



**Auto Racing Display  
CH-1424-WB**

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**Installation and Service Manual**

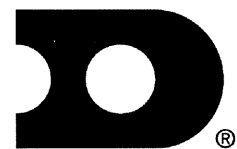
ED - 5336

**ED - 5336**

**Product #1081**

**Rev. 5 - 19 August 1998**

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**DAKTRONICS, INC.**

*Setting New Standards Worldwide*  
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# Section 1: Introduction

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## Reference Drawing: Display CH-1424-WB . . . . . Drawing A-42150

The **Drawing A-42150** shows a complete Daktronics CH-1424-WB display, consisting of: the scoring display, the Winston Racing Series logo, and a section for advertising or your racetrack logo. The display is sold only in this configuration with the only option being what will be printed on the advertising panel.

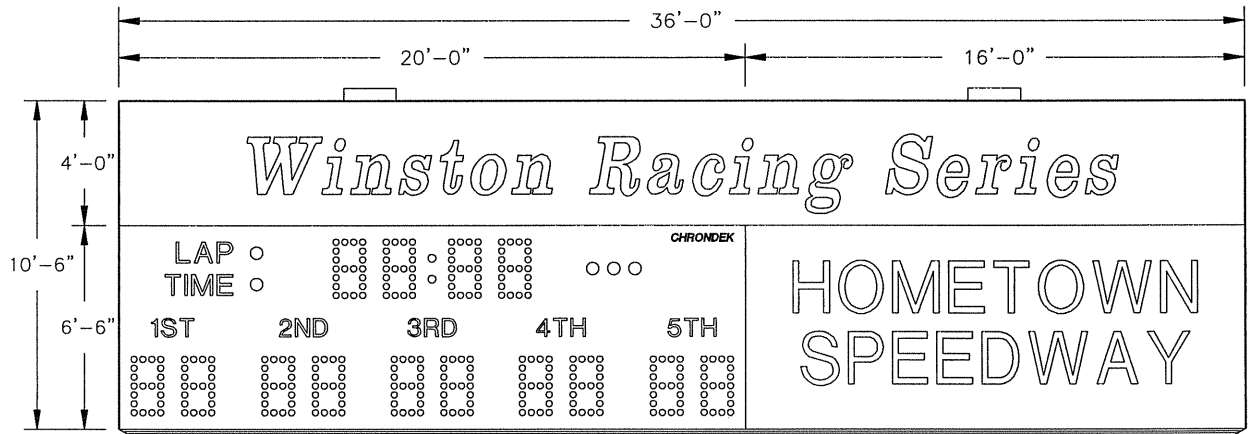
This manual covers the installation of the entire CH-1424-WB display. It includes information for servicing the digits and wiring. Basic information about power consumption as well as lists of possible problems and replacement parts are also included.

The following table shows the approximate weights of the individual sections of the CH-1424-WB:

Section	Uncrated Weight (lbs)	Crated Weight (lbs)
Scoring Display	500	850
Bottom AD Panel	125	425
Top ID Panel ( 2 sections)	200	425

### IMPORTANT SAFEGUARD

DISCONNECT POWER WHEN THE DISPLAY IS NOT IN USE, OR WHEN SERVICING. PROLONGED POWER-ON MAY SHORTEN THE LIFE OF ELECTRONIC COMPONENTS.



- OVERALL DIMENSIONS:  
126"H X 432"W X 6"D
- DIGITS ARE 24" HIGH, 4X7 LAMP MATRICES.
- DIGIT LAMPS ARE 25W FROSTED.
- LAP/TIME INDICATOR LAMPS ARE 55W FLOOD LAMPS.
- STATUS INDICATOR LAMPS ARE 85W-MISER FLOOD LAMPS.
- MAXIMUM POWER DEMAND WITH ALL LAMPS ON: 7425W.
- ELECTRICAL REQUIREMENTS: 120/240VAC 40A CIRCUIT.

DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: CHRONDEK DISPLAYS	
TITLE: DISPLAY, CH-1424-WB	
DES. BY:	DATE: 26APR90
DRAWN BY: JLH	
REVISION	APPR. BY:
SCALE: 1=65	1081-R08A-42150

REV.	DATE	DESCRIPTION	BY	APPR.

# Section 2: Installation

---

<b>Reference Drawings:</b>	Driver Enclosure Power & Signal . . . .	<b>Drawing A-37915</b>
	System Layout, CH-1424-WB . . . . .	<b>Drawing A-42151</b>
	Lifting Detail, CH-1424-WB . . . . .	<b>Drawing A-42152</b>
	Vertical Mtg. Channel Spacing . . . . .	<b>Drawing A-42258</b>
	Component Locations, CH-1424-WB .	<b>Drawing A-42312</b>
	Mounting Structure, 3 Pole . . . . .	<b>Drawing A-42313</b>
	Mounting Structure, 2 Pole . . . . .	<b>Drawing A-42314</b>
	Electrical Installation, CH-1424-WB .	<b>Drawing A-42315</b>
	Power Wiring and Grounding . . . . .	<b>Drawing A-45220</b>
	Color Code, 25-Pin J-Box . . . . .	<b>Drawing A-47207</b>
	Mounting Detail, Scoreboards . . . . .	<b>Drawing B-19787</b>

Refer to **Drawing A-42151** for general system layout of the CH-1424-WB display. The general procedure for installing the CH-1424-WB display is as follows:

1. Select appropriate beam and footing recommendations from the table in **Section 2.2**.
2. Dig the footing holes and install beams and footings.
3. Route power and signal cables to the display and control locations.
4. Mount the display sections to the beams refer to **Drawings A-42314, A-42313, A-42258, A-42152, and B-19787**.
5. Route the power and signal wires into the displays refer to **Drawings A-42315, A-45220, A-42312, A-47207, and A-37915**.

## 2.1 Beam and Footing Selection

---

The table in **Section 2.2** contains recommendations for beams and footings. The distance in the first column is from the ground to the bottom of the scoring display. The second column is wind velocities, in miles per hour, that are likely to occur at the display location.

The next two columns are the recommended number of vertical beams and horizontal bracing members to be used in the mounting structure. These recommendations are based on the height of the display, the wind loads that the display will be subjected to, and the properties of the recommended beams. Refer to **Drawing A-42314** and **A-42313** for recommended mounting structures corresponding to the table in **Section 2.2**.

The beams listed are W-section (wide flange) beams which provide maximum wind load strength for the weight and cost of the beams. Determine the reasonable extreme wind velocity that can be expected at the display location. Once the maximum wind velocity is determined, decide how high the display will be. Read across the table to find the recommended structure, beam, and footing dimensions.

The calculations for footing diameters and depths are based on the assumption that footings are in undisturbed soils, NOT FILL SOILS. They are based on an allowable soil bearing pressure of 3000 psf vertically and a lateral bearing capacity of 300 psf/ft of depth horizontally. These recommendations are suggestions only and each installation should be treated individually to ensure that the installation complies with local codes and is suitable for your particular soil and wind conditions. Daktronics recommends that W-section, grade 36 steel beams be used, and that 28-day concrete (strength 3000 psi) be used for footings. DAKTRONICS ASSUMES NO RESPONSIBILITY FOR STRUCTURES INSTALLED BY OTHERS.

## **2.2 Display Mounting**

---

- 2.2.1 Install support structure from recommendations in the table in Section 2.2. Structures are referred to on **Drawings A-42314** and **A-42313**. If an existing structure is used, only the horizontal beams need to be installed. Daktronics suggests that certification of the structure be obtained from a structural engineer before installation of the display. Whether using a new or existing structure, the positioning and spacing of the horizontal beams is important for display alignment and ease of installation. Each display section contains mounting holes which will line up with the horizontal beams, if they are spaced as shown refer to **Drawings A-42314** and **A-42313**.
- 2.2.2 Attach the left-top ID panel to the scoreboard, refer to **Drawing A-42258**. Raise the two sections (comprising the left half of the display) into place as one unit, refer to **Drawing A-42152**.
- 2.2.3 Attach the sections to the horizontal beams, **Drawing B-19787**. Attach to the top horizontal first. Position the display sections so that the rest angles contact the upper horizontal beam surface. Secure the display to the beams with the hardware included in the shipping kit, but do not tighten yet.
- 2.2.4 Repeat the two previous steps for the right-top ID panel and bottom ad panel.
- 2.3.5 Tighten all bolts securely.



BEAM AND FOOTING RECOMMENDATIONS  
CH-1424-WB

DISTANCE TO BOTTOM DISPLAY (ft)	DESIGN WIND VELOCITY (MPH)	NUMBER OF VERTICAL BEAMS	NUMBER OF HORIZONTAL BRACES	RECOMMENDE D BEAM SECTION	FOOTINGS	
					DEPT H (ft)	DIAM (ft)
6	70	2	0	W10x19	7.0	4.5
10		2	0	W10x29	8.0	5.0
14		2	0	W10x39	9.0	5.5
18		2	1	W10x39	9.5	6.0
22		2	1	W10x40	10.0	6.0
26		3	1	W10x39	9.5	6.0
30		3	1	W10x49	10.0	6.0
6	80	2	0	W10x19	7.5	5.0
10		2	0	W12x31	9.0	6.0
14		2	0	W12x40	10.0	6.0
18		3	1	W12x45	10.5	6.5
22		3	1	W12x48	11.0	6.5
26		3	1	W12x45	10.5	6.5
30		3	1	W12x53	11.0	6.5
6	90	2	0	W14x22	8.0	5.0
10		2	0	W14x34	10.0	6.0
14		2	0	W14x43	10.5	6.5
18		3	1	W14x34	10.0	6.0
22		3	1	W14x43	10.5	6.5
26		3	2	W16x45	11.0	7.0
30		3	2	W16x50	12.0	7.0
6	100	2	0	W14x26	9.0	5.5
10		2	0	W16x40	10.5	6.5
14		2	0	W16x50	11.0	7.0
18		3	1	W16x40	10.5	6.5
22		3	1	W18x45	11.0	7.0
26		3	2	W18x50	12.0	7.0
30		3	2	W18x60	13.0	7.0

These footing recommendations are based on an allowable soil bearing pressure of 3000 psf vertically and 300 psf/ft of depth horizontally. However, these recommendations are suggestions only and each installation should be treated individually. You must be sure that your installation complies with local codes and is suitable for your particular wind conditions. DAKTRONICS ASSUMES NO RESPONSIBILITY FOR STRUCTURES INSTALLED BY OTHERS.

## 2.3 Electrical Installation

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### 2.3.1 Control Signal Cable

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For displays, with distances up to 600 ft. two conductors of 24 AWG signal wire should be used, for distances up to 1000 ft. 22 AWG is required. Daktronics has the following cables available: Daktronics part no. W-1105, this is a 6 conductor, 24 AWG direct burial cable. Also Daktronics part no. W-1077, this is a two conductor, 22 AWG cable that must be pulled through conduit before it is buried.

At the control location, mount the signal J-box to a convenient location. Route the cables and connect the wires leading from the connector in the cover, according to the table below and refer to **Drawing A-47207**.

At the display, open the hinged access door covering the lamp driver enclosure, refer to **Drawing A-42312**. Remove the cover from the lamp driver enclosure. Refer to **Drawing A-37915** for an illustration of the components inside the enclosure. Connect the signal wires to TB31 as indicated in the table below.

