with a 120 VAC, 3-prong plug. Install a grounded receptacle near the equipment so that it is easily accessible to plug in the power cord. Actual maximum display power consumption is as follows:

Model No.	Max Power
BB-1013L,LB	75 watts
BB-1713L,LB	100 watts
BB-1813L,LB	150 watts

The control console requires a 120 VAC receptacle for power. Power requirement is less than one amp.

2.2.2 Signal

If running 4 or fewer displays (simultaneously or independently) route conduit and cable between display location(s) and the control location. Use paired cable, minimum 22 AWG, connecting the cable to the junction box at the control end. Install the phone plug provided to the display end of the cable. Insert plug (P31) into the jack on the top of the display. Refer to **Drawing A-67460**.

2.3 Basketball Codes

The following table describes what model of basketball scoreboard can be operated from each of the outputs of an All Sport® console.

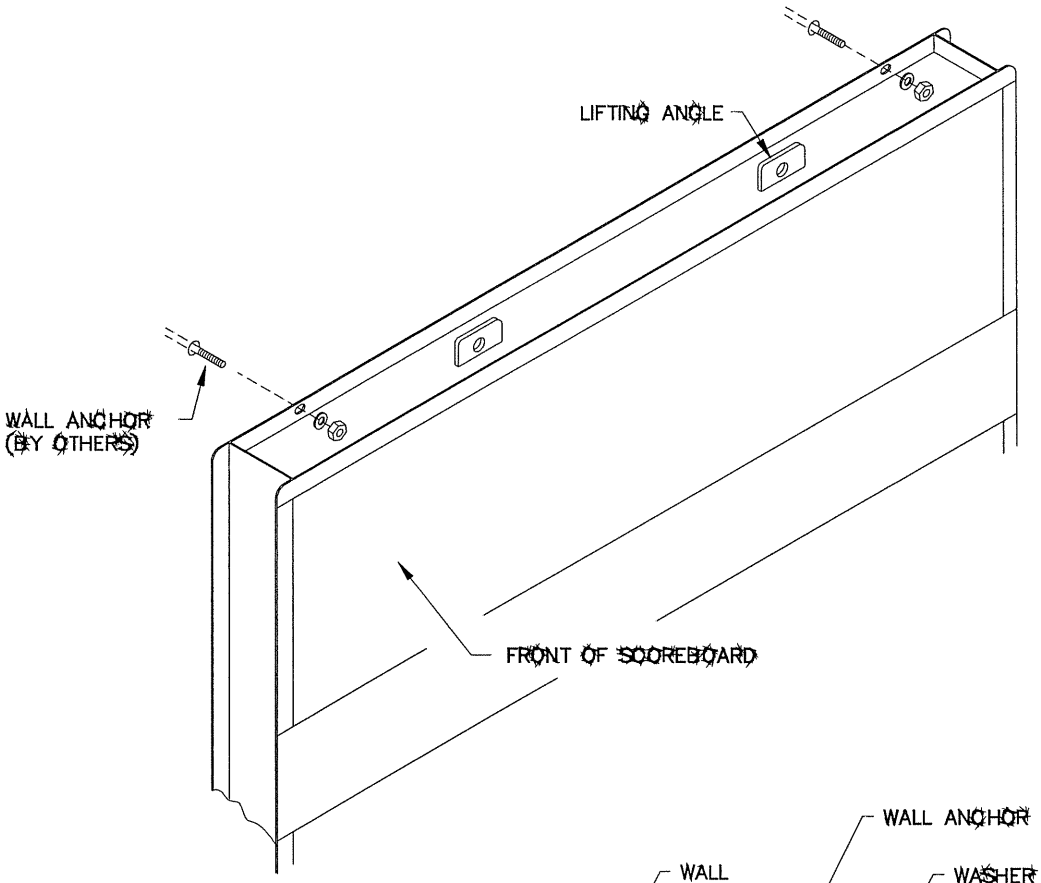
All Sport 2000, 2100, 2500 and 2510 use only output 1.
All Sport 2200, 2300, 2600 and 2610 use outputs 1 through 4.

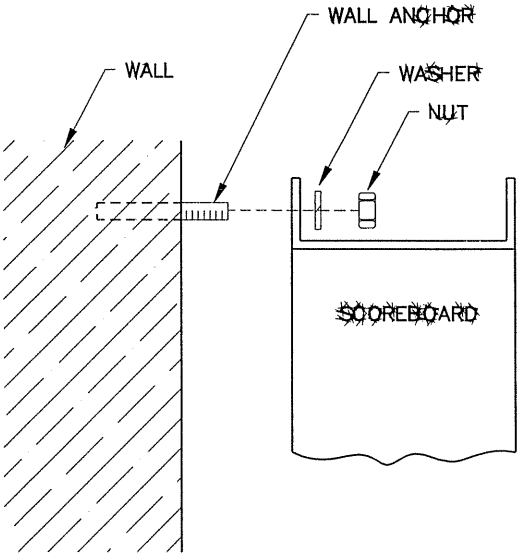
Code No.	Output 1	Output 2	Output 3	Output 4
03	BB-18	BB-18	G/S Clock	BB-17
04	BB-18A	BB-18A	G/S Clock	BB-17A
05	BB-18	BB-18	G/S Clock	BB-17
06	BB-18A	BB-18A	G/S Clock	BB-17A
07	BB-18	FP-15 DR1	FP-15 DR2	BB-17
08	BB-18A	FP-15 DR1	FP-15 DR2	BB-17A
10	PCS-4	PCS-4	PCS-4	PCS-4
11	BB-17	BB-17	G/S Clock	BB-17
12	BB-17A	BB-17A	G/S Clock	BB-17A
13	BB-17	BB-17	G/S Clock	BB-17
14	BB-17A	BB-17A	G/S Clock	BB-17A
15	FP-15 DR1	FP-15 DR2	-	FP-15 DR4*
16	FP-25 DR1	FP-25 DR2	FP-25 DR3	FP-25 DR4*
17	BB-17	FP-15 DR1	FP-15 DR2	BB-17
18	BB-17A	FP-15 DR1	FP-15 DR2	BB-17A

* For codes 15 and 16, output 4 is used as an *input* to the time/score console.

BB-18 includes: BB-1113S, BB-1113B, BB-1813S, BB-114CL, **BB-1813L**, **BB-1813LB**
BB-18A includes: BB-1113S, BB-1113B, BB-1813S-A, BB-1818B-A, BB-114CL
BB-17 includes: BB-1013S, **BB-1013L**, **BB-1013LB**, BB-1013B, BB-1713S, **BB-1713L**, **BB-1713LB**, BB-1713B, BB-87B
BB-17A includes: BB-1013S, BB-1013B, BB-1713S-A, BB-1713B-A, BB-87B

Note: This manual covers LED (L or LB) displays that use the BB-17 and BB-18 group as noted.





ATTACH THE SCOREBOARD TO THE WALL AT BOTH MOUNTING LOCATIONS INDICATED. USE THE APPROPRIATE ANCHORS FOR THE TYPE OF WALL.

