



# **Auto Racing Display Model CH-2024V**

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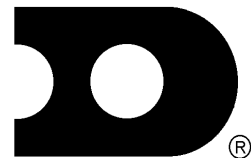
## **Installation & Service Manual**

ED 5900

**ED 5900  
Project#1081  
Rev. 5-10 August, 1998**

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KTRONICS, INC.**

***Setting New Standards Worldwide***

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# Section 1 : Introduction

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## 1.1 How To Use This Manual

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This manual explains the installation and maintenance of the Daktronics CH-2024V auto racing display system. Setup of other control equipment or operation of the CHTS-300 timing console are not covered in this manual. 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. Be sure the display is properly grounded with a ground rod at the display location.
4. *Disconnect power to the display when it is not in use.*
5. *Disconnect power when servicing the display.*
6. Do not modify the display structure or attach any panels or coverings to the display without the written consent of Daktronics, Inc.

The box below illustrates Daktronics drawing numbering system. The drawing number “7087-P08A-69945” is how Daktronics identifies individual drawings. This number is located in the lower-right corner of the drawing. This manual refers to drawings by listing the last set of digits and the letter preceding them. In the example below, the drawing would be referred to as **Drawing A-69945**. Referenced drawings are inserted at the *end of the first section which references them*.

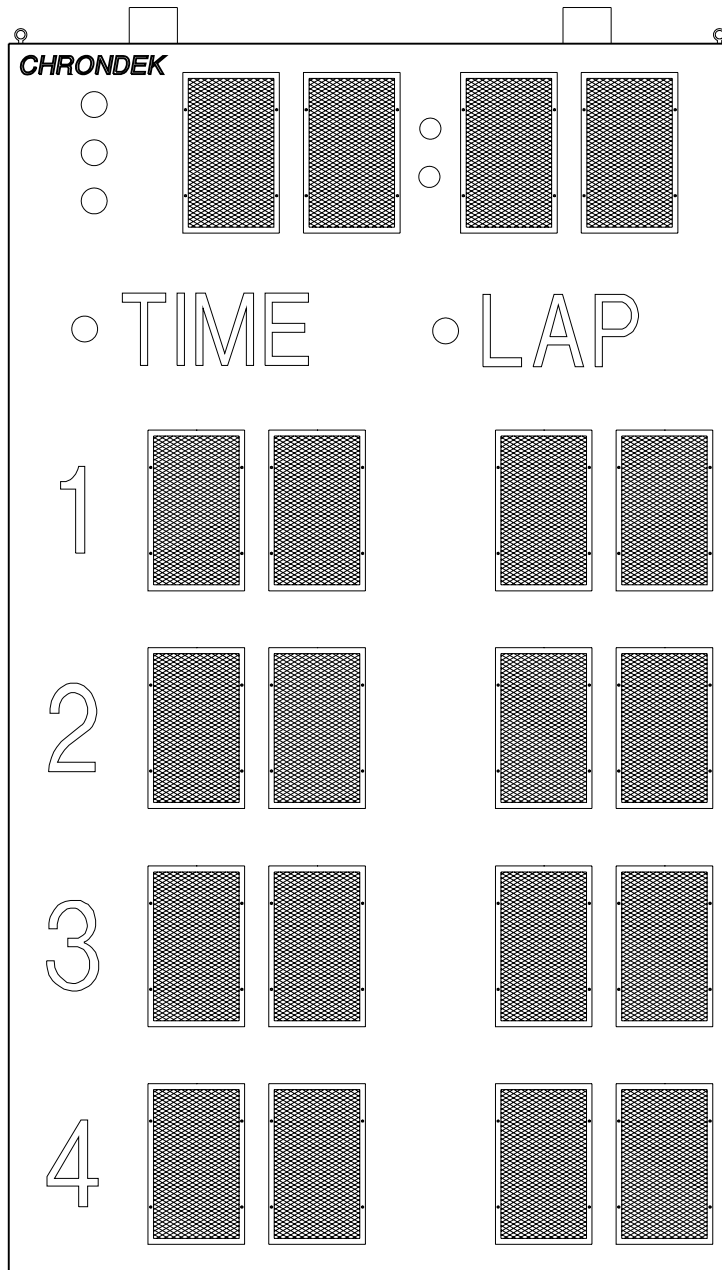
DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ:	
TITLE:	
DES. BY:	DATE: 04-20-95
APPR. BY:	7087-P08A-69945
SCALE: 1=80	

## 1.2 Display Overview

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**Reference Drawing:** Display, CH-2024V ..... **Drawing A-46493**

**Drawing A-46493** shows a Daktronics CH-2024V display. The CH-2024V display along with the use of the Daktronics CHTS-300 timing console can display the lap number or elapsed race time, the top eight racers, and the race status.



OVERALL DIMENSION: 204" H x 120" W x 6" D

WEIGHT: 750 LBS

POWER REQUIREMENTS: 120/240 VAC, 50 AMPS PER LINE, WITH 25W LAMPS  
60 AMPS PER LINE, WITH 30W LAMPS

MAXIMUM POWER DEMAND: 10415 WATTS WITH 25W LAMPS  
12425 WATTS WITH 30W LAMPS

DIGITS ARE 24" HIGH, 4 x 7 MATRICES, WITH 25W MED. BASE LAMPS, OR  
30W FROSTED, 30R20 REFLECTOR LAMPS.

LAP & TIME INDICATOR LAMPS ARE 55W FLOOD LAMPS.

RACE STATUS INDICATOR LAMPS ARE 85W MISER FLOOD LAMPS.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: CHRONDEK DISPLAYS

TITLE: DISPLAY, CH-2024V

DES. BY: CF

DRAWN BY: CF

DATE: 11 MAR 91

REVISION

APPR. BY: AVB

SCALE: 1=30

1081-R08A-46493

REV.	DATE	DESCRIPTION	BY	APPR.
1	1 APR 91	ADDED SPEC'S FOR 30W, 30R20 LAMPS.	CF	

# Section 2 : Installation

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## 2.1 General System

---

**Reference Drawings:** Footing & Beam, CH-2024V ..... **Drawing A-46492**  
System Layout, CH-2024V ..... **Drawing A-46533**  
Display Mounting, CH-2024V ..... **Drawing A-46534**  
Component Locations, CH-2024V ..... **Drawing A-46539**  
Pwr&Sig Entrance Components ..... **Drawing A-46545**  
Connector Plate, CH-2024V ..... **Drawing A-46563**  
Color Code, 25 Pin J-Box ..... **Drawing A-47207**  
Electrical Installation, CH-2024V ..... **Drawing A-47326**

The CH-2024V display consists of three sections, the upper, middle and lower sections. Refer to **Drawing A-46533** for the general system layout.