Signal Connections

Control End		Display End
J-Box Term. No.	Wire Color	TB31 Term. No.
14	RED/WHT	1 (+)
15	GRN/WHT	2 (-)

### 2.3.2 Power Wiring

---

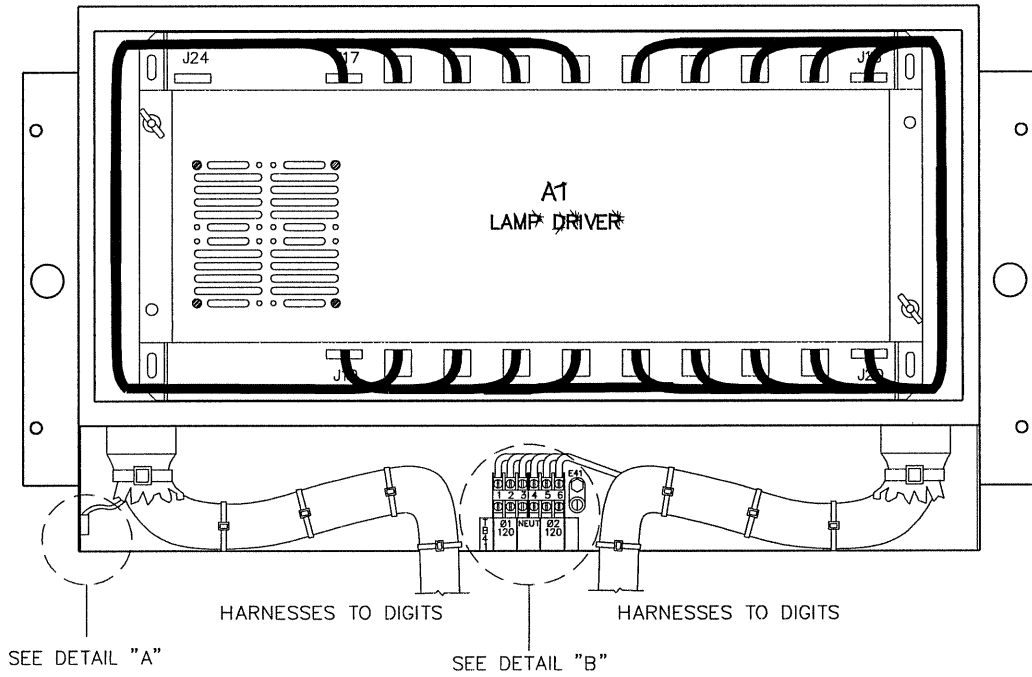
A 120/240 VAC circuit (two hot lines, one neutral, plus a separate earth-ground conductor) must be run into the load center from the electrical source. With all lamps lighted, this display is capable of drawing a maximum of 33.5 amps on one line and 28.5 amps on the other line.

Install a lockable safety disconnect and a load center to the display support beam refer to **Drawing A-42315**. A three-conductor disconnect is recommended for proper protection from lightening strikes, refer to **Drawing A-45220**. Install a copper ground rod by each of the support poles of the display. **THE DISPLAY MUST BE CONNECTED TO EARTH GROUND AT THE DISPLAY LOCATION**. This is in addition to the separate earth-ground conductor in the power cable.

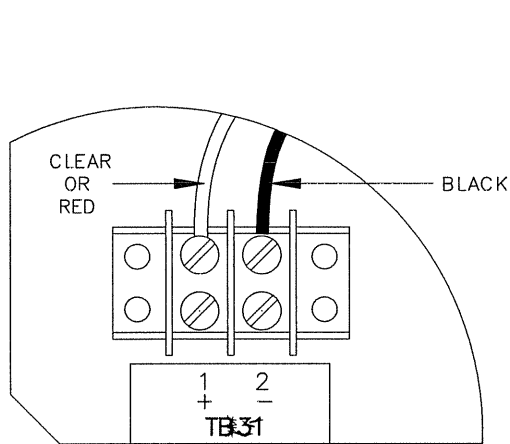
Route four "hot", two "neutral", and one "ground" wire, 12 AWG from the load center to the driver enclosure in the scoring display. Refer to **Drawing A-37915** for component locations. Connect the ground wire to terminal E41. Connect the two neutral wires to TB41-3 and TB41-4. Connect the hot wires to the load center and display as listed below.

\* Breaker No.'s are examples only.

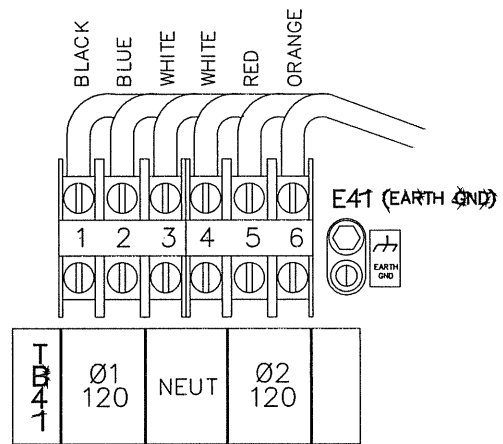
Load Center Breaker No.	Display Term. No.
2	TB41-5
2	TB41-6
4	TB41-1
4	TB41-2



FRONT VIEW (COVER REMOVED)

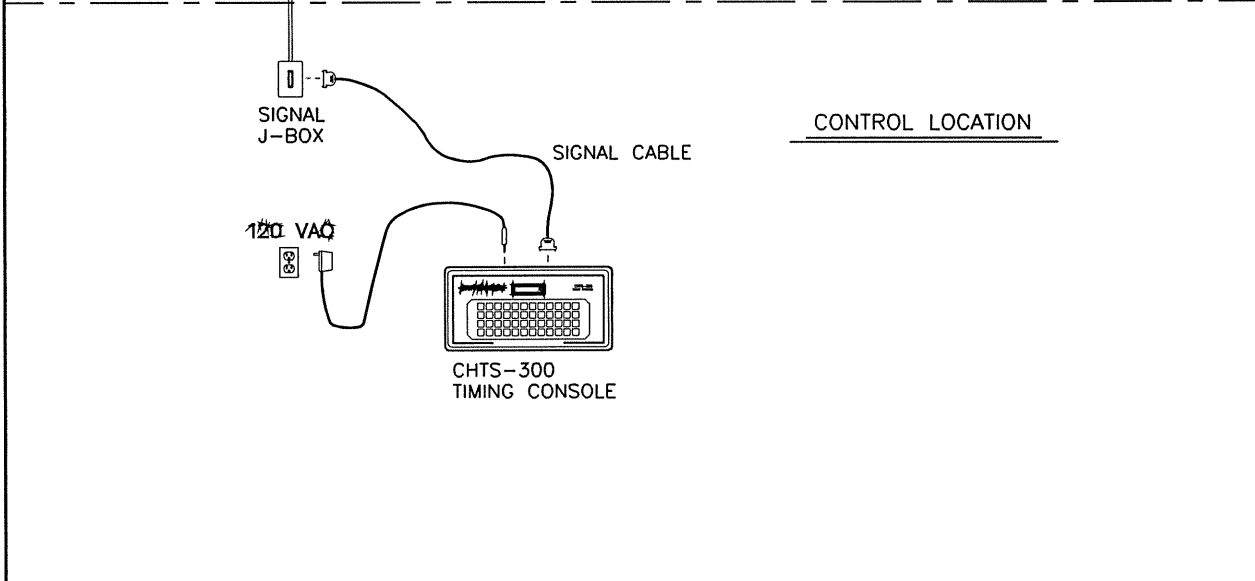
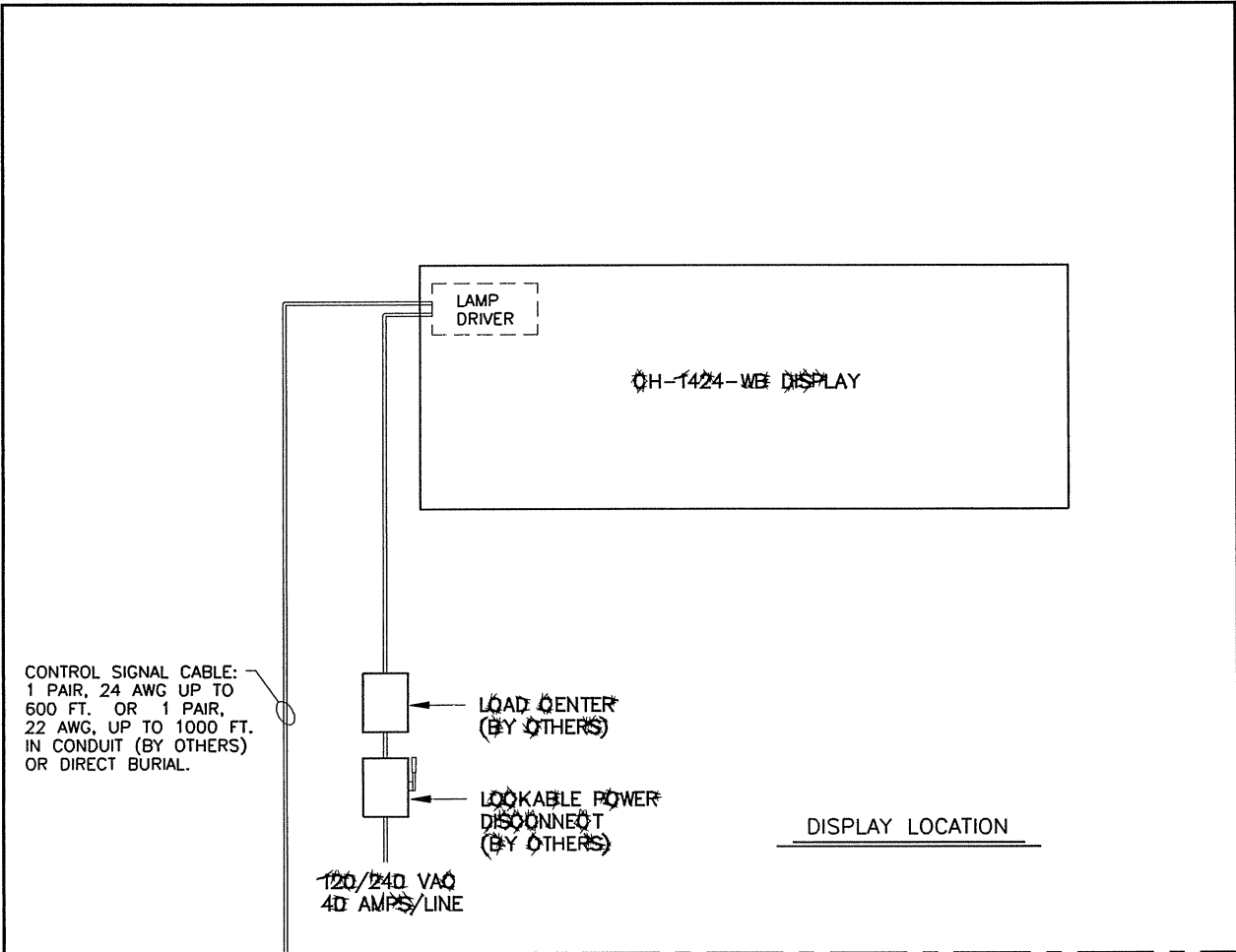


D  
A DETAIL "A" (SIGNAL)