REV.	DATE	DESCRIPTION	BY	APPR.
4	18AUG94	DELETED REFERENCE TO SPECIFIC MODELS	AVB	AVB
3	1 NOV 93	REMOVED LIFTING HOLES AT EACH SIDE OF DISPLAY AND ADDED LIFTING ANGLES.	C FICK	
2	10 JAN 92	ADDED "MOUNTING STUDS LOCATIONS" DETAIL.	C FICK	
1	05NOV91	REDREW ON A-SIZE ON ACAD.	JLH	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ:

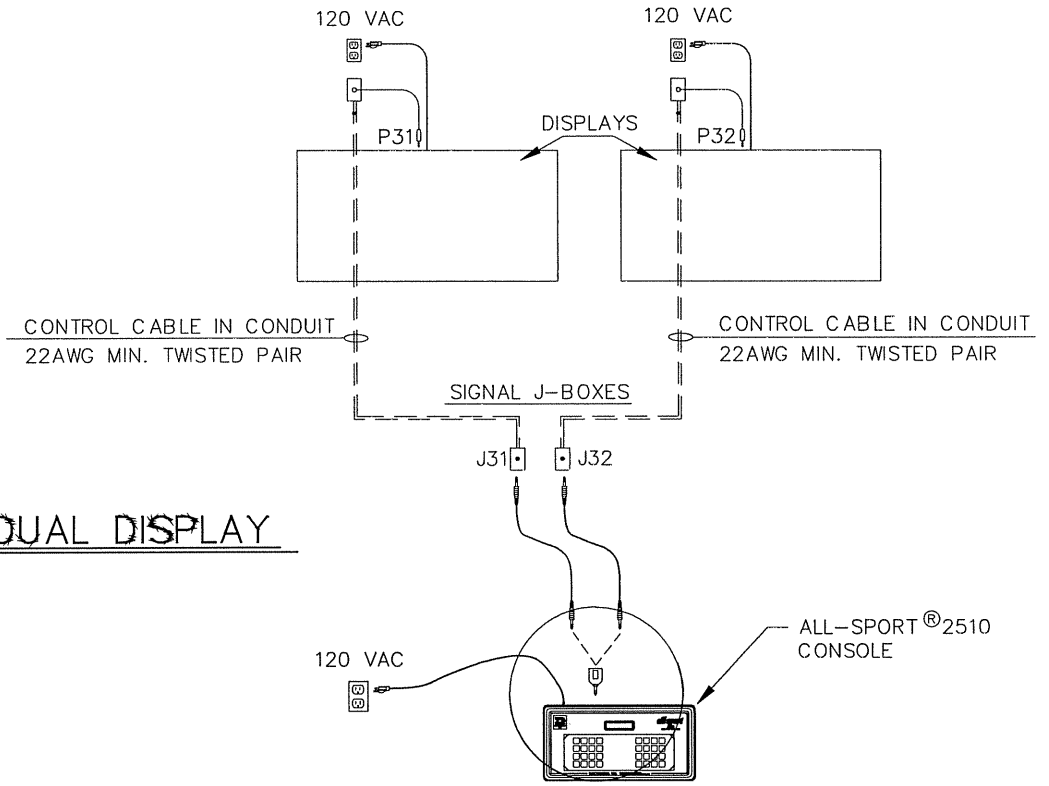
TITLE: SCOREBOARD MOUNTING

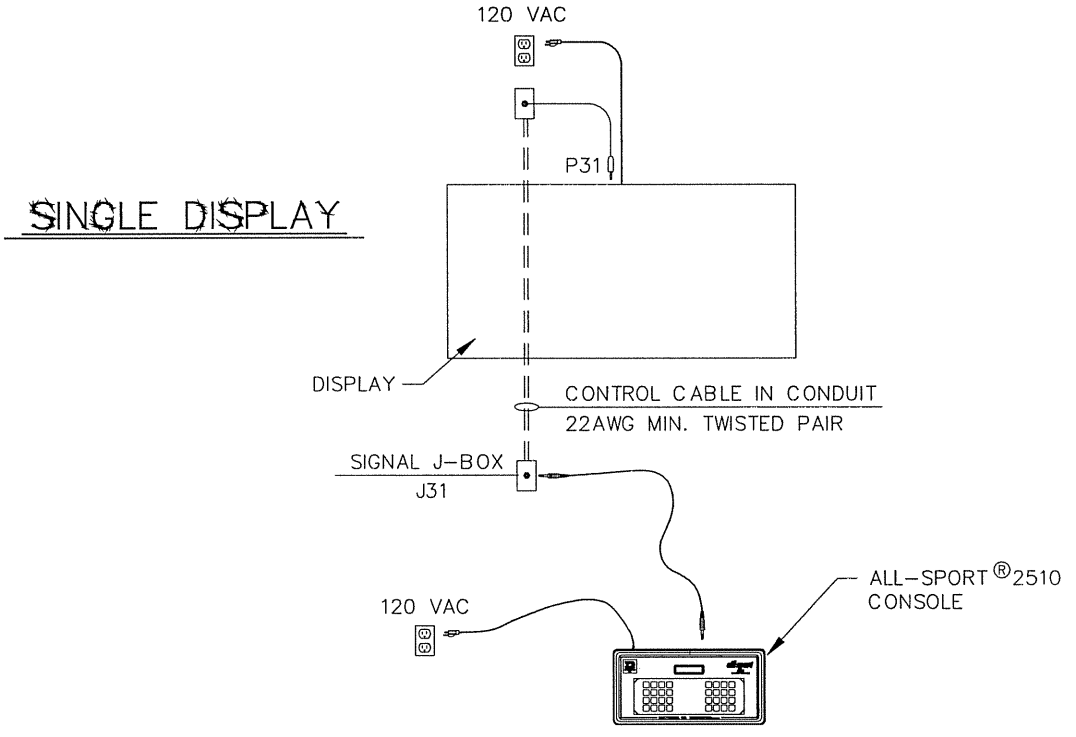
DES. BY: WREDER DRAWN BY: WREDER DATE: 14APR86

REVISION APPR. BY: AVB

SCALE: NONE

1009-R10A-26861





REV.	DATE	DESCRIPTION	BY	APPR.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: BASKETBALL SCOREBOARDS

TITLE: SINGLE/DUAL DISPLAY INSTALLATION

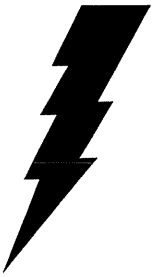
DES. BY: DRAWN BY: NJA DATE: 12 JAN 95

REVISION APPR. BY:

SCALE: NONE

1009-R10A-67460

SECTION 3: MAINTENANCE & TROUBLESHOOTING



IMPORTANT NOTES:

1. **Disconnect power before any repair or maintenance work is done on the scoreboard display!**
2. **Any access to internal display electronics must be made by qualified service personnel.**
3. **Disconnect power when the scoreboard display is not in use.**

Reference Drawings:

LED Driver	**Drawing A-87407**
Component Locations, BB-XX13-L	**Drawing A-73854**
Component Locations, BB-1813L	**Drawing A-78308**
Segmentation, 4x7 Digit (Dot)	**Drawing A-26762**
Segmentation, 7-Segment Bar Digit	**Drawing A-38532**
Schematic, Power, Signal Inputs, BB-XX13-L	**Drawing A-72072**
Schematic, Digits, Indicators, BB-XX13-L	**Drawing A-72164**
Schematic, Power, Signal, BB-1813L, 120V	**Drawing A-76896**
Schematics, Digits, Indicators, BB-1813L	**Drawing A-77213**

3.1 LED Driver

The task of switching LEDs on and off is performed by the LED driver (refer to **Drawing A-87407**). Each driver has 19 connectors providing power and signal inputs/outputs to digits and indicators. The function of each of these connectors is as follows:

Connector No.	Function
1 thru 16	Output to digits and indicators
17	Control signal and power input
18	Control for horn
19	Address - not used in these models

Output connectors 1 through 16 each have 9 pins. Pin 7 provides power to the digit or indicators wired to that connector. The other 8 pins provide switching connections. **Drawings A-73854** (1013, 1713) and **A-73808** (1813) shows which connector number or connector and pin number, operates each digit or indicator in each display model.

3.2 Segmentation

In each digit, certain lamps always go on and off together. These groupings of lamps are referred to as *segments*. **Drawings A-26762** (dot digit) and **A-38532** (bar digit) show which connector pin number is wired to each digit segment and the wiring color code used throughout the display.

3.3 Fuses

Each BB-1013 and BB-1713 display has one fuse, F41, located behind the access door to protect 120 VAC wiring circuits. This fuse is type MDL-2½. The BB-1813 models each have 3 fuses, type MDA-6.

Replace fuses only with fuses of the same type and rating.

3.4 Component Location And Access

Drawings A-73854 (models 1013, 1713) and **A-78308** (model 1813) shows front views of the display models covered in this manual and the locations of the various components. The component numbers correspond to the schematic, **Drawings A-72072** (models 1013, 1713) and **A-76896** (models 1813).

The LED driver is located behind a panel, as indicated on the drawings. Release the fasteners securing the panel to gain access.

3.5 Schematic

Drawings A-72072 (models 1013, 1713) and **A-76896** (model 1813) are the schematic diagrams of the power and signal inputs and all 120V wiring. The component numbers correspond to **Drawings A-73854** (models 1013, 1713) and **A-78308** (model 1813).

DISCONNECT POWER BEFORE SERVICING DISPLAY.

Disconnect power when the display is not in use. Prolonged power-on may shorten the life of some electronic components.

3.6 Troubleshooting

SYMPTOM / CONDITION	POSSIBLE CAUSE
Scoreboard will not light.	1. Console not connected or poor connection. 2. No power to control console. 3. No power to the scoreboard. 4. Driver fuse blown. 5. Main fuse blown.
Garbled display.	1. Internal driver logic malfunction. 2. Control console malfunction.
Digit will not light.	2. Black wire to digit broken. 3. Poor contact at driver connection.

Segment will not light.	1. Broken LED or connection 2. Driver shift register failure. 3. Broken wire between lamp driver and digit. 4. Poor contact at driver connector.
Segment stays lit.	1. Driver shift register failure. 2. Short circuit on digit.

3.7 Replacement Parts List

DESCRIPTION	PART NO.
Fuse MDL-2½	F-1002
Fuse, MDA-6	F-1023
Fuseholder; panel mount	X-1032
Horn; 120 VAC 60Hz LS1	DS-1040
Plug;1/4" phone	P-1041
Junction Box; Phone Jack	0A-1009-0038
LED Driver	0P-1150-0017
J-box, 16-pin circular	0A-1010-0026

3.8 Unit Exchange/Replacement Procedure

Daktronics unique exchange program was designed with the client's needs in mind. This is the quickest and most economical way available for product repair. If a component has failed, Daktronics will send the customer a replacement. The customer, in turn, sends the failed component(s) to Daktronics. This not only saves money but also decreases the amount of time that the display is inoperable. Daktronics offers a repair and return on a timely basis, but in urgent situations, every attempt is made to ship by the fastest transit method available.

1. **Packaging for Return:** Package and pad the item well so that it will not be damaged in shipment. Electronic components such as printed circuit boards should either be installed in an enclosure or should be put in an anti-static bag before boxing.

   Please enclose your name and address with all symptoms listed as best you can describe them.

2. **Digits and Driver Packaging Instructions:** Digits and drivers should be placed in a static-free enclosure for return shipping. An antistatic convoluted foam packing is available from Daktronics, part number PK-1135 for your use if needed. The shipping box (Daktronics part number PK-1006) should be used in conjunction with the foam.

3. **Where to Send:** To return parts for service, contact your local representative prior to shipment to acquire a Return Material Authorization Number (RMA#). This will speed up the repair of your unit.

   For return of defective items under the exchange program, please utilize the UPS Blue Return Tags found in the package containing the exchange unit sent from Daktronics. This will speed up the transaction and will also avoid any confusion when the part is

returned to Daktronics. **The defective item must be returned within 15 days of receiving a replacement part.** Using the UPS Blue Return Tag immediately will eliminate the possibility of late charges being assessed against your account.

Mail: Daktronics, Inc., Customer Service
PO Box 5128
331 32nd Avenue
Brookings, SD 57006