The general procedure for installing the CH-2024V display is as follows:

1. Select beam and footing recommendations from the table in **Section 2.2**.
2. Dig the footing holes and install the beams and the footings.
3. Route power and signal cables to the display and the control locations.
4. Mount the displays to the beams as described in **Drawings A-46492** and **A-46534** and **Section 2.3**.
5. Route power and signal wires into the displays as described in **Drawings A-47326, A-46539, A-46545, A-46563** and **A-47207** and **Section 2.4**.

## 2.2 Beam and Footing Selection

---

The table below contains recommendation for beams and footings to support your display. The first column is wind velocity in miles per hour. The distance in the second column is from the ground to the bottom of the display. The choice from these columns depends upon the display location.

Wind Speed	Height (ft)	Beam Section	Footing Depth x Diameter
70 MPH	10	W 10x19	7 ½ ftx3 ft
	15	W 10x25	8 ¼ ftx3 ft
80 MPH	10	W 10x25	8 ½ ftx3 ft
	15	W 10x29	9 ¼ ftx3 ft
90 MPH	10	W 14x26	9 ½ ftx3 ft
	15	W 12x31	10 ½ ftx3 ft

The beams listed are W-shape (wide flange) beams which provide maximum wind load strength for the weight and the cost of the beams.

The calculations for footing diameters and depths are based on the assumption that footings are in undisturbed soils, *not fill soils*. Lateral bearing capacity of 400 psf per foot of depth in natural grade was used to derive these figures.

These footing recommendations are based on an allowable soil bearing pressure of 4000 psf vertically and 400 psf/ft of depth horizontally. However, these recommendations *are suggestions only* and each installation should be treated individually. Be sure that the installation complies with local codes and is suitable for particular soil and wind conditions. *Daktronics assumes no responsibility for structures installed by others.* Daktronics recommends that W-sections of grade 36 steel be used for beams, and that 28-day (strength 4000 psi) concrete be used for footings.

## 2.3 Display Mounting

---

**Reference Drawings:** Display Mounting, CH-2024V ..... **Drawing A-46534**

**Drawing A-46534** shows the typical mounting procedure for the display.

**Note:** The bolts that secure the display do not go through the beams, but run along both sides of the beams, clamping the display to the beams.

Mounting angles and 1/2" hardware are provided to mount your display.

1. Starting with the bottom display section, lift the display into place on the mounting beams.
2. Secure the bottom of the lower display section as shown in Steps 1 through 4 in **Drawing A-46534**.
3. Secure the top of the display section with the mounting angles and the 1/2" hardware.
4. Tighten all nuts securely.
5. Repeat the same procedure for the middle and upper sections, starting with the middle section next.

## 2.4 Electrical Installation

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### 2.4.1 Control Signal Cable

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**Reference Drawings:** Component Locations, CH-2024V ... **Drawing A-46539**  
Pwr&Sig Entrance Components..... **Drawing A-46545**  
Color Code, 25 Pin J-Box..... **Drawing A-47207**

For the display, two conductors of 24 AWG are needed. For distances up to 600 ft. or 22 AWG, up to 1000 ft. are required. Daktronics has 24 AWG direct burial cable, Daktronics part no. W-1105 with 6 conductors, and 22 AWG cable that must be pulled through the conduit before burial, Daktronics part no. W-1077 with 2 conductors.

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

At the display's bottom section, open the bottom hinged panel covering the entrance enclosure as shown in **Drawing A-46539**. Remove the cover from the entrance enclosure. **Refer to Drawing A-46545** for an illustration of the components inside the enclosure. Signal and power cables are routed into the rear of the display. There are two knockouts for the conduit connection in the back of the bottom section. Refer



to **Drawing A-46539**. Connect the signal wires to TB31 as indicated in the table below.

Control End			Display End
J-box Terminal No.	Wire Color	Output No.	TB31 Terminal No.
14	Red/Wht	1*	1 (+)
15	Grn/Wht		2 (-)
16	Blue/Wht	2*	4 (+)
17	Blk/Red		5 (-)

\*Auxiliary display(s) require(s) a different output number(s). Consult your CHTS-300 console manual.

## 2.4.2 Power Wiring

---

### Reference Drawings: Pwr&Sig Entrance Components ..... **Drawing A-46545**

The CH-2024V display requires a 120/240 VAC circuit, at 50 amps per line when equipped with 25W lamps, with a maximum current draw of 87 amps. When equipped with 30W lamps a 120/240 VAC circuit, at 60 amps per line, with a maximum current draw of 103 amps.

Route power wires into the display and connect to TB41 in the entrance enclosure, as shown in **Drawing A-46545**.

**Connect the ground wires to E41 and to a ground rod near the display according to local codes.**

## 2.4.3 Connection Between Sections

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### Reference Drawing: Component Locations, CH-2024V ..... **Drawing A-46539** Connector Plate, CH-2024V..... **Drawing A-46563**

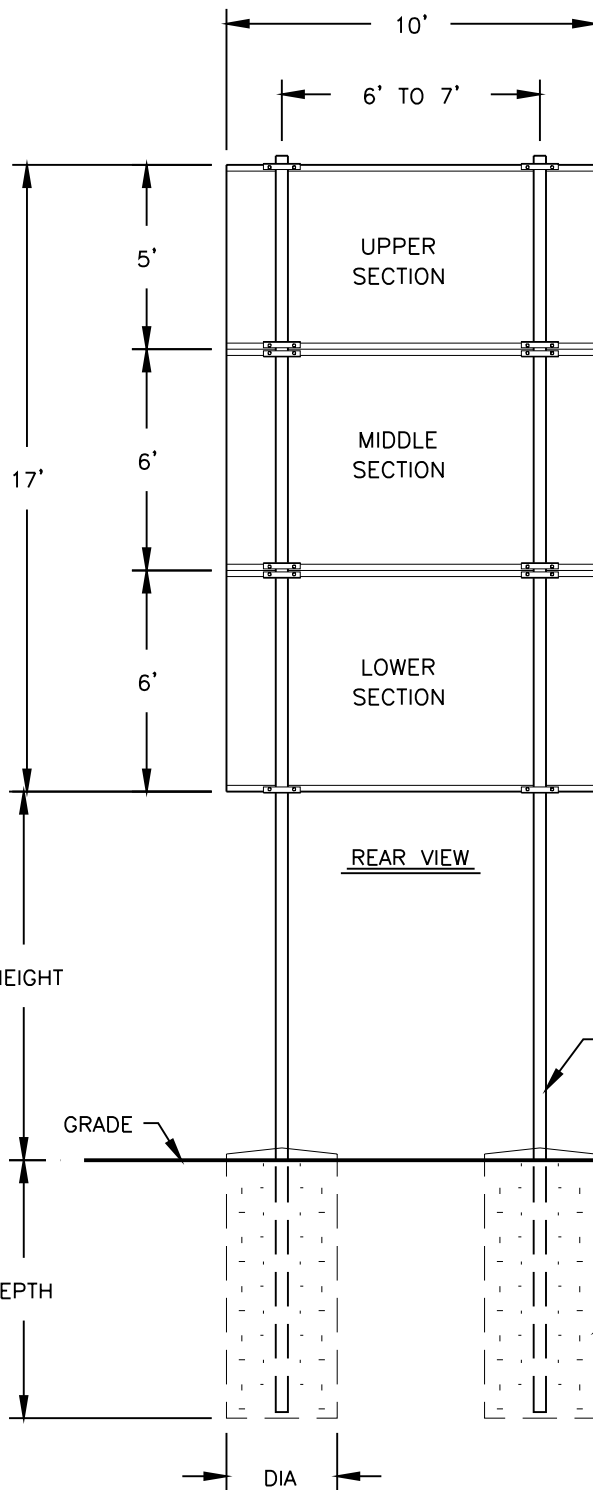
There are several digit harnesses located near a 3" hole at the bottom of the upper section and the top of the lower section that must be routed to the connector plate located at the bottom of the middle section as shown in **Drawing A-46539**.