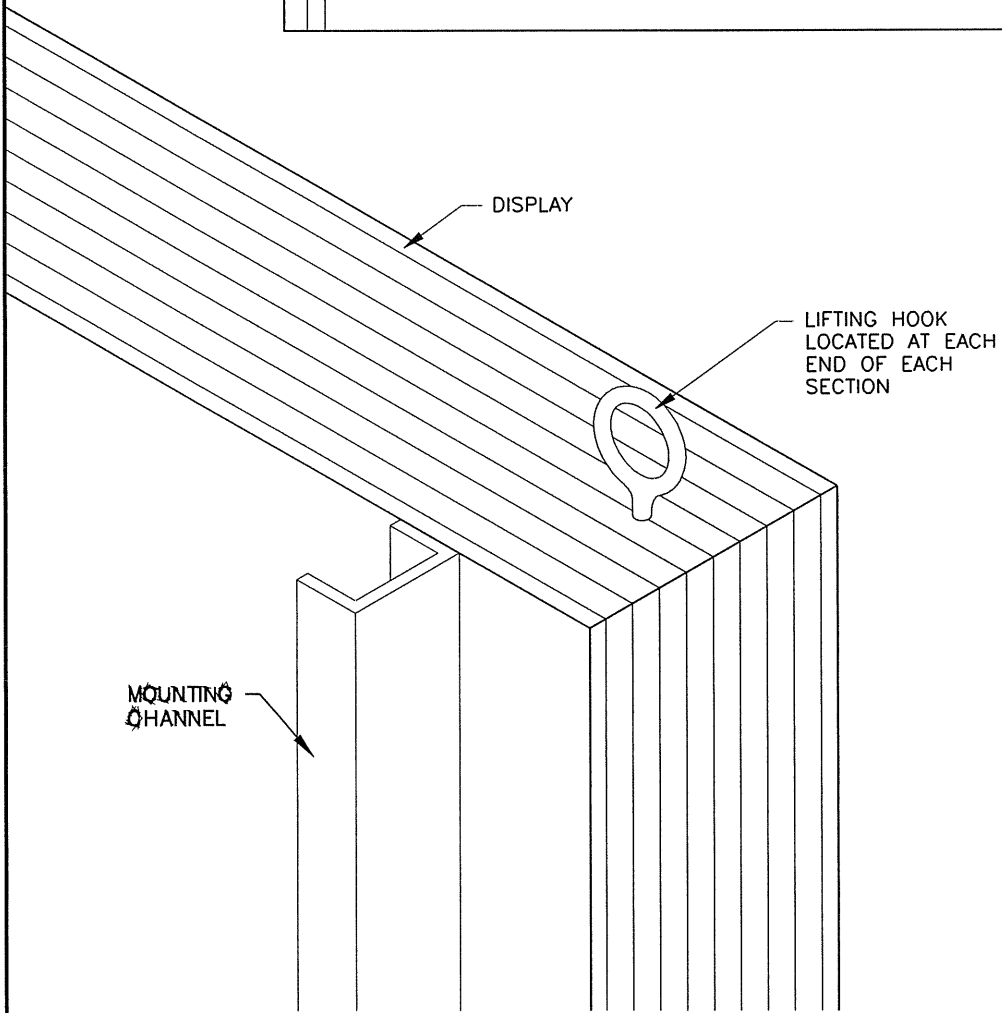
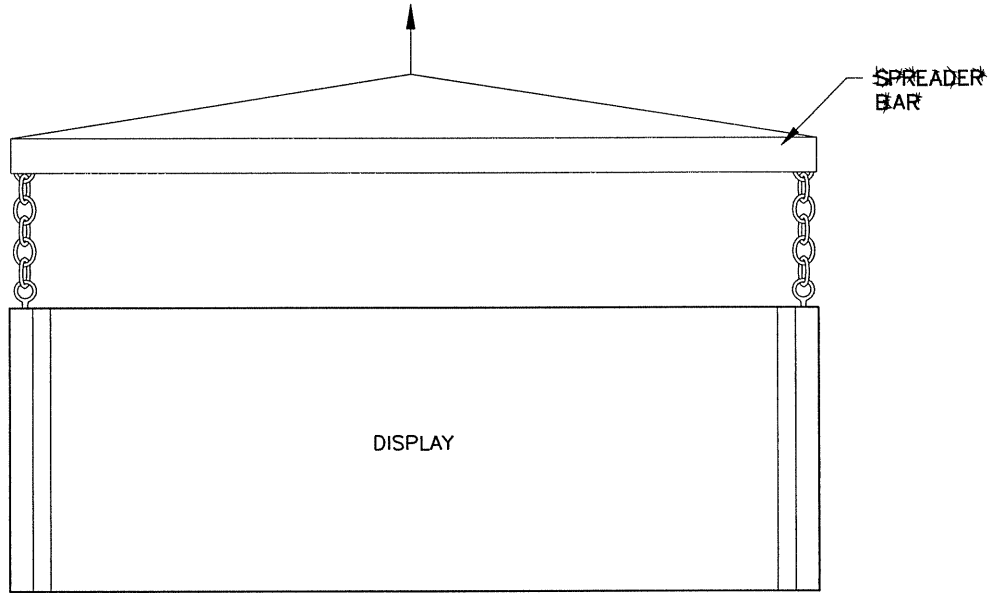
D  
B DETAIL "B" (POWER)

DAKTRONICS, INC. BROOKINGS, SD 57006				
PROJ: CHRONDEK DISPLAYS				
TITLE: DRIVER ENCLOSURE, POWER & SIGNAL				
DES. BY: T. WOODARD		DRAWN BY: T. WOODARD		DATE: 10 MAY 89
1	8 MAR 91	ADDED E41 AND CHANGED FROM "B" TO "A" SIZE DWG.	CF	CF
REV.	DATE	DESCRIPTION	BY	APPR.
REVISION		APPR. BY:	1081-R08A-37915	
SCALE: 1=5				



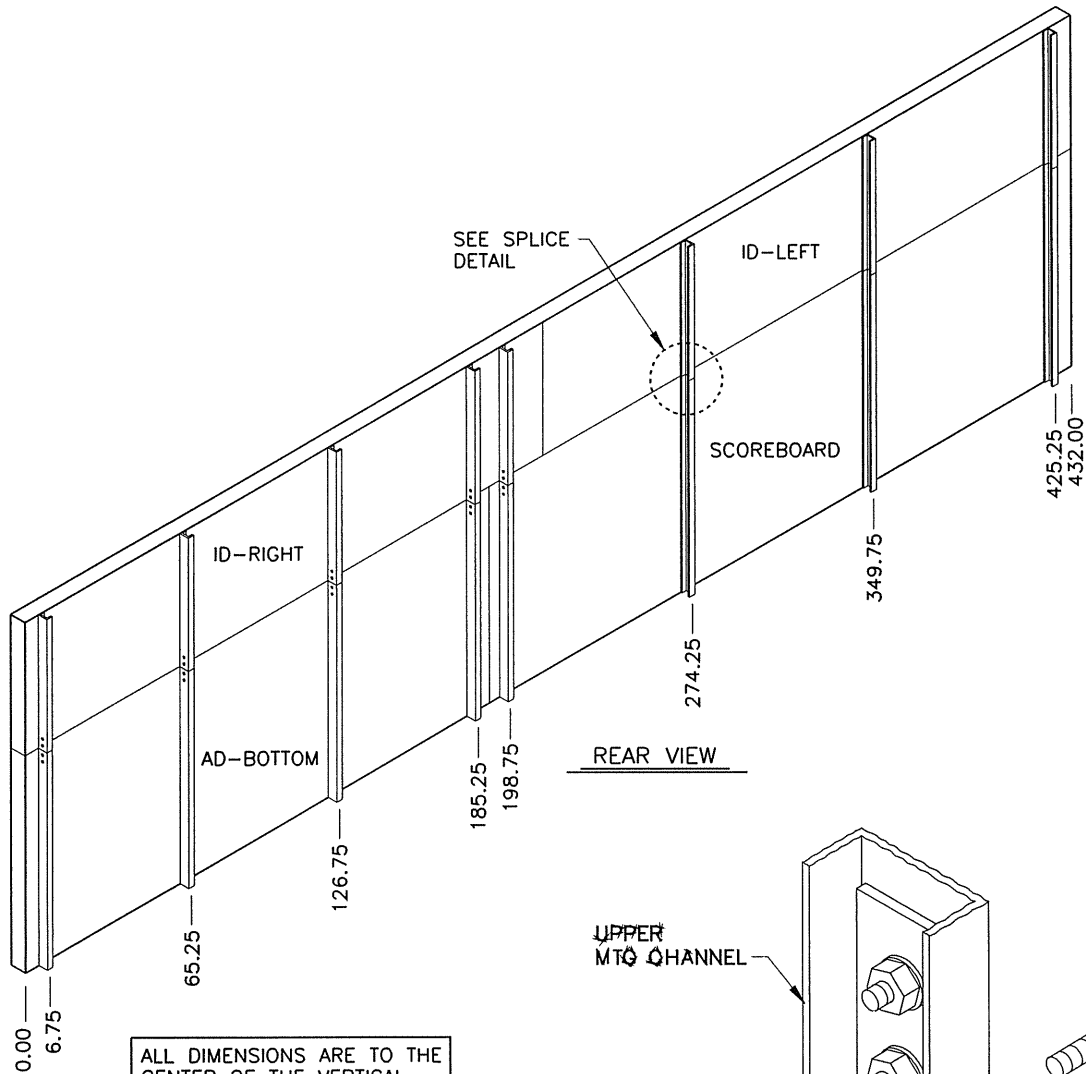
DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: CHRONDEK DISPLAYS	
TITLE: SYSTEM LAYOUT, CH-1424-WB	
DES. BY: JHEIDERSCHIEDT DRAWN BY: JHEIDERSCHIEDT DATE: 26APR90	
REVISION	APPR. BY: AVB
	SCALE: NONE
1081-R08A-42151	

REV.	DATE	DESCRIPTION	BY	APPR.
1	15JUL91	ADDED LOCKABLE SAFETY DISCONNECT AND CORRECTED CONSOLE AND J-BOX ILLUSTRATIONS.	JLH	

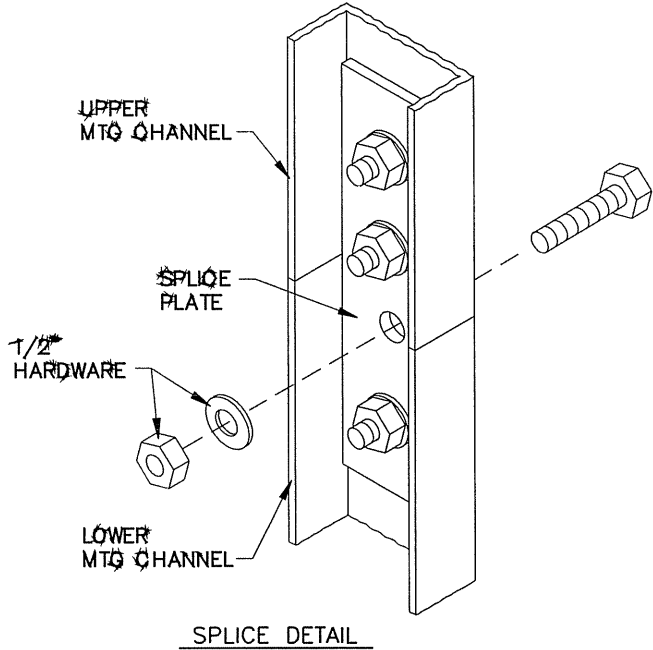


DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: CHRONDEK DISPLAYS	
TITLE: LIFTING DETAIL, CH-1424-WB	
DES. BY:	DATE: 26APR90
REVISION	APPR. BY:
	SCALE: NONE
1081-R08A-42152	

REV.	DATE	DESCRIPTION	BY	APPR.