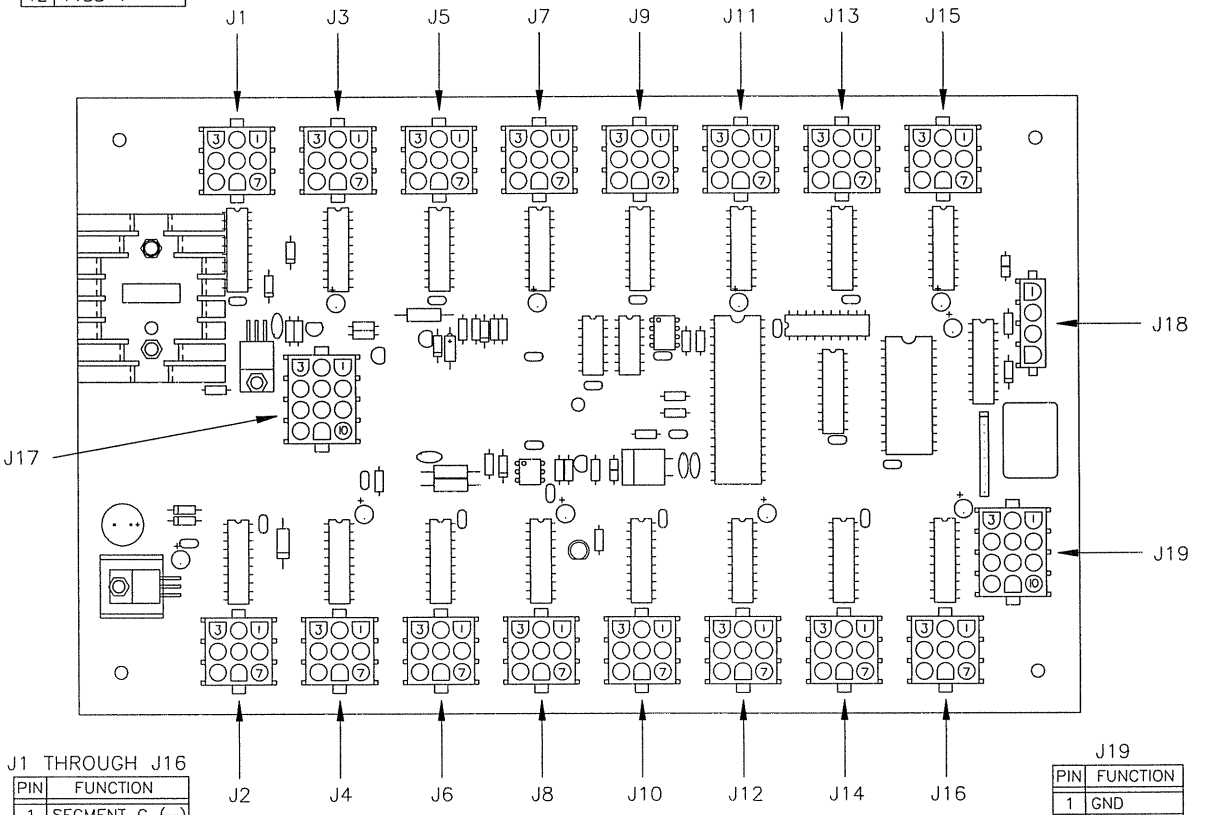
Phone: Toll Free: 1-800-843-9879
or 1-605-697-4400

J17

PIN	FUNCTION
1	SIGNAL IN +
2	SIGNAL IN –
3	GND
4	SIGNAL OUT +
5	SIGNAL OUT –
6	16V AC IN
7	GND
8	EARTH
9	16V AC IN
10	GND
11	+VCC +
12	+VBB +

J18

PIN	FUNCTION
2	K1 IN, 16V DC (–)
3	120V HOT IN
4	120V SWITCHED OUT



FRONT VIEW

J1 THROUGH J16

PIN	FUNCTION
1	SEGMENT C (–)
2	SEGMENT B (–)
3	SEGMENT A (–)
4	SEGMENT F (–)
5	SEGMENT E (–)
6	SEGMENT D (–)
7	COMMON (+)
8	SEGMENT H (–)
9	SEGMENT G (–)

J19

PIN	FUNCTION
1	GND
2	SW0–N
3	SW1–N
4	GND
5	SW2–N
6	SW3–N
7	GND
8	SW4–N
9	SW5–N
10	GND
11	SW6–N
12	SW7–N

REV.	DATE	DESCRIPTION	BY	APPR.
1	27 MAR 97	ADDED TABLES TO DESCRIBE FUNCTIONS IN EACH JACK.	AVB	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: LED SCOREBOARDS

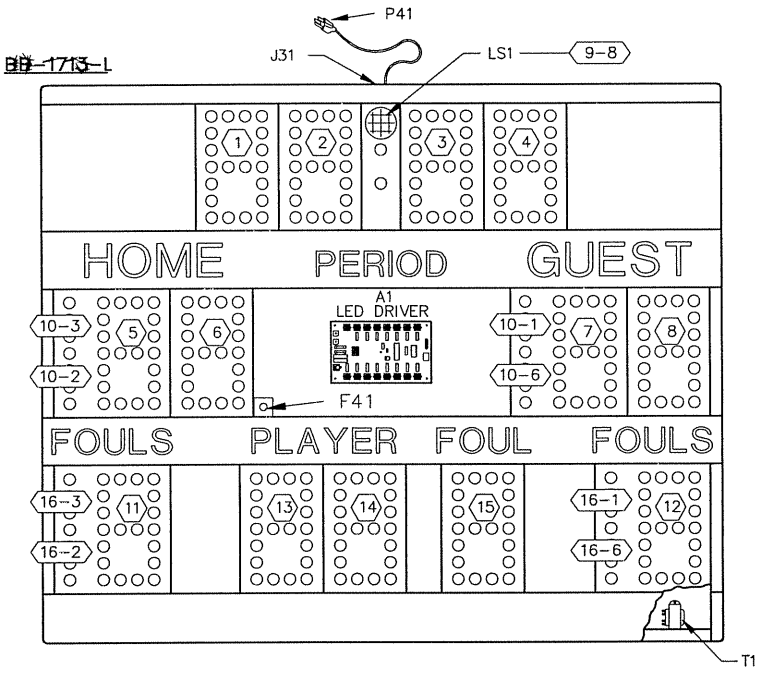
TITLE: LED DRIVER 16 COLUMN

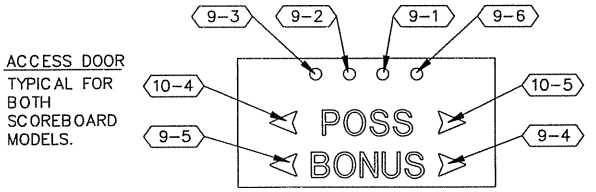
DES. BY: DRAWN BY: JMOEN DATE: 15 OCT 96

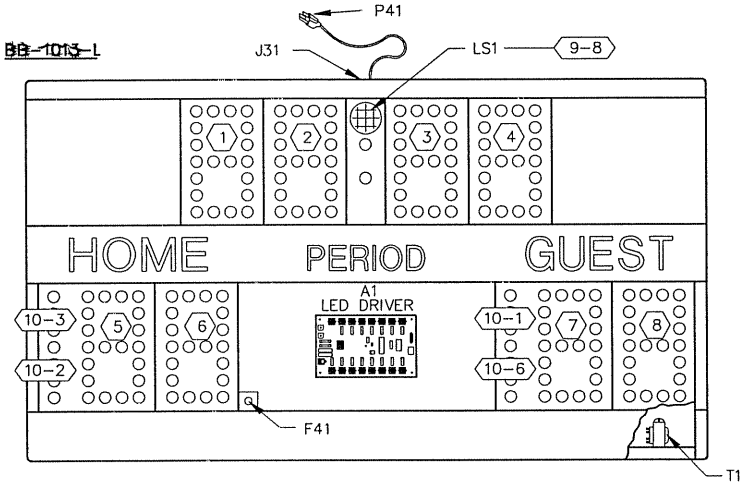
REVISION APPR. BY:

SCALE: 1=2

1150-R04A-87407







= LED DRIVER CONNECTOR NO. TO WHICH DIGIT IS WIRED.

= LED DRIVER CONNECTOR AND PIN NO.