1. Open the access doors and route these harnesses through the 3" holes provided at the top, bottom and middle of the middle section.
2. Remove the cover from the connector enclosure.
3. Connect the plugs on the digit harnesses to the mating jacks in the connector plate. Refer to **Drawing A-46563**.
4. Match the numbers on the plugs with the numbers next to the jacks in the connector plate.

Included with the digit harnesses is a 4-pin plug labeled "A1-17" (refer to **Drawing A-46545**) which is the signal to the lamp driver (A1). Also included is a 9-pin plug labeled "A1 Power" which is the power to the lamp driver "A1".

Connect the 4-Pin plug (A1-17) from the entrance to the 4-Pin jack located next to the connector panel. Connect the 9-pin plug labeled "A1 Power" to the 9-pin jack labeled "A1 Power" in the connector panel.

Power and signal wires from the lamp driver (A2) to the entrance are already connected.



WIND SPEED	HEIGHT (FT)	BEAM SECTION	FOOTINGS DEPTH X DIA
70 MPH	10	W10x21	8' x 3'
	15	W10x29	9' x 3'
80 MPH	10	W14x26	9' x 3'
	15	W12x31	10 1/4' x 3'
90 MPH	10	W14x30	10 1/4' x 3'
	15	W12x36	11 1/2' x 3'

A NOTE ABOUT BEAM NOMENCLATURE: FOR A TYPICAL BEAM, W10 X 21 FOR EXAMPLE, "W" STANDS FOR "WIDE-FLANGE BEAM". THE FIRST NUMBER (10) IS THE APPROXIMATE FRONT TO REAR DIMENSION OF THE BEAM IN INCHES. THE SECOND NUMBER (21) IS THE WEIGHT PER FOOT IN POUNDS. THIS NUMBERING IS STANDARD IN THE STEEL INDUSTRY. WIDTHS VARY FROM 10" TO 14" IN THIS CHART.

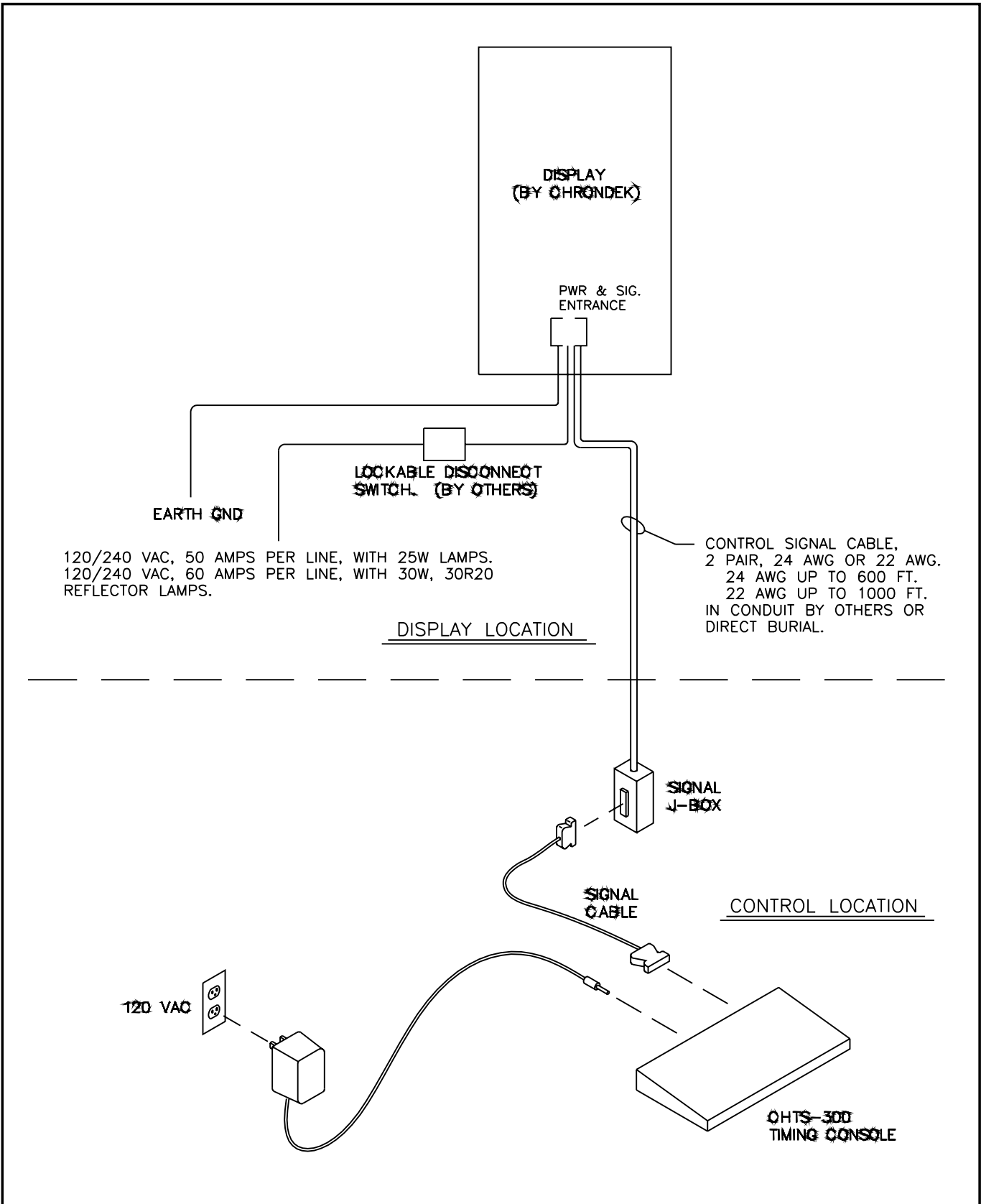
INFORMATION ON FOOTINGS IS NOT A SPECIFICATION, BUT A RECOMMENDATION ONLY, BASED ON ASSUMED SOIL BEARING PRESSURE OF 4000 LBS/FT<sup>2</sup>.