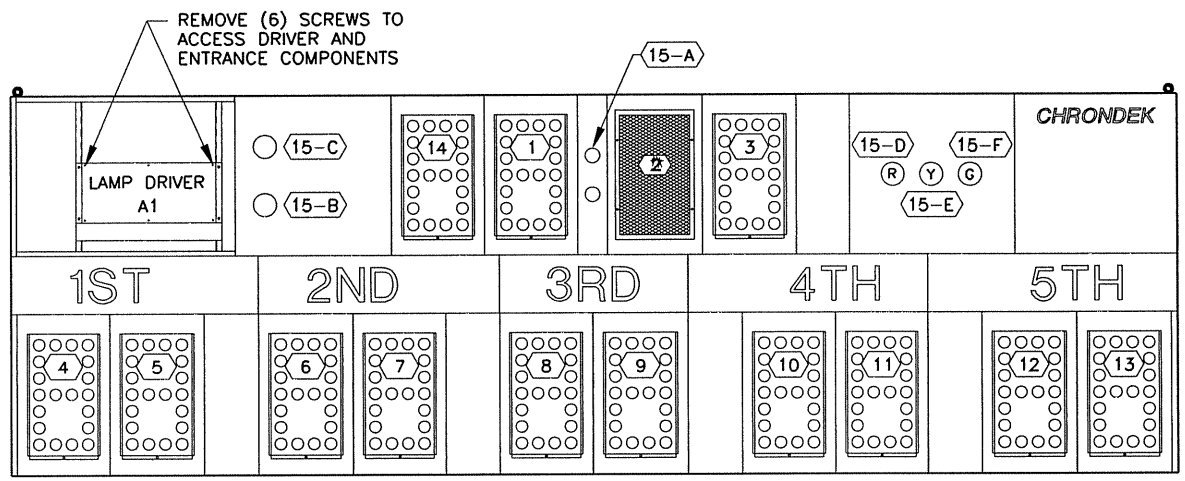
ALL DIMENSIONS ARE TO THE CENTER OF THE VERTICAL MOUNTING CHANNELS.



DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: CHRONDEK	
TITLE: DISPLAY VERT. MTG CHANNEL SPACING, CH-1424-WB	
DES. BY:	DRAWN BY: JLH
	DATE: 7 MAY 90
REVISION	APPR. BY:
	SCALE: 1=60
1081-R10A-42258	

REV	DATE	DESCRIPTION	BY	APPR.

ACCESS DOOR REMOVED TO SHOW ENCLOSED LAMP DRIVER (A1) LOCATION.



FRONT VIEW

TO GAIN ACCESS TO DRIVER ENCLOSURE, REMOVE THE THREE SCREWS AT THE BOTTOM OF THE ACCESS DOOR, LOCATED AT THE TOP LEFT CORNER OF THE DISPLAY.

15-B = LAMP DRIVER CONNECTOR AND PIN (SEGMENT) NO. WHICH THE INDICATOR IS CONNECTED TO.

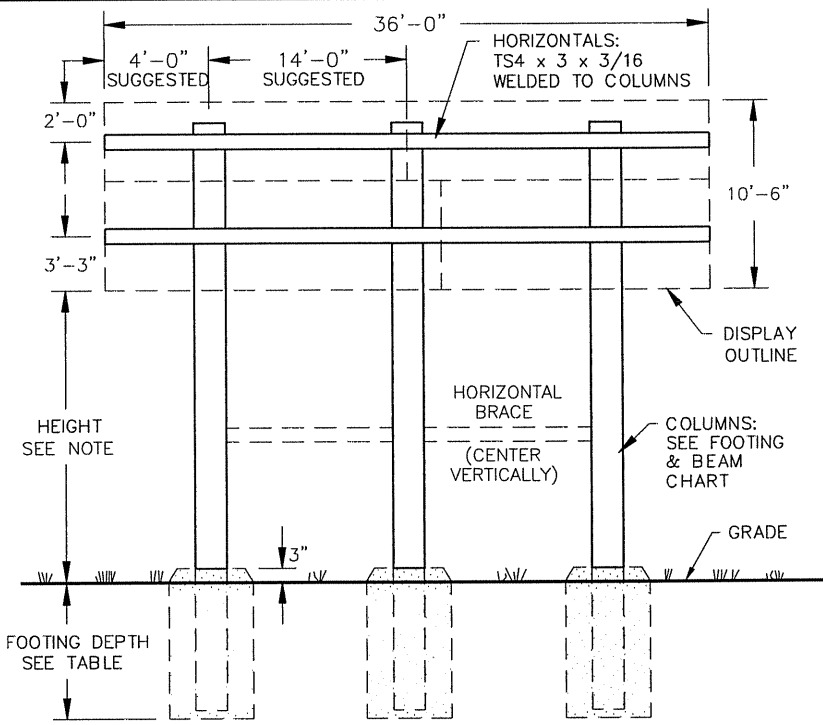
12 = LAMP DRIVER CONNECTOR NO. WHICH DIGIT IS CONNECTED TO.

DAKTRONICS, INC. BROOKINGS, SD 57006				
PROJ: CHRONDEK DISPLAYS				
TITLE: COMPONENT LOCATIONS, CH-1424-WB				
DES. BY: JHEIDERSCHIEDT DRAWN BY: JHEIDERSCHIEDT DATE: 09MAY90				
REV.	DATE	DESCRIPTION	BY	APPR.
				REVISION
				APPR. BY:
				SCALE: 1=35
				1081-R08A-42312



SUGGESTED MOUNTING STRUCTURE FOR THE FOLLOWING CONDITIONS:

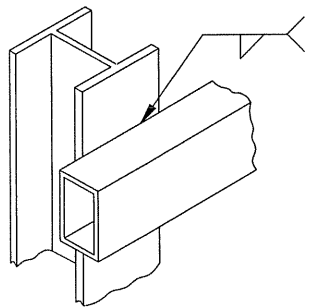
- WIND GUSTS BETWEEN 80-100 MPH.
- DISTANCE BETWEEN GRADE AND BOTTOM OF DISPLAY IS BETWEEN 15 AND 25 FEET.
- OR---
- WIND GUSTS LESS THAN 80 MPH.
- DISTANCE BETWEEN GRADE AND BOTTOM OF DISPLAY IS NOT OVER 30 FEET.



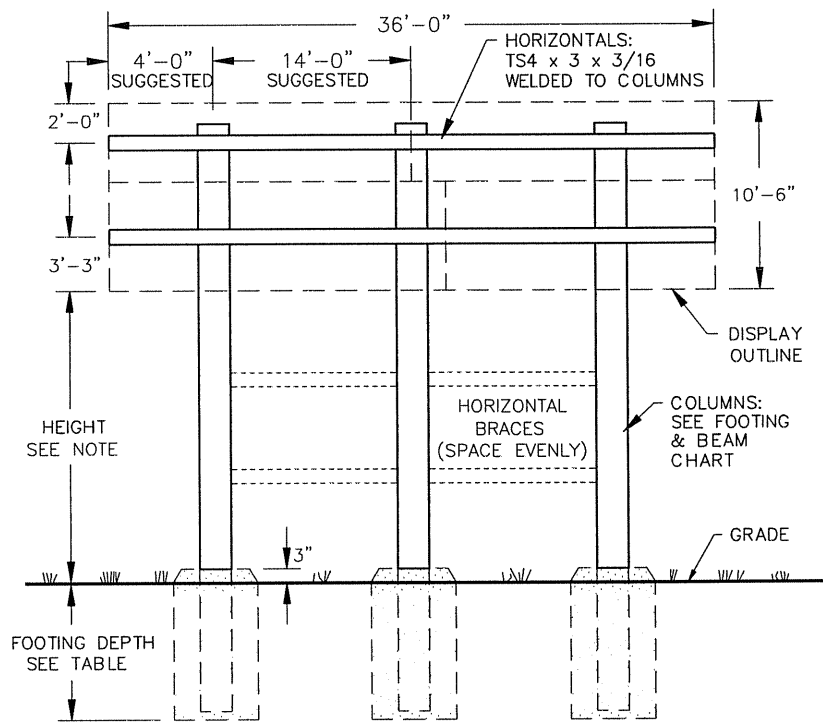
FRONT VIEW

SUGGESTED MOUNTING STRUCTURE FOR THE FOLLOWING CONDITIONS:

- WIND GUSTS BETWEEN 80-100 MPH.
- DISTANCE BETWEEN GRADE AND BOTTOM OF DISPLAY IS NOT OVER 30 FEET.



DETAIL SHOWING ORIENTATION OF HORIZONTAL AND VERTICAL BEAMS FOR MOUNTING DISPLAY.



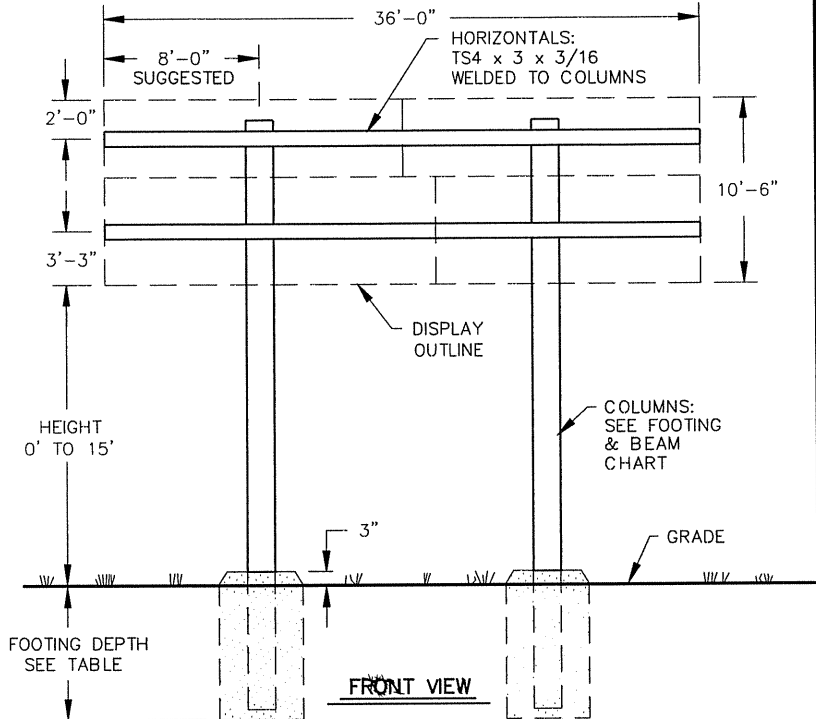
FRONT VIEW

DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: CHRONDEK DISPLAYS	
TITLE: MOUNTING STRUCTURE, 3-POLE	
DES. BY: JHEIDERSCHIEDT DRAWN BY: JHEIDERSCHIEDT DATE: 08MAY90	
REVISION	APPR. BY:
	SCALE: NONE
1081-R08A-42313	

REV.	DATE	DESCRIPTION	BY	APPR.

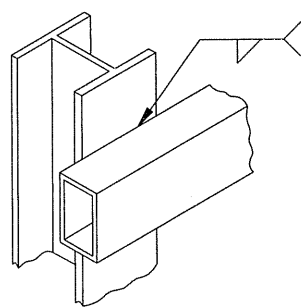
SUGGESTED MOUNTING STRUCTURE FOR THE FOLLOWING CONDITIONS:

- WIND GUSTS LESS THAN 100 MPH.
- DISTANCE BETWEEN GRADE AND BOTTOM OF DISPLAY IS LESS THAN 15 FEET.