REV.	DATE	DESCRIPTION	BY	APPR.
1	11 SEP 95	CHANGED BB-1013S AND BB-1713S TO BB-1013-L AND BB-1713-L.	NJA	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: LED BASKETBALL SCOREBOARDS

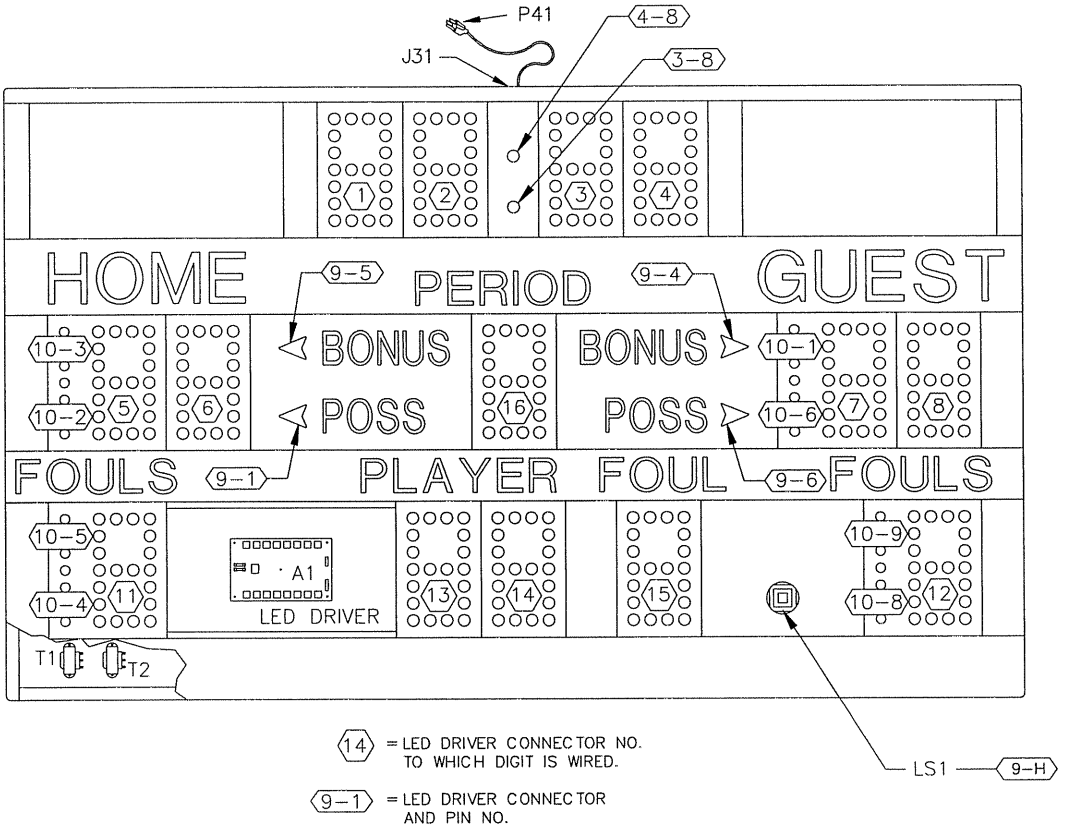
TITLE: COMPONENT LOCATIONS, BB-XX13-L

DES. BY: DRAWN BY: NJA DATE: 8 AUG 95

REVISION APPR. BY:

SCALE: 1=20

1150-R04A-73854



REV.	DATE	DESCRIPTION	BY	APPR.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: LED SCOREBOARDS

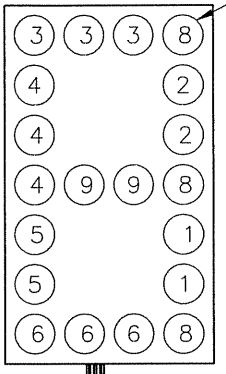
TITLE: COMPONENT LOCATIONS, BB-1813L

DES. BY: AVB DRAWN BY: JMOEN DATE: 17 JAN 96

REVISION APPR. BY:

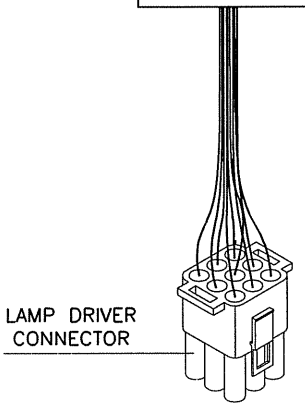
SCALE: 1=20

1152-R04A-78308



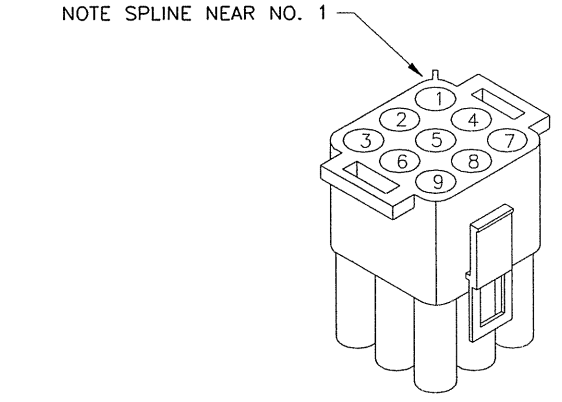
THE NUMBERS IN THE CIRCLES REPRESENT THE LAMP DRIVER CONNECTOR PIN NUMBER WIRED TO EACH LAMP.

4X7 DOT MATRIX DIGIT



COLOR CODE		
PIN NO.	WIRE COLOR	DRIVER SEGMENT
1	ORANGE	C
2	RED	B
3	BROWN	A
4	BLUE	F
5	PINK	E
6	TAN	D
7	BLACK	COMMON
8	GRAY	H
9	VIOLET	G

CONNECTOR PIN NUMBERING



REV.	DATE	DESCRIPTION	BY	APPR.
2	29JAN93	CHANGED TO ASIZE-V BORDER.	AVB	AVB
1	18APR89	REDRAWN ON CAD.	AVB	AVB

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR SCOREBOARDS

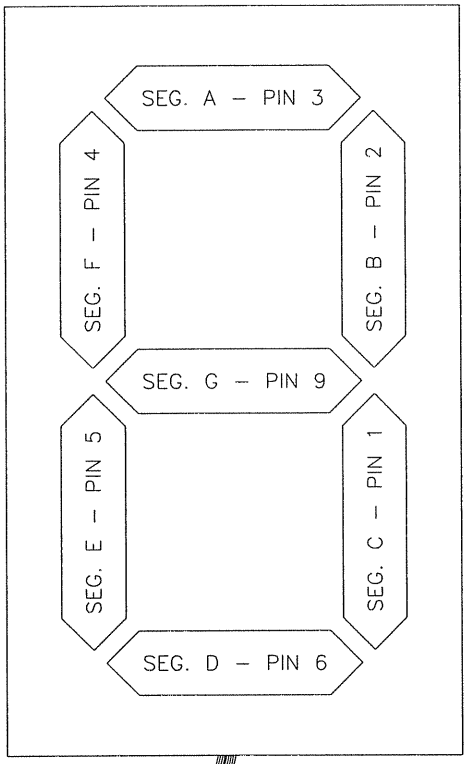
TITLE: SEGMENTATION, 4X7 DIGIT

DES BY: DRAWN BY: WREDER DATE: 10APR86

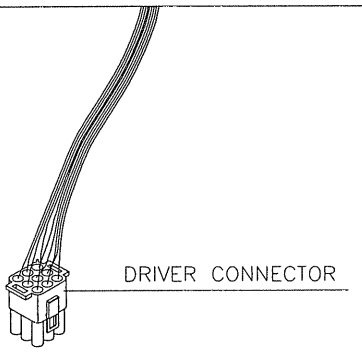
REVISION APPR. BY:

SCALE: NONE

1064-R04A-26762



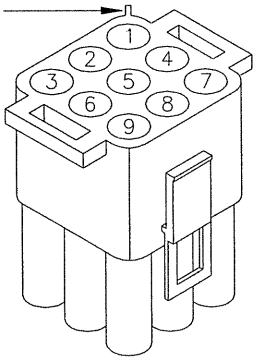
7 SEGMENT BAR DIGIT
FRONT VIEW



COLOR CODE		
PIN NO.	WIRE COLOR	DRIVER SEGMENT
1	ORN	C
2	RED	B
3	BRN	A
4	BLU	F
5	PNK	E
6	TAN	D
7	BLK	COM.
8	GRY	H
9	VIO	G

CONNECTOR PIN NUMBERING

NOTE SPLINE NEAR NO. 1

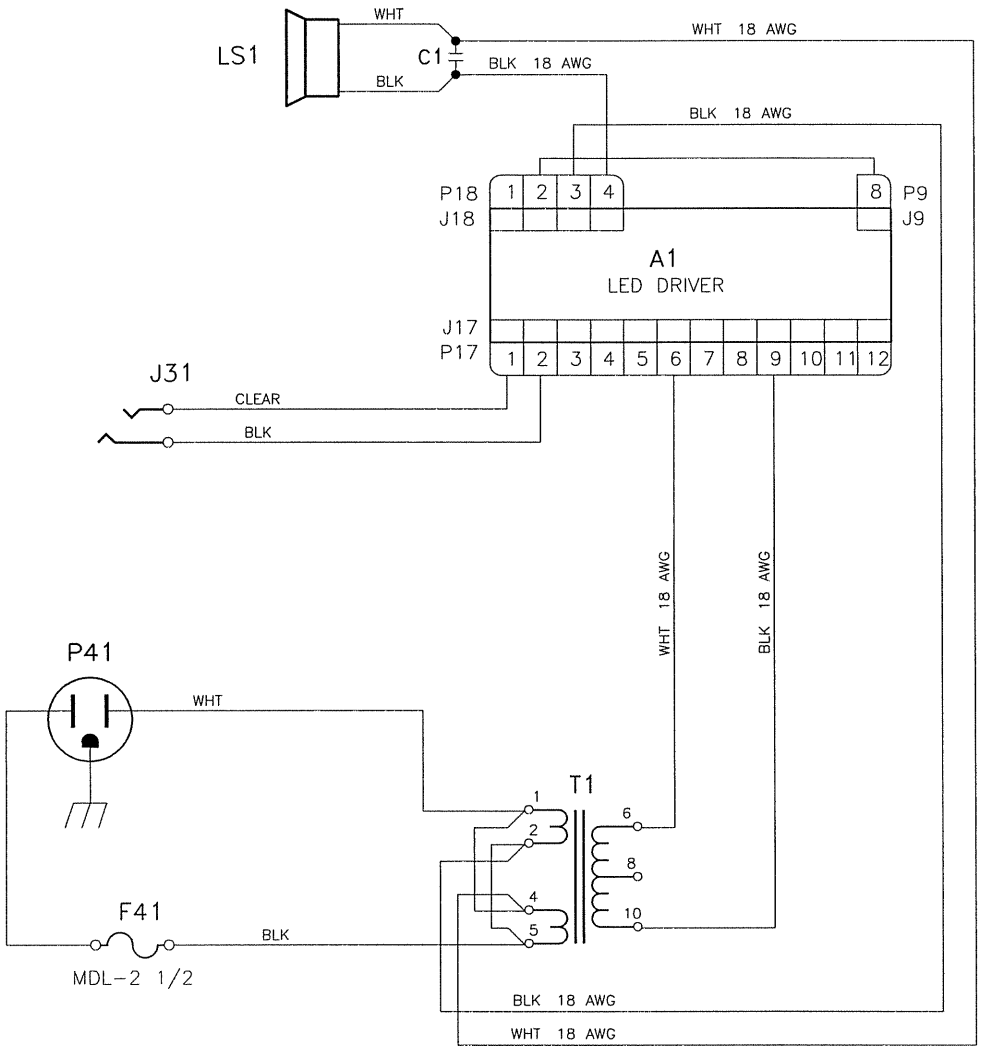


NOTE: "H" SEGMENT, GRAY WIRE IS NOT USED ON 7 SEGMENT BAR DIGIT.

DAKTRONICS, INC. BROOKINGS, SD 57006

REV.	DATE	DESCRIPTION	BY	APPR.
2	30 APR 97	ADDED SEGMENT DESIGNATIONS TO DIGIT FIGURE.	AVB	AVB
1	2 JAN 92	CHANGED FROM B-SIZE TO A-SIZE DWG.	C FICK	

PROJ: BASKETBALL
TITLE: SEGMENTATION, 7 SEGMENT BAR DIGIT
DES. BY: DRAWN BY: HEIDERSCHEIDT DATE: 5 JUN 89
REVISION 02 APPR. BY: AVB SCALE: 1=4
1009-R04A-38532



REV.	DATE	DESCRIPTION	BY	APPR.
3	20 AUG 96	ADDED CAPACITOR TO HORN	JEM	
2	11 SEP 95	CHANGED P17-7 TO P17-6. CHANGED P17-8 TO P17-9.	NJA	
1	23 AUG 95	ADDED JUMPER WIRE FROM P9 TO P18.	NJA	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: LED BASKETBALL SCOREBOARDS