SOIL BEARING PRESSURE AT THE SITE MUST BE DETERMINED BY A SAMPLE TEST PRIOR TO SPECIFYING ACTUAL FOOTINGS.

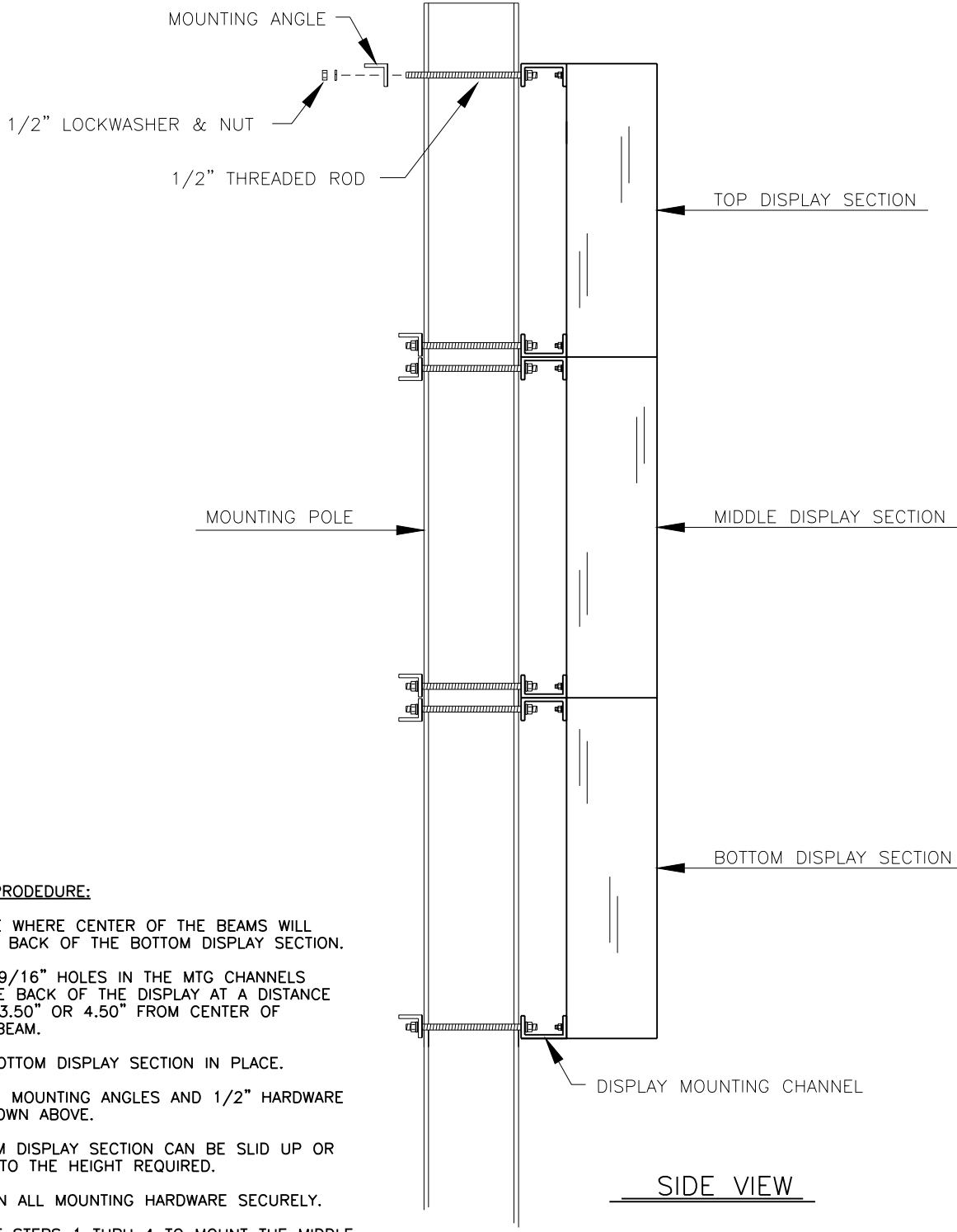
CHRONDEK ASSUMES NO RESPONSIBILITY FOR STRUCTURES INSTALLED BY OTHERS.

DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: CHRONDEK DISPLAYS			
TITLE: FOOTING & BEAM, CH-2024V			
DES. BY: CF	DRAWN BY: CF		DATE: 11 MAR 91
APPR. BY: AVB	1081-R08A-46492		
SCALE: 1=60			

REV.	DATE	DESCRIPTION	BY	APPR.
1	3 FEB 92	CHANGED HEIGHT FROM 12' TO 15' IN HEIGHT COLUMN OF CHART ALSO CHANGED SOME OF THE BEAM AND FOOTING SIZES.	CFICK	



DAKTRONICS, INC. BROOKINGS, SD 57006				
PROJ: CHRONDEK DISPLAYS				
TITLE: SYSTEM LAYOUT, CH-2024V				
DES. BY: CF		DRAWN BY: CF		DATE: 12 MAR 91
1	29 APR 91	CHANGED SIGNAL CABLE SPEC.'S.	CF	
REV.	DATE	DESCRIPTION	BY	APPR.
		REVISION		APPR. BY: AVB
		SCALE: 1 = 1		1081-R04A-46533