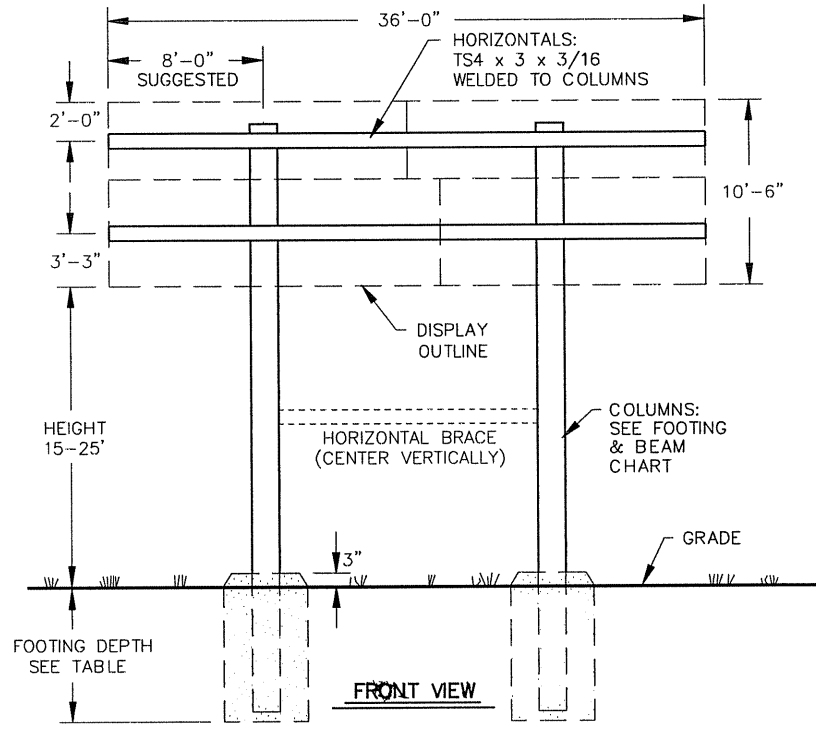


SUGGESTED MOUNTING STRUCTURE FOR THE FOLLOWING CONDITIONS:

- WIND GUSTS LESS THAN 80 MPH.
- DISTANCE BETWEEN GRADE AND BOTTOM OF DISPLAY IS BETWEEN 15 AND 25 FEET.

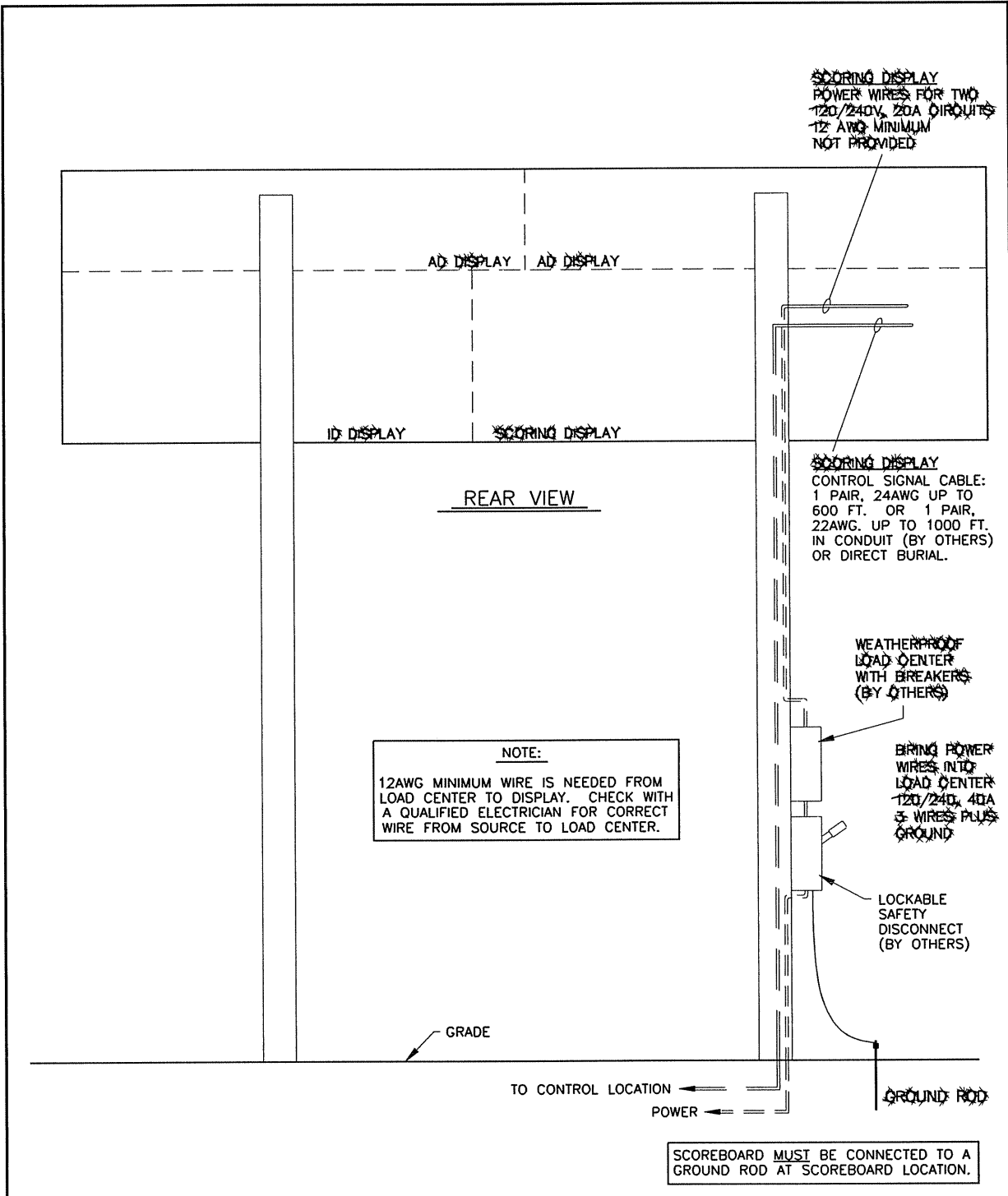


DETAIL SHOWING ORIENTATION OF HORIZONTAL AND VERTICAL BEAMS FOR MOUNTING DISPLAY.



DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: CHRONDEK DISPLAYS			
TITLE: MOUNTING STRUCTURE, 2-POLE			
DES. BY: JHEIDERSCHIEDT DRAWN BY: JHEIDERSCHIEDT DATE: 08MAY90			
REVISION	APPR. BY:	1081-R08A-42314	
	SCALE: NONE		

REV.	DATE	DESCRIPTION	BY	APPR.



DAKTRONICS, INC. BROOKINGS, SD 57006				
PROJ: CHRONDEK DISPLAYS				
TITLE: ELECTRICAL INSTALLATION, CH-1424-WB				
DES. BY: JHEIDERSCHIEDT DRAWN BY: JHEIDERSCHIEDT DATE: 08MAY90				
REV.	DATE	DESCRIPTION	BY	APPR.
2	22 JUN 92	CHANGED "BY CHRONDEK" TO "BY OTHERS" IN REFERENCE TO LOAD CENTER.	C FICK	
1	15JUL91	ADDED LOCKABLE SAFETY DISCONNECT.	JLH	
		REVISION		APPR. BY: AVB
				SCALE: NONE
				1081-R10A-42315

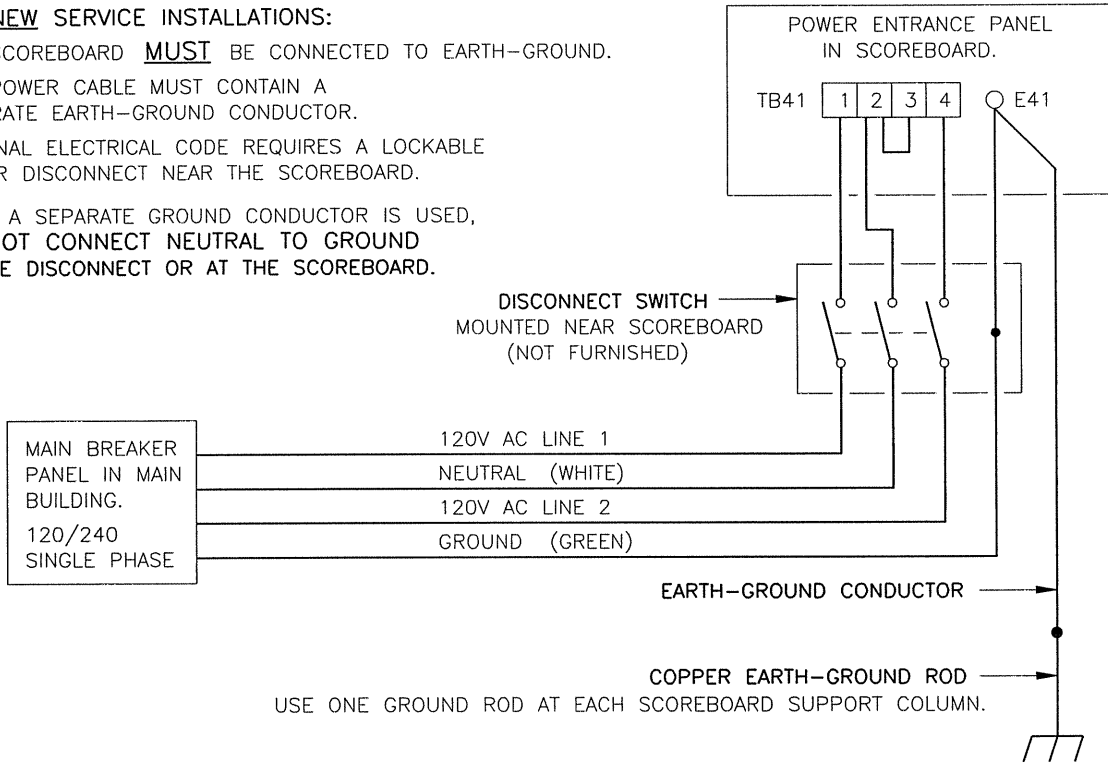
**FOR NEW SERVICE INSTALLATIONS:**

THE SCOREBOARD **MUST** BE CONNECTED TO EARTH-GROUND.

THE POWER CABLE MUST CONTAIN A SEPARATE EARTH-GROUND CONDUCTOR.

NATIONAL ELECTRICAL CODE REQUIRES A LOCKABLE POWER DISCONNECT NEAR THE SCOREBOARD.

WHEN A SEPARATE GROUND CONDUCTOR IS USED, DO NOT CONNECT NEUTRAL TO GROUND AT THE DISCONNECT OR AT THE SCOREBOARD.



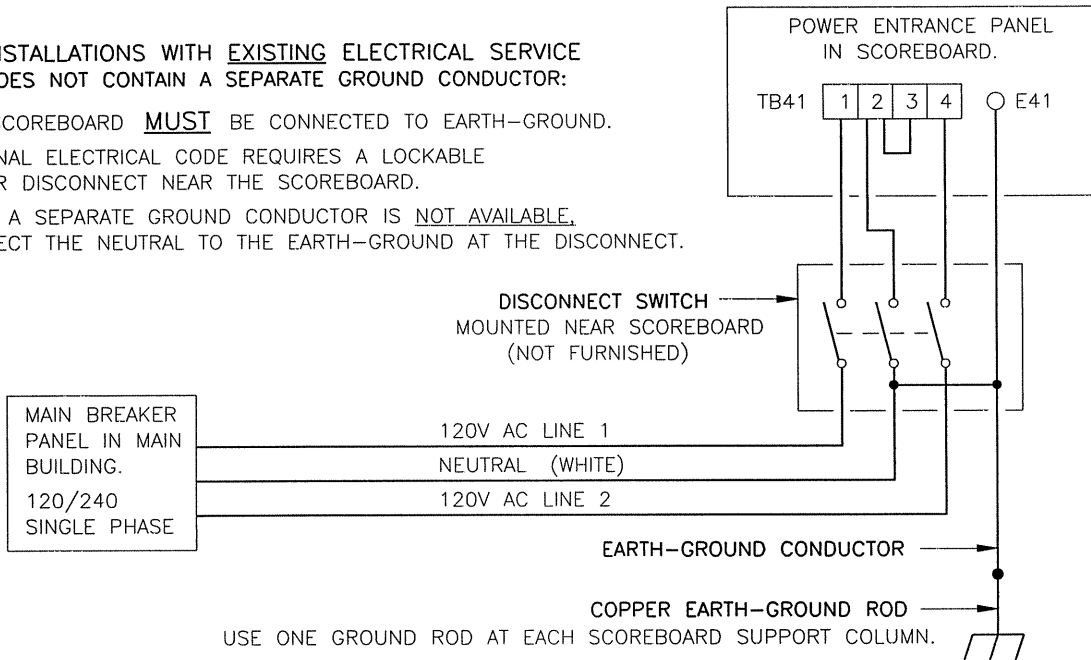
FOR LIGHTNING PROTECTION, DAKTRONICS RECOMMENDS A THREE-CONDUCTOR DISCONNECT THAT CAN BREAK BOTH HOT LINES AND THE NEUTRAL.