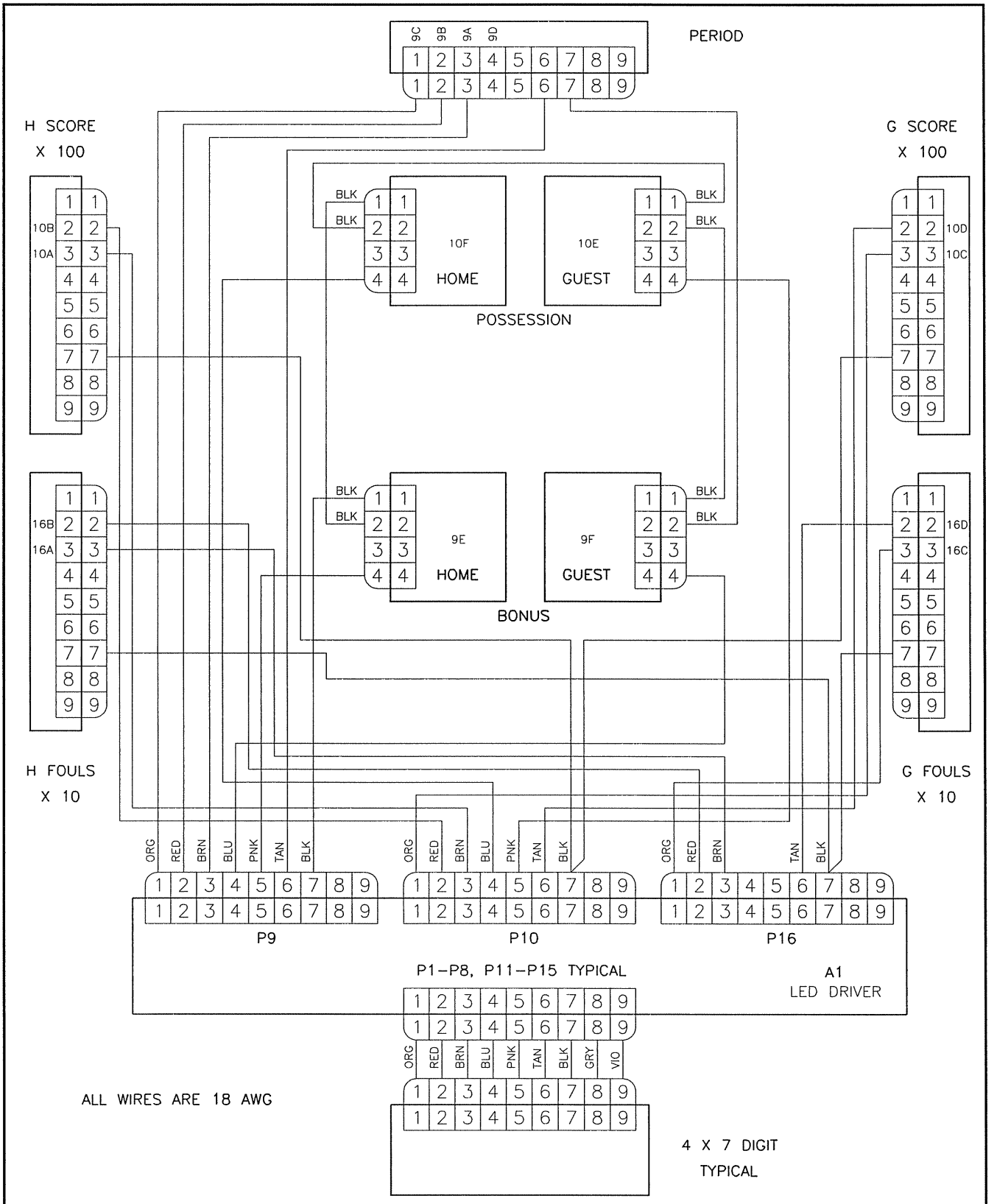
TITLE: SCHEMATIC, POWER AND SIGNAL INPUTS, BB-XX13-L

DES. BY: DRAWN BY: NJA DATE: 22 JUN 95

REVISION APPR. BY:

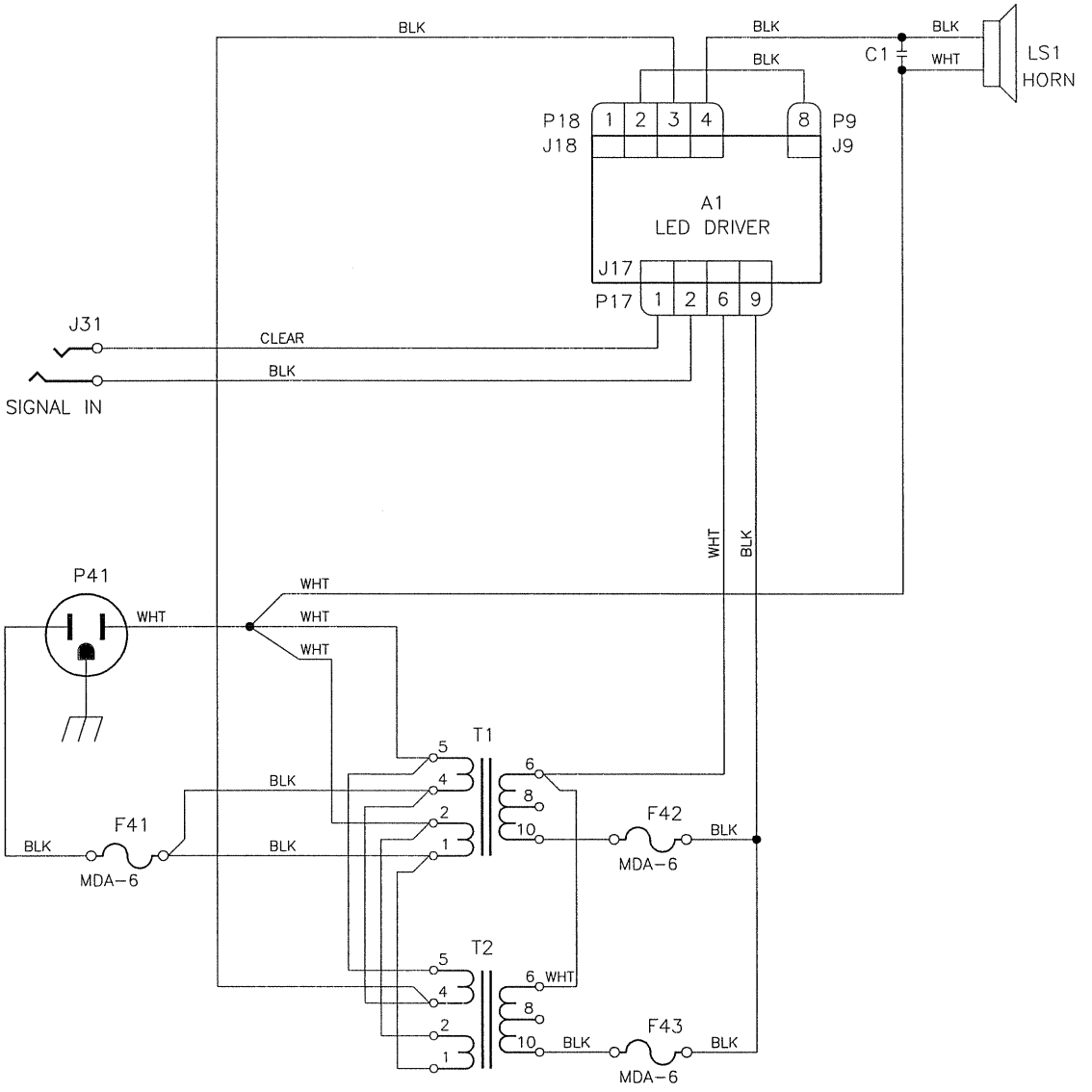
SCALE: NONE

1150-R03A-72072



DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: LED BASKETBALL SCOREBOARDS			
TITLE: SCHEMATIC, DIGITS AND INDICATORS, BB-XX13-L			
DES. BY:	DRAWN BY: NJA	DATE: 22 JUN 95	
REVISION	APPR. BY:	1150-R03A-72164	
	SCALE: NONE		

REV.	DATE	DESCRIPTION	BY	APPR.