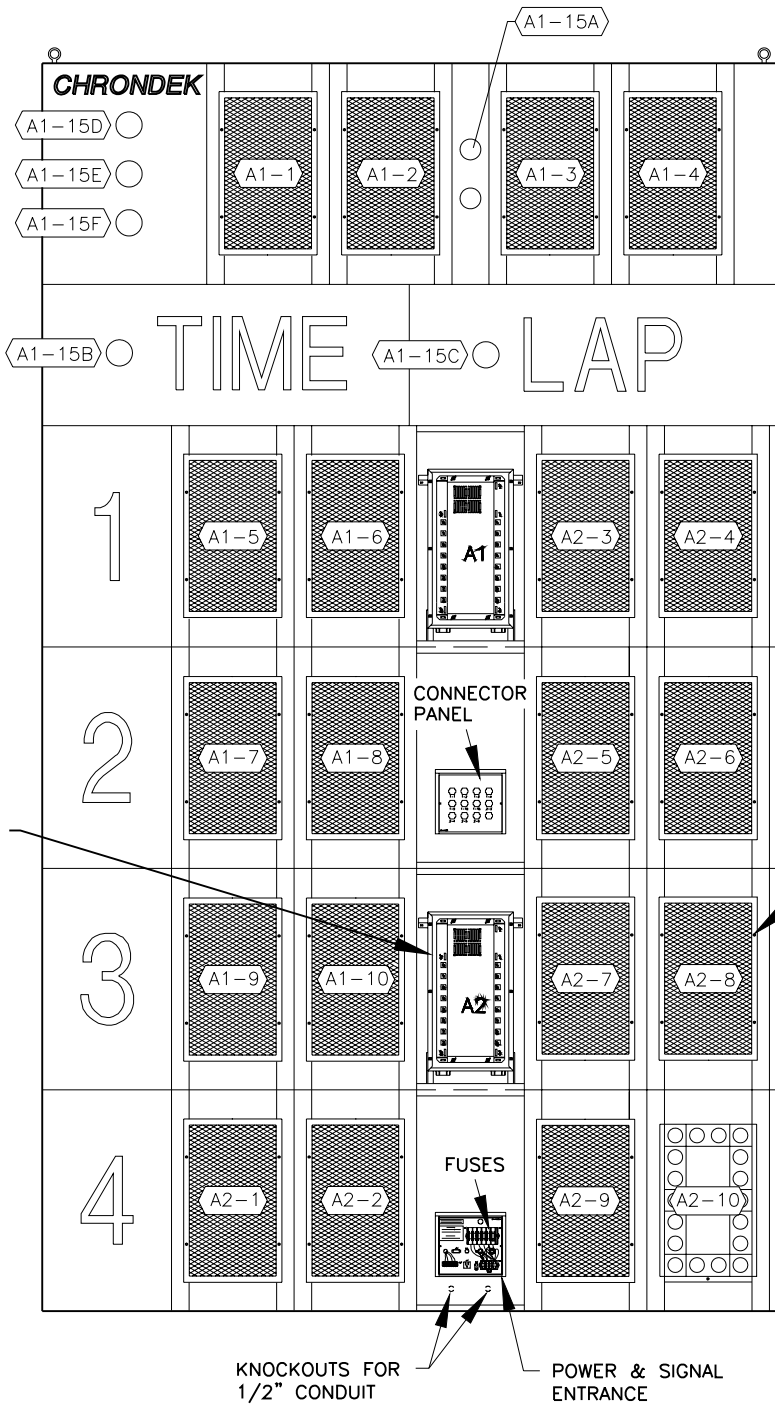
**MOUNTING PRODEDURE:**

- 1.) LOCATE WHERE CENTER OF THE BEAMS WILL BE ON BACK OF THE BOTTOM DISPLAY SECTION.
- 2.) DRILL 9/16" HOLES IN THE MTG CHANNELS ON THE BACK OF THE DISPLAY AT A DISTANCE OF ± 3.50" OR 4.50" FROM CENTER OF EACH BEAM.
- 3.) LIFT BOTTOM DISPLAY SECTION IN PLACE.
- 4.) ATTACH MOUNTING ANGLES AND 1/2" HARDWARE AS SHOWN ABOVE.
- 5.) BOTTOM DISPLAY SECTION CAN BE SLID UP OR DOWN TO THE HEIGHT REQUIRED.
- 6.) TIGHTEN ALL MOUNTING HARDWARE SECURELY.
- 7.) REPEAT STEPS 1 THRU 4 TO MOUNT THE MIDDLE AND TOP SECTION INTO PLACE.
- 8.) AGAIN ALSO TIGHTEN MOUNTING HARDWARE SECURELY ON MIDDLE AND TOP SECTIONS.

SIDE VIEW

DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: CHRONDEK DISPLAYS			
TITLE: DISPLAY MOUNTING, CH-2024V			
DES. BY: CF		DRAWN BY: CF	
		DATE: 12 MAR 91	
REVISION	APPR. BY: AVB	1081-R10A-46534	
	SCALE: 1=2		

REV.	DATE	DESCRIPTION	BY	APPR.



A1 & A2 ARE ENCLOSED LAMP DRIVERS. (COVERS REMOVED TO SHOW DRIVER)

REMOVE THESE (4) SCREWS TO REMOVE SCREEN FOR LAMP ACCESS. (TYPICAL)

KNOCKOUTS FOR 1/2" CONDUIT  
POWER & SIGNAL ENTRANCE

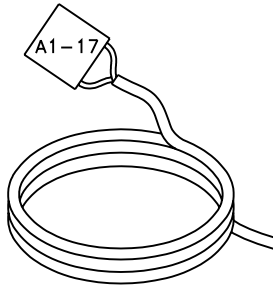
**NOTE:**  
FOUR HINGED ACCESS PANELS REMOVED TO SHOW LAMP DRIVERS, ENTRANCE ENCLOSURE AND DIGIT HARNESS CONNECTOR PANEL LOCATIONS.

LAMP DRIVER NO.      DRIVER OUTPUT CONNECTOR NO.  
 A1-8 = LAMP DRIVER NO. AND CONNECTOR NO. WIRED TO THAT DIGIT.  
 A1-15B = LAMP DRIVER NO., CONNECTOR NO., AND PIN NO. WIRED TO THAT INDICATOR.  
 SEGMENT (PIN) NO.

DAKTRONICS, INC. BROOKINGS, SD 57006		
PROJ: CHRONDEK DISPLAYS		
TITLE: COMPONENT LOCATIONS, CH-2024V		
DES. BY: CF	DRAWN BY: CF	DATE: 13 MAR 91
REVISION	APPR. BY: AVB	1081-R04A-46539
	SCALE: 1=30	

REV.	DATE	DESCRIPTION	BY	APPR.