**FOR INSTALLATIONS WITH EXISTING ELECTRICAL SERVICE THAT DOES NOT CONTAIN A SEPARATE GROUND CONDUCTOR:**

THE SCOREBOARD **MUST** BE CONNECTED TO EARTH-GROUND.

NATIONAL ELECTRICAL CODE REQUIRES A LOCKABLE POWER DISCONNECT NEAR THE SCOREBOARD.

WHEN A SEPARATE GROUND CONDUCTOR IS NOT AVAILABLE, CONNECT THE NEUTRAL TO THE EARTH-GROUND AT THE DISCONNECT.



DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR SCOREBOARDS

TITLE: POWER WIRING AND GROUNDING

DES. BY:

DRAWN BY: AVB

DATE: 09NOV90

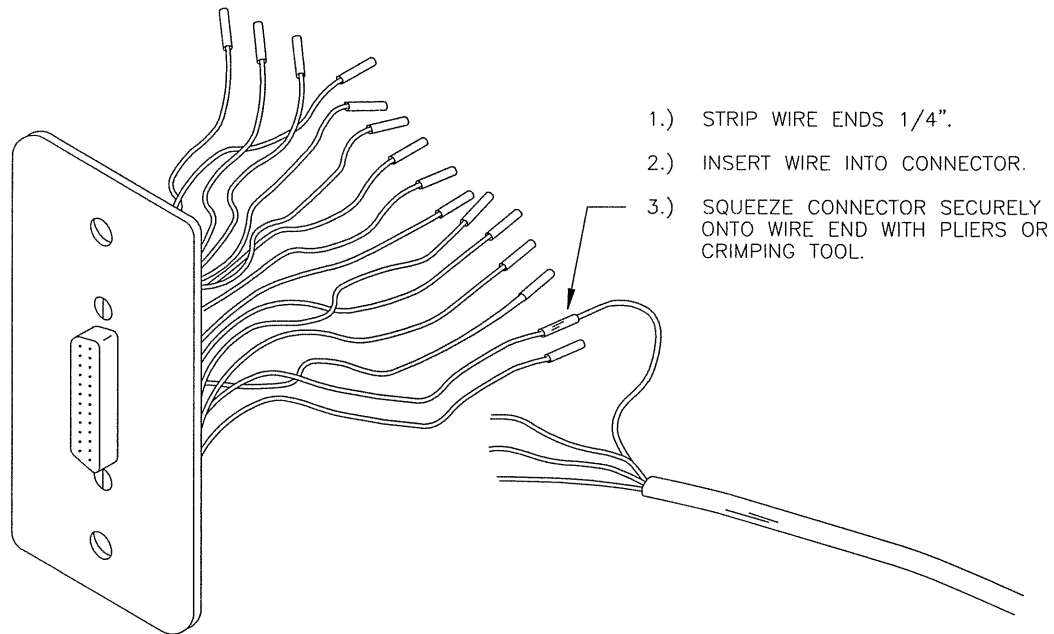
REV.	DATE	DESCRIPTION	BY	APPR
1	06MAY91	ADDED FIGURE FOR USING EXISTING SERVICE.	AVB	

REVISION

APPR. BY:

SCALE: NONE

1091-R03A-45220



- 1.) STRIP WIRE ENDS 1/4".
- 2.) INSERT WIRE INTO CONNECTOR.
- 3.) SQUEEZE CONNECTOR SECURELY ONTO WIRE END WITH PLIERS OR CRIMPING TOOL.

PIN NO.	WIRE COLOR	FUNCTION	
1	BLACK	PHOTO 1-N	PHOTOCELL POWER INPUTS
2	WHITE	PWR 1-P	
3	RED	GND 1-N	
4	GREEN	PHOTO 2-N	
5	ORANGE	PWR 2-P	
6	BLUE	GND 2-N	
7	WHITE/BLACK	PHOTO 3-N	
8	RED/BLACK	PWR 3-P	
9	GREEN/BLACK	GND 3-N	
10	ORANGE/BLACK	PHOTO 4-N	
11	BLUE/BLACK	PWR 4-P	
12	BLACK/WHITE	GND 4-N	
14	RED/WHITE	1 SIG-P	SCOREBOARD SIGNAL OUTPUTS
15	GREEN/WHITE	1 SIG-N	
16	BLUE/WHITE	2 SIG-P	
17	BLACK/RED	2 SIG-N	
18	WHITE/RED	3 SIG-P	
19	ORANGE/RED	3 SIG-N	
22	BLUE/RED	4 SIG-P	THESE PINS TYPICALLY NOT USED BY CHTS TIMER
23	RED/GREEN	4 SIG-N	
13	ORANGE/GREEN	NOT USED	
20	BLK/WHT/RED	NOT USED	
21	WHT/BLK/RED	NOT USED	
24	RED/BLK/WHT	12 VAC	
25	GRN/BLK/WHT	12 VAC	

<b>DAKTRONICS, INC. BROOKINGS, SD 57006</b>																
2	10MAR97	ADDED WIRES TO PINS 13,20,21,24,25	EB													
1	4 JUN 92	CHANGED "SIGNAL INPUTS" TO "SIGNAL OUTPUTS"	C FICK													
REV.	DATE	DESCRIPTION	BY	APPR.												
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">PROJ: CHRONDEK</td> </tr> <tr> <td colspan="2" style="text-align: center;">TITLE: COLOR CODE, 25-PIN J-BOX</td> </tr> <tr> <td style="width: 50%;">DES. BY: CF</td> <td style="width: 50%;">DRAWN BY: CF</td> </tr> <tr> <td style="width: 50%;">REVISION</td> <td style="width: 50%;">DATE: 1 MAY 91</td> </tr> <tr> <td>APPR. BY: AVB</td> <td></td> </tr> <tr> <td>SCALE: 1=2</td> <td style="text-align: right; font-size: 1.2em;"><b>1067-R10A-47207</b></td> </tr> </table>					PROJ: CHRONDEK		TITLE: COLOR CODE, 25-PIN J-BOX		DES. BY: CF	DRAWN BY: CF	REVISION	DATE: 1 MAY 91	APPR. BY: AVB		SCALE: 1=2	<b>1067-R10A-47207</b>
PROJ: CHRONDEK																
TITLE: COLOR CODE, 25-PIN J-BOX																
DES. BY: CF	DRAWN BY: CF															
REVISION	DATE: 1 MAY 91															
APPR. BY: AVB																
SCALE: 1=2	<b>1067-R10A-47207</b>															

1027-R10B-19787

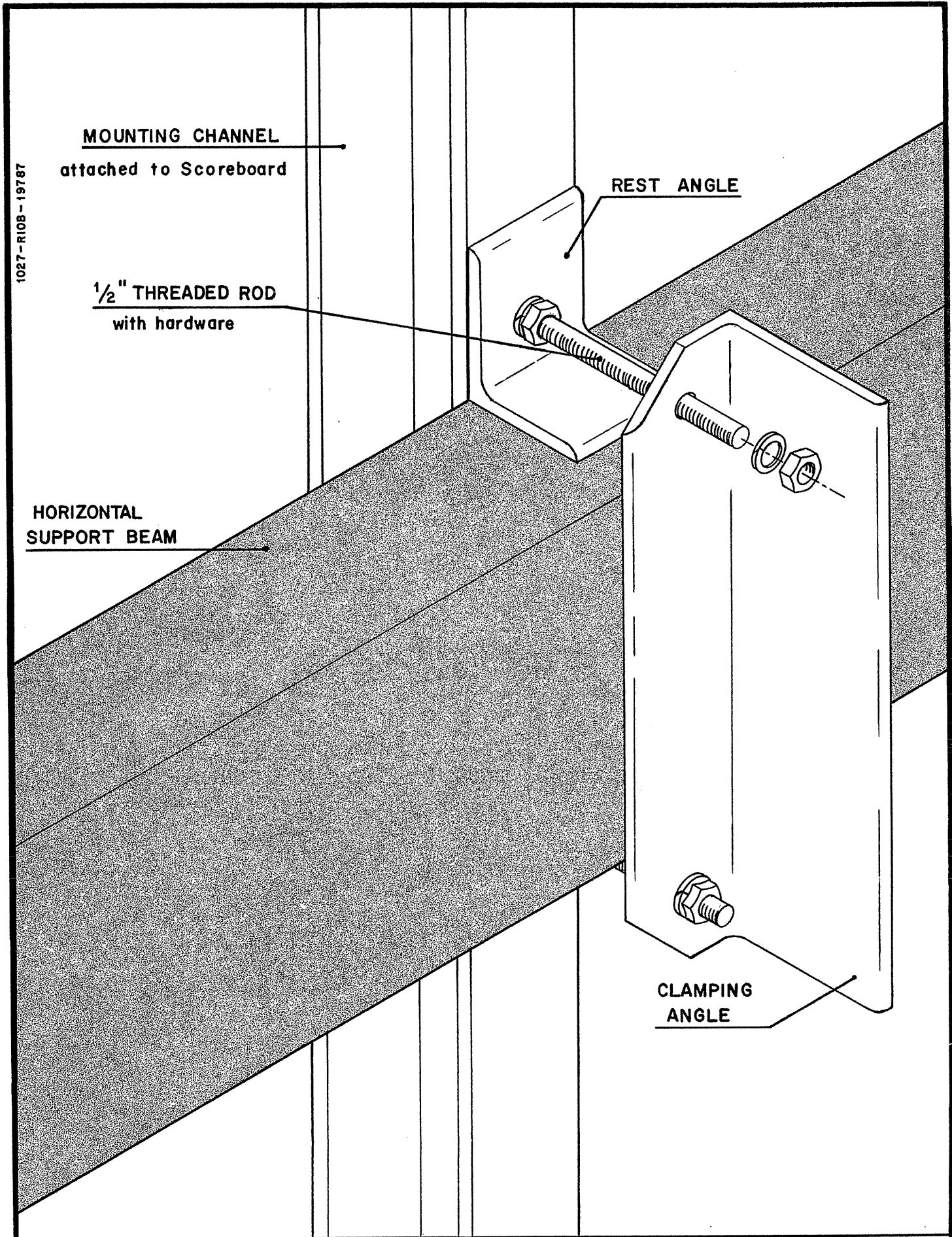
MOUNTING CHANNEL  
attached to Scoreboard

1/2" THREADED ROD  
with hardware

REST ANGLE

HORIZONTAL  
SUPPORT BEAM

CLAMPING  
ANGLE



# Section 3: Service

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**Reference Drawings:** Digit Service . . . . . **Drawing A-27674**  
Lamp Driver, 16 Col, w/Fan . . . . . **Drawing A-37070**  
Segments, 4x7 Lamp Matrix Digit . . . . . **Drawing A-37685**  
Schematic; Power & Signal, CH-21-GP . . . . . **Drawing A-38788**

DISCONNECT POWER TO THE DISPLAY BEFORE SERVICING.

## 3.1 Lamp Replacement

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The primary service required by the CH-1424-WB display is to replace burned-out lamps. Refer to **Drawing A-27674** for an illustration of how to access the digit lamps for replacement. Replacement lamps are 120V, 25W frosted medium base, available at your local store or directly from Daktronics, part number DS-1029.