REV.	DATE	DESCRIPTION	BY	APPR.
1	8 FEB 96	ADDED CAPACITOR BEFORE HORN	JEM	

DAKTRONICS, INC. BROOKINGS, SD 57006

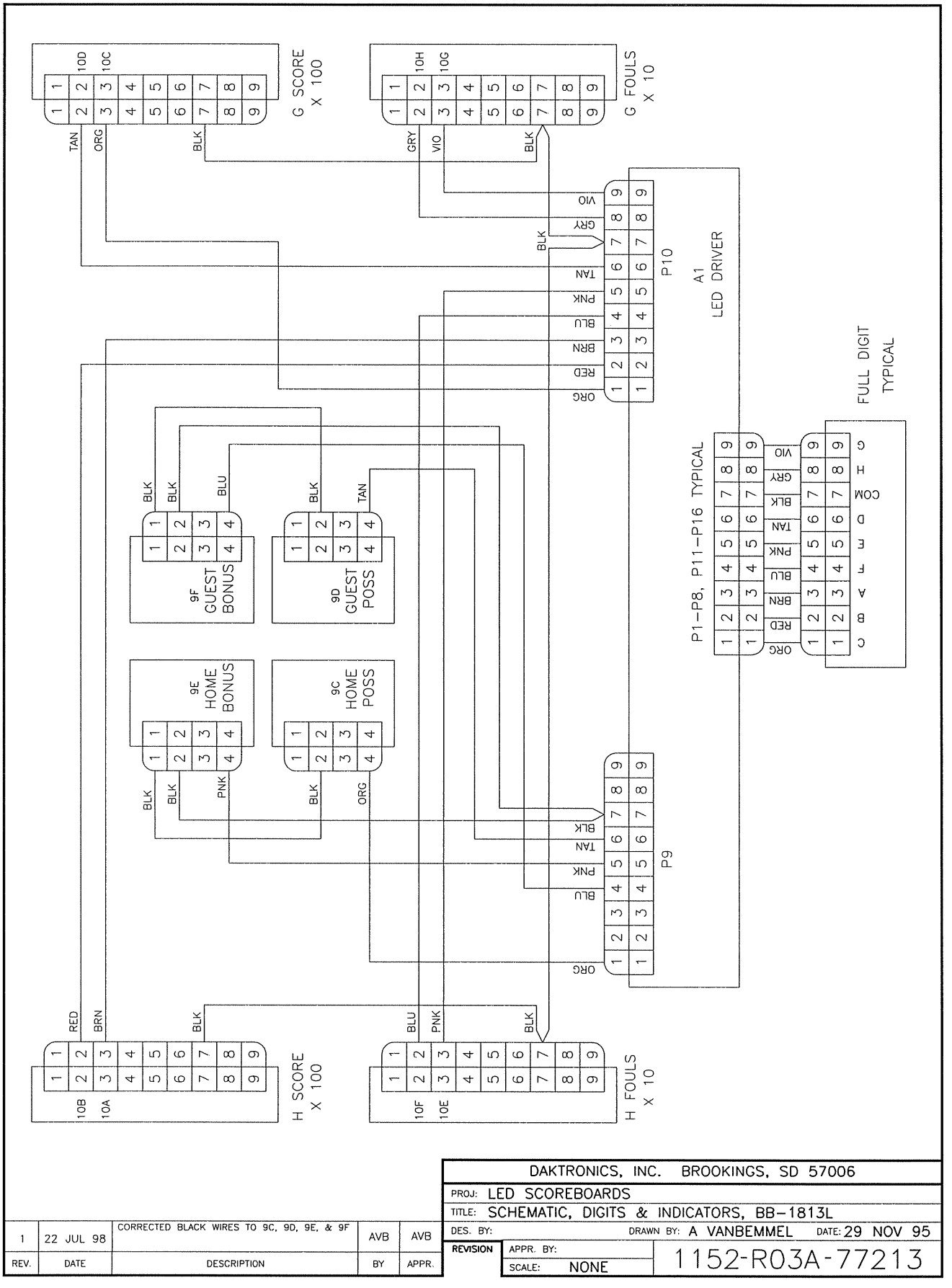
PROJ: LED SCOREBOARDS

TITLE: SCHEMATIC, POWER & SIGNAL, BB-1813L, 120V

DES. BY: DRAWN BY: A VANBEMMEL DATE: 17NOV95

REVISION | APPR. BY: | SCALE: NONE

1152-R03A-76896



1	22 JUL 98	CORRECTED BLACK WIRES TO 9C, 9D, 9E, & 9F	AVB	AVB
REV.	DATE	DESCRIPTION	BY	APPR.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: LED SCOREBOARDS

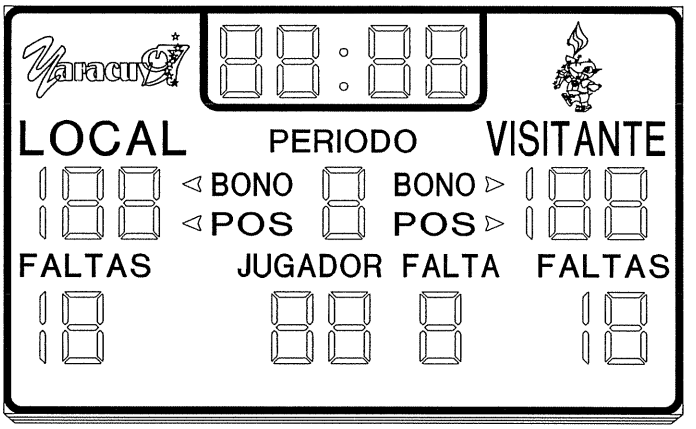
TITLE: SCHEMATIC, DIGITS & INDICATORS, BB-1813L

DES. BY: DRAWN BY: A VANBEMMEL DATE: 29 NOV 95

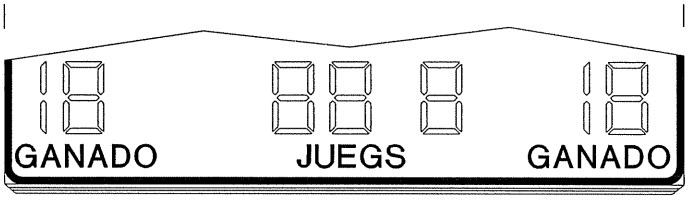
REVISION | APPR. BY:

SCALE: NONE

1152-R03A-77213



BASKETBALL CAPTIONS



VOLLEYBALL CAPTIONS

REV.	DATE	DESCRIPTION	BY	APPR.
1	09-16-97	UPDATED CAPTIONS	DOK	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: BASKETBALL SCOREBOARD

TITLE: BB-1813LB

DES. BY: DRAWN BY: DKJELDE DATE: 08-29-97

REVISION APPR. BY:

SCALE: 1=30

7000-P08A-96132