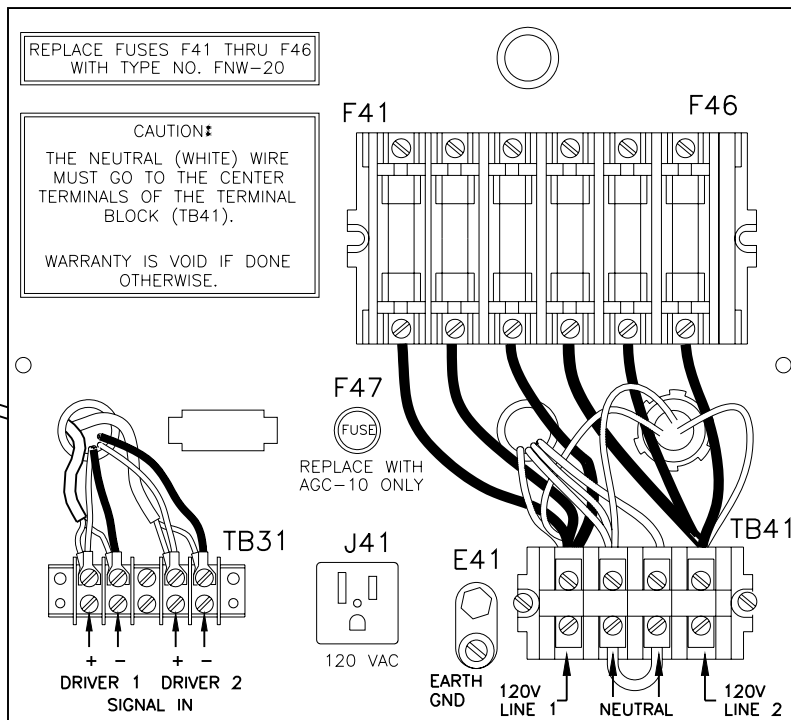
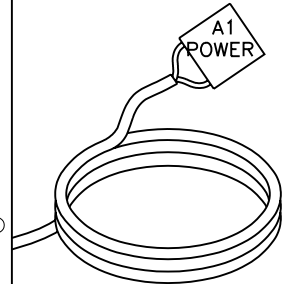
4-PIN JACK CONNECTS TO 4-PIN PLUG FROM LAMP DRIVER (A1) AT BOTTOM OF MIDDLE SECTION, FOR SIGNAL CONNECTION.



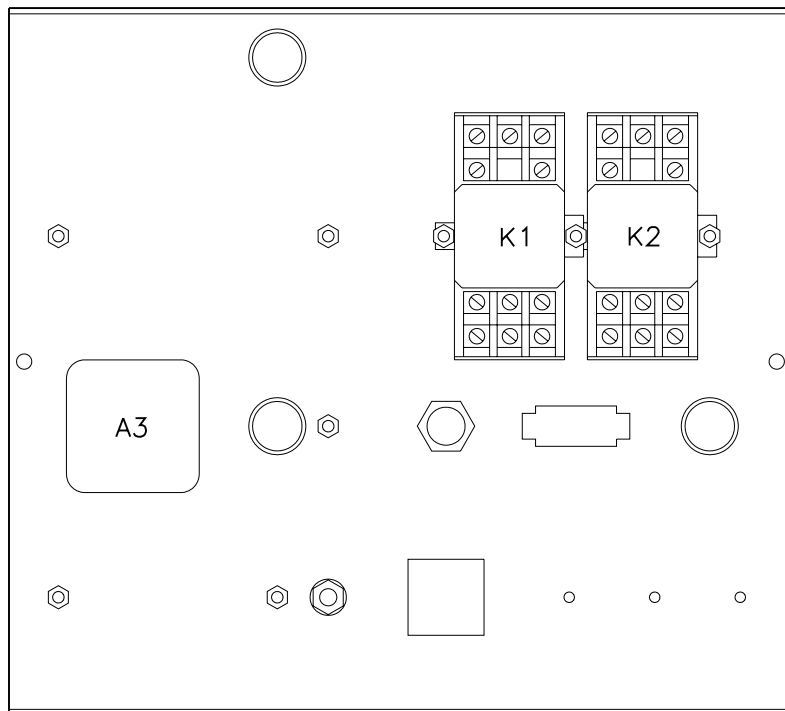
REPLACE FUSES F41 THRU F46 WITH TYPE NO. FNW-20

**CAUTION:**  
THE NEUTRAL (WHITE) WIRE MUST GO TO THE CENTER TERMINALS OF THE TERMINAL BLOCK (TB41).  
WARRANTY IS VOID IF DONE OTHERWISE.

9-PIN PLUG CONNECTS TO 9-PIN JACK IN THE CONNECTOR PANEL LABELED "A1 POWER", TO PROVIDE POWER TO THE "A1" LAMP DRIVER.



FRONT VIEW



REAR VIEW

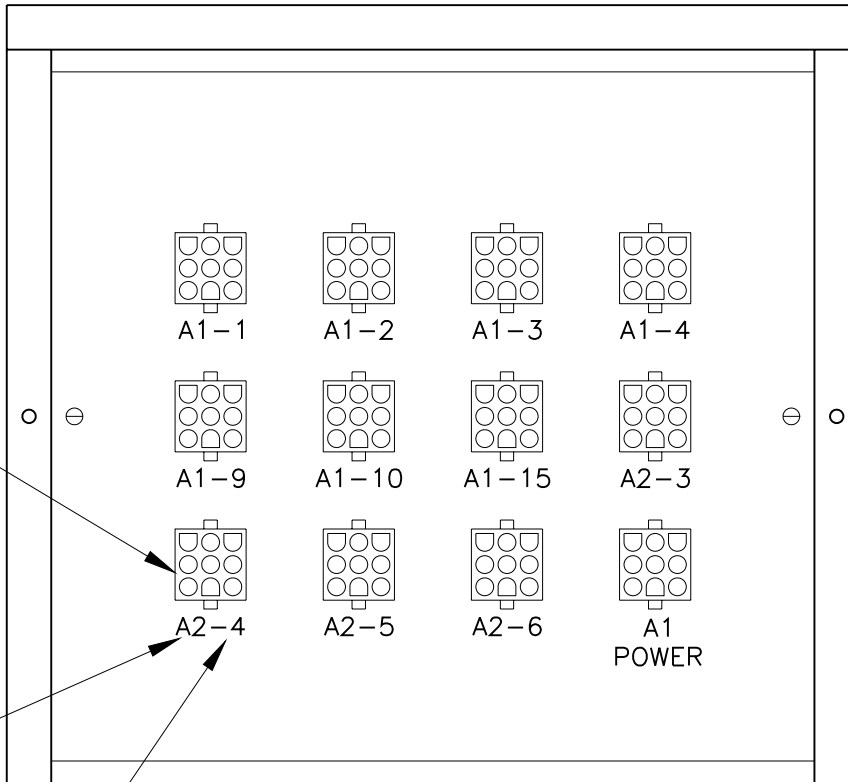
DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: CHRONDEK DISPLAYS			
TITLE: PWR & SIG ENTRANCE COMPONENTS, CH-2024V			
DES. BY:	DRAWN BY: CF	DATE: 13 MAR 91	
REVISION	APPR. BY:	1081-R04A-46545	
	SCALE: 1=3		

1	10 MAY 91	REMOVED 4-PIN PLUG "A2". MOVED WIRE FROM FUSE F43/TB41-4. TO FUSE F43/TB41-1. ADDED "A1 POWER" PLUG.	CF	
REV.	DATE	DESCRIPTION	BY	APPR.