The Lap/Time indicators use 120V, 55W clear flood lamps, type 55PAR38, Daktronics number, DS-1101.

The Status indicators use 120V, 85W flood lamps, type 85PAR38. The Daktronics numbers are as follows:

- Amber - Daktronics Number, DS-1184
- Green - Daktronics Number, DS-1185
- Red - Daktronics Number, DS-1186

Do not use lamps larger than those originally installed in the display. Using higher power lamps will likely cause fuse failures in the display and could exceed the current levels that the display's circuits can safely handle.

## 3.2 Lamp Driver

---

In the display, the task of switching lamps on and off is performed by the lamp driver. **Drawing A-42312** (in **Section 2**) shows the location of the lamp driver in the display. **Drawing A-37070** is an illustration of the lamp driver and the fuses located in it.

The lamp driver has 21 connectors, providing power and signal inputs to the driver and outputs to the digits and indicators. The connector functions are as follows:

<u>Connector No.</u>	<u>Function</u>
1-16	Outputs to digits and indicators
17	Signal input
18	Power input for outputs 1-8 (120V)
19	Power input for driver logic and fan (120V)

20	Power input 9-6 (120V)
24	Dim option selector

On **Drawing A-42312** (see **Section 2**), the numbers on the digits refer to the lamp driver output connector wired to each digit.

### 3.3 Digit Segmentation

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In a digit, certain lamps always go on and off together. These groupings of lamps are known as "segments". Each digit has eight segments, referred to by letters A through H. **Drawing A-37685** illustrates these segments and shows which connector pin and wire color is wired to each segment.

### 3.4 Schematic

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The schematic diagram on **Drawing A-38788** shows the power and signal inputs into the display and to the lamp driver. The component numbers correspond to those shown on **Drawing A-37915** (in **Section 2**).

### 3.5 Troubleshooting

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This is a list of possible problems that may occur and their possible solutions.

<u>Observed Problem</u>	<u>Possible Cause</u>
One lamp won't light	Burned-out lamp.
Digit segment won't light	Broken wire. Poor contact at driver connector. Internal driver malfunction.
Entire digit won't light	Broken wire(black). Poor contact at connector, pin 7. Fuse blown in driver.
Half the display won't light	Service breaker is tripped. Main fuse blown. Poor contact at main power connection. P18 disconnected.
Segment stays lit	Broken wire behind digit. Internal driver malfunction.
Garbled display	Control malfunction. Internal driver malfunction.

If a problem is observed in one digit, the cause may be isolated by swapping plugs on the driver. That is, connect the plug from the malfunctioning digit into a different jack. If the same digit shows the same problem, the cause may be in the digit or wiring. If the problem moves to



another digit, then the cause is most likely an internal driver problem

Use a voltmeter at driver inputs to determine if power is being supplied to the driver. An ohmmeter can be helpful in finding broken wires and bad connections. Internal electronic problems must be corrected by Daktronics or an authorized service center.

### 3.6 Replacement Parts

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<u>Part Name or Description</u>	<u>Type</u>	<u>Daktronics Part Number</u>
Lamp Driver		A-1033-122
J-Box, Signal, 25-Pin		A-1067-56
Fuse, Lamp Driver, 10A	AGC-10	F-1066
Fuse, Driver Logic, 1/2A	AGC-1/2	F-1000
Digit Lampbank, 24" 4x7		A-1064-02
Digit Screen, 24" 4X7		S-1064-02
Socket, Med. Base		X-1046
Lamp, 25W Frosted		DS-1029
Lamp, 55W Clear Flood	55PAR38	DS-1101
Lamp, 85W Amber Flood	85PAR38	DS-1184
Lamp, 85W Green Flood	85PAR38	DS-1185
Lamp, 85W Red Flood	85PAR38	DS-1186

For parts not listed, or for more information about installation or service, please call Daktronics. Our phone number is (605) 697-4400, or call toll-free 1-888-247-6633.

### 3.7 Unit Exchange/Replacement Procedure

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Daktronics unique exchange program offers our clients the quickest, most economical way of receiving product repairs. If a component has failed, Daktronics will send the customer a replacement. The customer, in turn, sends the failed components to Daktronics. This not only saves money but also decreases the time the display is inoperable. Daktronics offers repair and return on a timely basis; 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 to prevent damage during shipment. Electronic components such as printed circuit boards should either be installed in an enclosure or placed in an anti-static bag before boxing.

Please enclose your name and address along with a list of all the symptoms. Please be as specific as possible.

2. **Lampbank and Driver Packaging Instructions:** Lampbanks and drivers should be placed in a static-free enclosure for return shipping. An anti-static 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.

When returning 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 help 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.

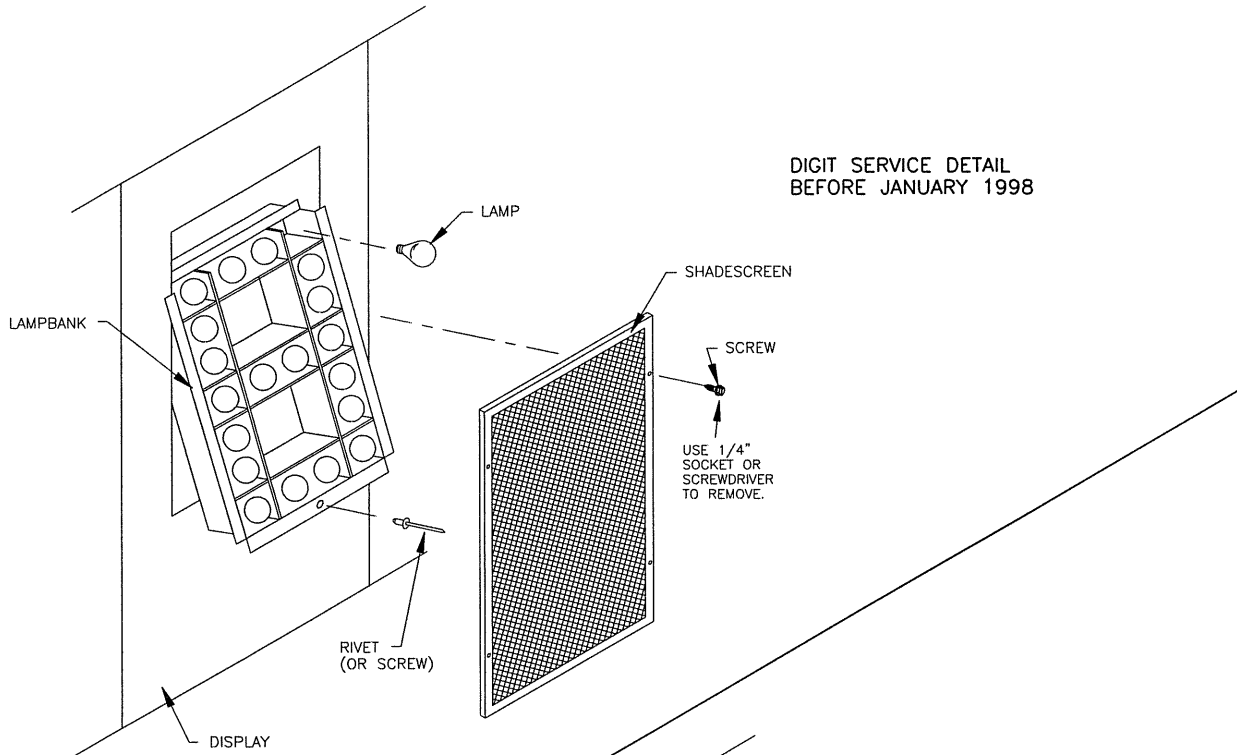
**Mail:** Daktronics, Inc., Customer Service  
PO Box 5128  
331 32nd Avenue  
Brookings, SD 57006

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

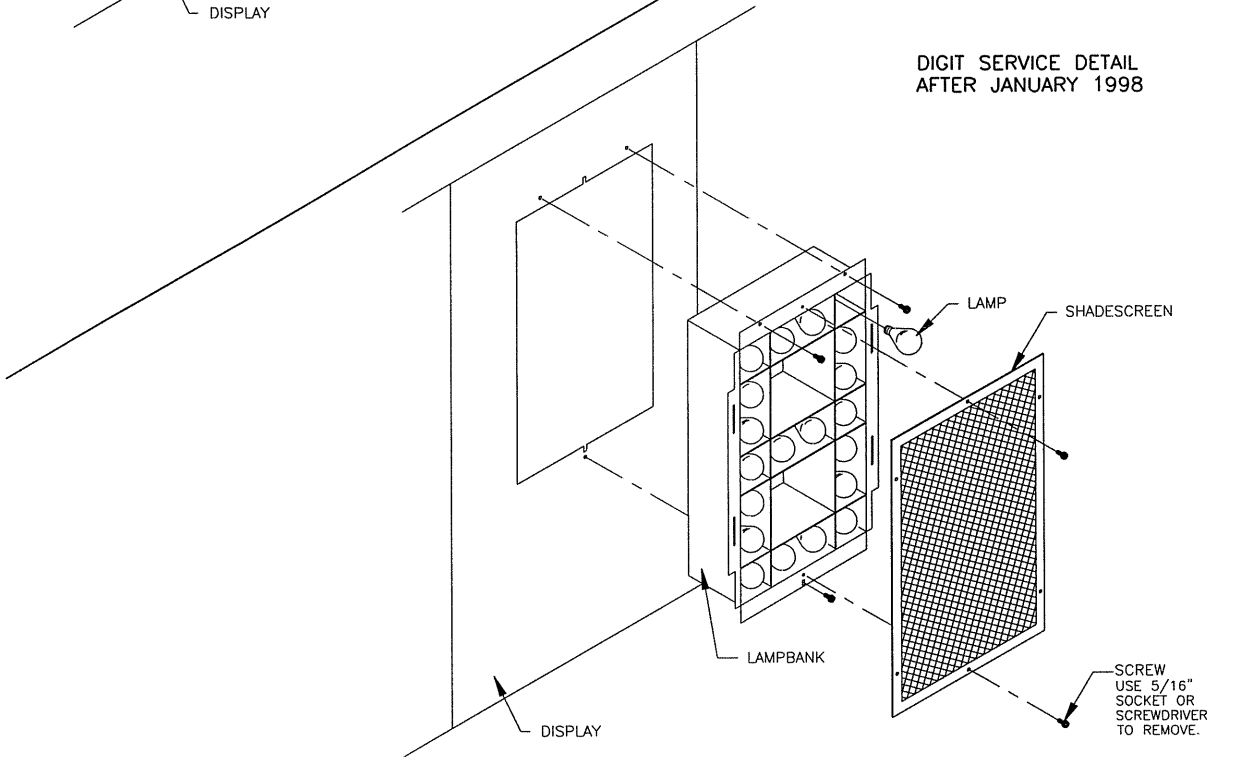
**Customer Service Fax:** 1-605-697-4444

**E-Mail:** [helpdesk@daktronics.com](mailto:helpdesk@daktronics.com)

DIGIT SERVICE DETAIL  
BEFORE JANUARY 1998

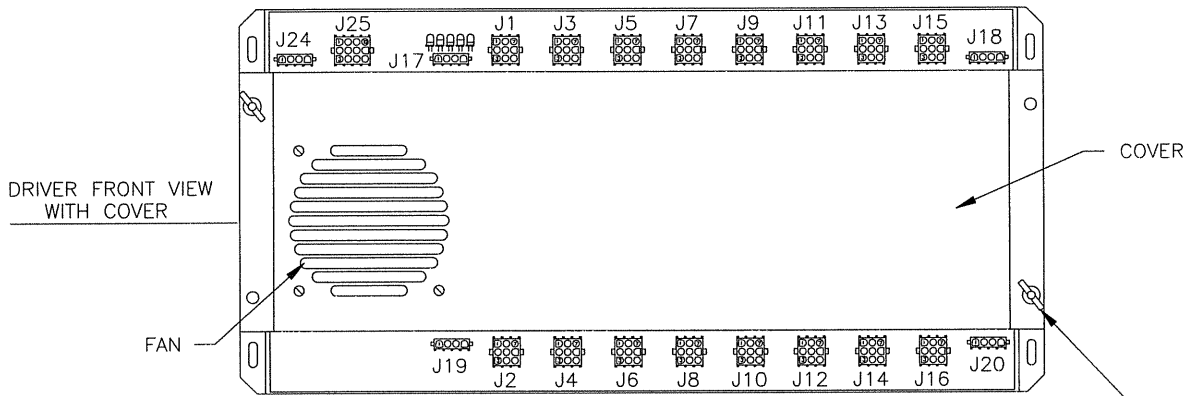


DIGIT SERVICE DETAIL  
AFTER JANUARY 1998



DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ:	OUTDOOR SCOREBOARDS
TITLE:	DIGIT SERVICE
DES. BY:	DRAWN BY: TERRY P. DATE: 31 JULY 86
REVISION	APPR BY:
	SCALE: 1=15
1064-E10A-27674	

REV.	DATE	DESCRIPTION	BY	APPR.
2	10NOV97	ADDED DIGIT SERVICE AFTER JANUARY 1998 CHANGED SCALE FROM 1=10 TO 1=15	BDP	
1	5 MAR 91	CHANGED FROM "B" TO "A" SIZE DWG.	CF	



DRIVER FRONT VIEW WITH COVER

FAN

COVER

REMOVE TWO WING NUTS TO REMOVE COVER AND GAIN ACCESS TO FUSES.