9-PIN JACK  
(TYP)

LAMP DRIVER NO.

LAMP DRIVER  
PLUG/DIGIT NO.  
THAT PLUGS INTO  
9-PIN JACK.



FRONT VIEW

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: CHRONDEK DISPLAYS

TITLE: CONNECTOR PLATE, CH-2024V

DES. BY: CF

DRAWN BY: CF

DATE: 13 MAR 91

REVISION

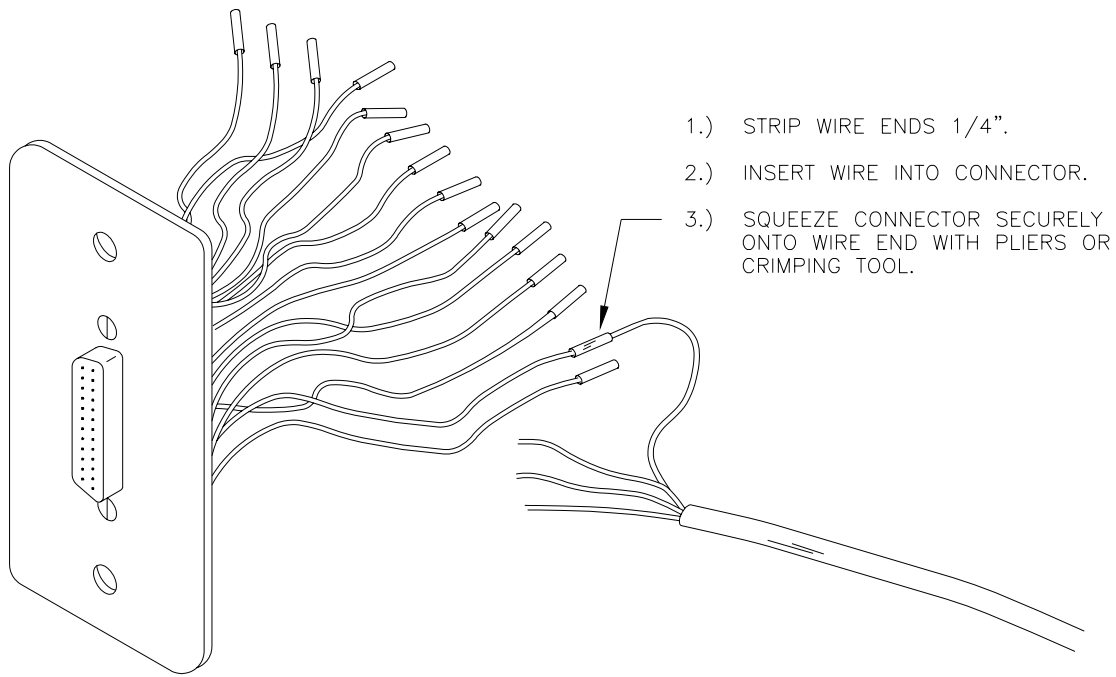
APPR. BY: AVB

SCALE: 1=3

1081-R04A-46563

REV.	DATE	DESCRIPTION	BY	APPR.
1	13 MAY 91	CHANGED 9-PIN JACK LABELING.	CF	

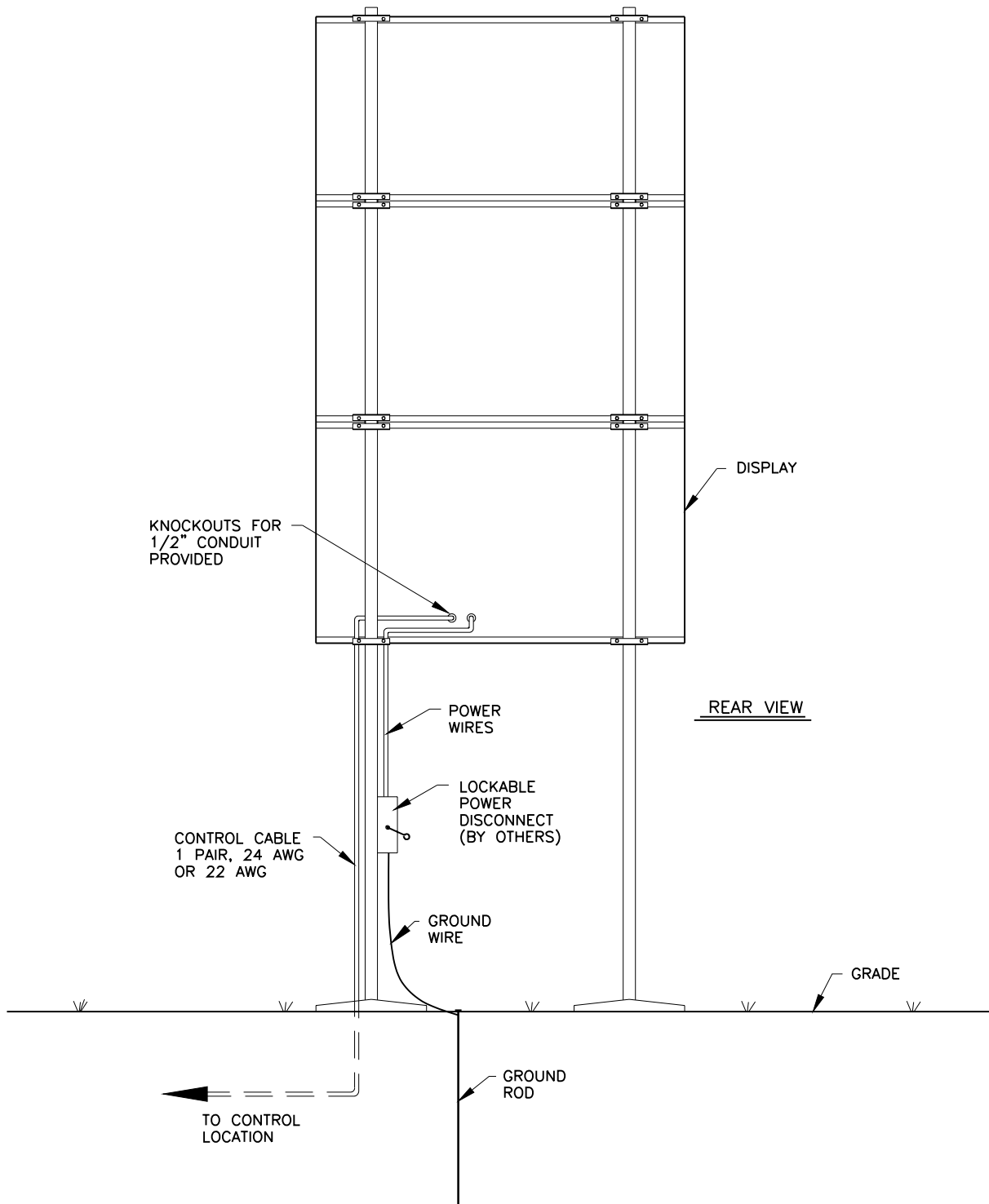




- 1.) STRIP WIRE ENDS 1/4".
- 2.) INSERT WIRE INTO CONNECTOR.
- 3.) SQUEEZE CONNECTOR SECURELY ONTO WIRE END WITH PLIERS OR CRIMPING TOOL.

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	

DAKTRONICS, INC. BROOKINGS, SD 57006				
2	10MAR97	ADDED WIRES TO PINS 13,20,21,24,25	EB	PROJ: CHRONDEK
1	4 JUN 92	CHANGED "SIGNAL INPUTS" TO "SIGNAL OUTPUTS"	C FICK	TITLE: COLOR CODE, 25-PIN J-BOX
REV.	DATE	DESCRIPTION	BY	DES. BY: CF      DRAWN BY: CF      DATE: 1 MAY 91
				REVISION      APPR. BY: AVB      SCALE: 1=2      1067-R10A-47207



SCOREBOARD MUST BE CONNECTED TO A GROUND ROD AT SCOREBOARD LOCATION.

DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: CHRONDEK DISPLAYS	
TITLE: ELECTRICAL INSTALLATION, CH-2024V	
DES. BY: CF	DATE: 13 MAY 91
REVISION	APPR. BY: AVB
SCALE: 1=60	1081-R10A-47326

REV.	DATE	DESCRIPTION	BY	APPR.

# Section 3 : Maintenance & Troubleshooting

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## IMPORTANT NOTES:

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

### 3.1 Lamp Replacement

---

**Reference Drawing:** Digit Service ..... **Drawing A-27674**

The primary service required by the CH-2024V display is to replace burned-out lamps. Refer to **Drawing A-27674** for an illustration of how to access the digit lamps for replacement. Standard replacement lamps for the digits are 120V, 25W frosted medium base and may be obtained at your local store or directly from Daktronics, part number DS-1029. Some displays may be equipped with 120V, 30W reflector type 30R20 lamps, Daktronics part number DS-1126.

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

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

Color	Part Number
Amber	DS-1184
Green	DS-1185
Red	DS-1186

Do not use lamps larger than those originally installed in the display. Using higher powered 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

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**Reference Drawings:** Lamp Driver, 16 Col. W/ Fan ..... **Drawing A-37070**  
Component Locations, CH-2024V ..... **Drawing A-46539**

In the display, the task of switching lamps on and off is performed by the lamp driver. **Drawing A-46539** in **Section 2** shows the location of the lamp drivers in the display. **Drawing A-37070** is an illustration of the lamp driver and the fuses located in it.

The lamp driver has 22 connectors providing power and signal inputs and outputs to the digits. The functions of these connectors are as follows:

Connector No.	Function