J24			
PIN	FUNCTION	PIN	FUNCTION
1	NETWORK+	7	ADDR 3 -
2	NETWORK-	8	NTW GND -
3	NTWREF-P	9	NTW GND -
4	ADDR 0 -	10	FAN SW HOT
5	ADDR 1 -	11	FAN HOT
6	ADDR 2 -	12	NEUT

J17	
PIN	FUNCTION
1	SIGNAL +
2	SIGNAL -
3	N.C.
4	N.C.

J1 - J16	
PIN	FUNCTION
1	SEG C
2	SEG B
3	SEG A
4	SEG F
5	SEG E
6	SEG D
7	COMMON
8	SEG H
9	SEG G

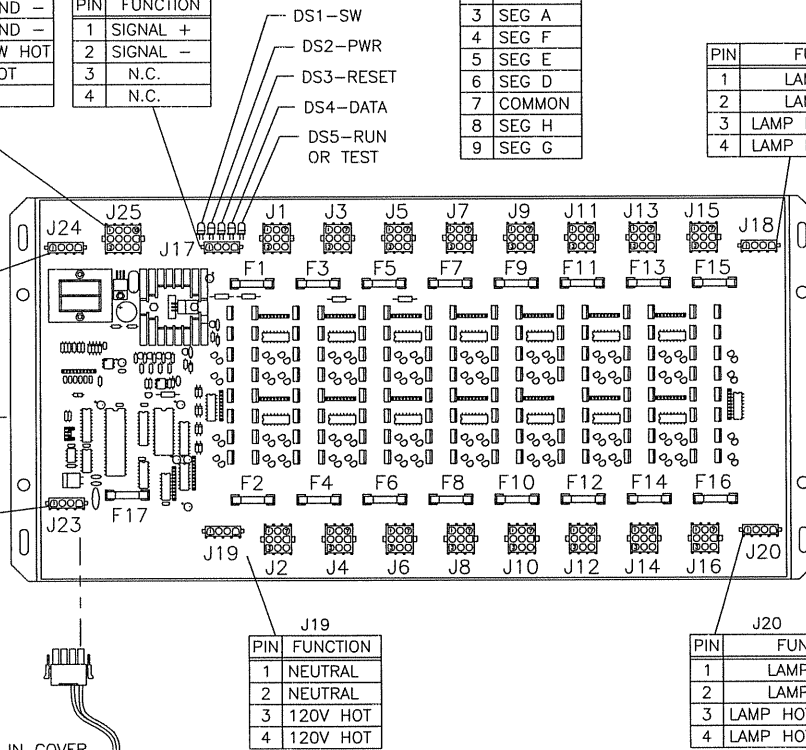
J18	
PIN	FUNCTION
1	LAMP NEUT
2	LAMP NEUT
3	LAMP HOT 1, 3, 5, 7
4	LAMP HOT 2, 4, 6, 8

J24	
PIN	FUNCTION
1	-5V
2	DIM SEL 1
3	-5V
4	DIM SEL 2

DRIVER FRONT VIEW WITH COVER REMOVED

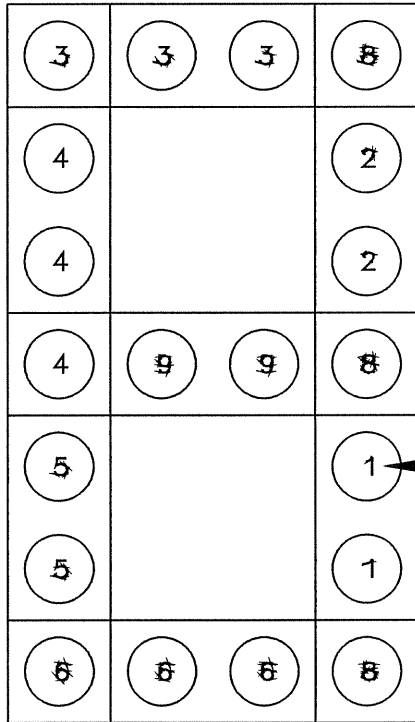
J23	
PIN	FUNCTION
1	FAN SW HOT
2	N.C.
3	FAN HOT
4	NEUT

PLUG FROM FAN IN COVER CONNECTS TO J23



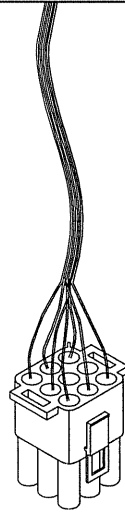
F1 THRU F16 ARE TYPE AGC-10, DAKTRONICS PART NUMBER F-1006. F17 IS TYPE AGC-1/2, DAKTRONICS PART NUMBER F-1000

DAKTRONICS, INC. BROOKINGS, SD 57006				
2	29 APR 97	ADDED TABLES OF PINS AND FUNCTIONS	AVB	AVB
1	5 MAR 91	CHANGED FROM "B" TO "A" SIZE DWG	CF	
REV.	DATE	DESCRIPTION	BY	APPR.
PROJ: MULTIPLEX CONTROLLERS		TITLE: LAMP DRIVER, 16 COL., W/FAN		
DES. BY: JLH		DRAWN BY: JLH		DATE: 20 FEB 89
REVISION	APPR. BY:	1033-R04A-37070		
	SCALE: 1=5			



4 x 7 LAMP MATRIX DIGIT

CONNECTOR PIN NUMBER  
WIRED TO THAT SEGMENT



LAMP DRIVER  
CONNECTOR

COLOR CODE		
PIN NO.	WIRE COLOR	DRIVER SEGMENT
1	ORANGE	0
2	RED	B
3	BROWN	A
4	BLUE	F
5	GRN OR PNK	E
6	YEL OR TAN	D
7	BLACK	COMMON
8	GRAY	H
9	VIOLET	G

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR SCOREBOARDS

TITLE: SEGMENTS, 4 x 7 LAMP MATRIX DIGIT

DES. BY:

DRAWN BY: AVB

DATE: 18 APR 89

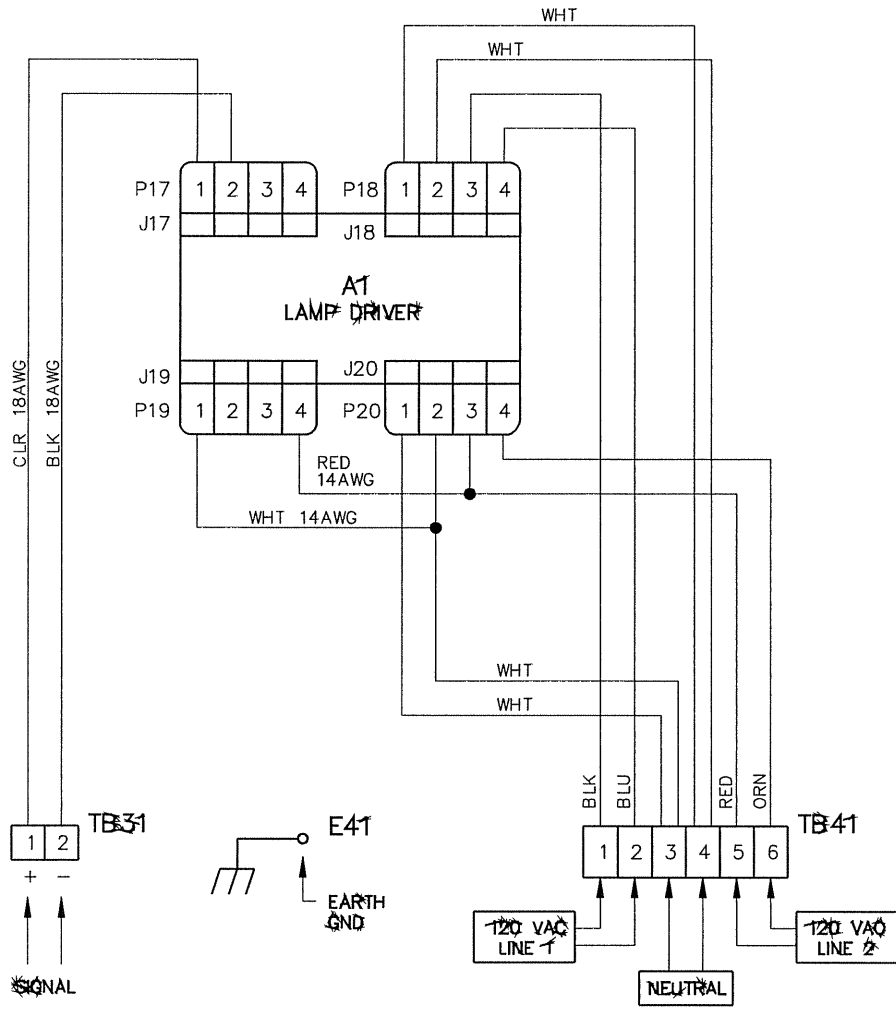
REVISION

APPR. BY:

SCALE: 1 = 1

1064-R04A-37685

REV.	DATE	DESCRIPTION	BY	APPR.
1	5 MAR 91	CHANGED FROM "B" TO "A" SIZE DWG.	CF	



NOTES  
 ALL WIRES ARE 12 AWG UNLESS OTHERWISE SPECIFIED.

10	30APR98	CHANGED MODEL NUMBER FROM CH-21GP TO CH-1421-H & CH-1521-H	RDA	RDA
9	11 MAR 93	REMOVED LIST OF DISPLAY MODELS.	C FICK	
8	01 JUL 92	ADDED MODEL CH-1024V TO NOTE.	TWEBER	
7	18 JUN 92	ADDED CH-1421V, CH-1421GP, CH-1424WB AND CH-36-DS TO LIST OF MODELS.	C FICK	
REV.	DATE	DESCRIPTION	BY	APPR.

DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: CHRONDEK DISPLAYS	
TITLE: SCHEMATIC; PWR/SIG CH-1421-H & CH-1521-H	
DES. BY:	DRAWN BY: JLH DATE: 19JUL89
REVISION	APPR. BY:
SCALE: 1=1	1081-R03A-38788