1-16	Outputs to digits

17	Signal Input
18	Power input for outputs 1-8 (120V)
19	Power input for driver logic and fan (120V)
20	Power input for outputs 9-16 (120V)
24	Dim option selector

In **Drawing A-46539**, the numbers on the digits refer to the lamp driver output connector wired to each digit.

### 3.3 Digit Segmentation

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**Reference Drawing:** Segments, 4x7 Lamp Matrix Digit..... **Drawing A-37685**

In a digit certain lamp always go on and off together. These groupings of lamps are known as "segments". Each digit has eight segments, referred 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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**Reference Drawing:** Schematic, Pwr&Sig, CH-2024V ..... **Drawing A-46437**  
Pwr&Sig Entrance Components ..... **Drawing A-46545**

The schematic diagram in **Drawing A-46437** shows the power and signal inputs into the display and to the lamp driver. The component numbers correspond to those shown in **Drawing A-46545**.

### 3.5 Troubleshooting

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

Observed Problem	Possible Cause
One lamp won't light	<ul style="list-style-type: none"> <li>• Burned-out lamp</li> <li>• Broken wire behind digit</li> </ul>
Digit segment won't light	<ul style="list-style-type: none"> <li>• Broken wire</li> <li>• Poor contact at driver connector</li> <li>• Internal driver malfunction</li> </ul>
Entire digit won't light	<ul style="list-style-type: none"> <li>• Broken wire</li> <li>• Poor contact at connector, pin 7</li> <li>• Fuse blown in driver</li> </ul>
Half the display won't light	<ul style="list-style-type: none"> <li>• Service breaker tripped</li> <li>• Main fuse blown</li> <li>• Poor contact at main power connection</li> <li>• P18 disconnected</li> </ul>

Entire display won't light	<ul style="list-style-type: none"> <li>• Power disruption</li> <li>• Poor signal connection</li> <li>• Driver logic fuse blown</li> <li>• Control not connected to display</li> <li>• P20 disconnected</li> </ul>
Segment stays lit	<ul style="list-style-type: none"> <li>• Broken wire behind digit</li> <li>• Internal driver malfunction</li> </ul>
Garbled display	<ul style="list-style-type: none"> <li>• Control malfunction</li> <li>• Internal driver malfunction</li> </ul>

If a problem is observed in one digit, the cause may be isolated by swapping plugs on the driver (connect the plug from the digit into a different jack). If the same digit shows the same problem, the cause may be in the digit or the wiring. If the problem moves to another digit, then the cause is probably an internal driver problem.

Use a volt meter 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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Part Number of Description	Type	Part Number
Lamp Driver		0A-1033-0122
J-Box, CHTS-300 Timer		0A-1067-0056
Fuse, Main Power, 20A	FNW-20	F-1016
Fuse, Lamp Driver, 10A	AGC-10	F-1006
Fuse, Driver Logic, 1/2A	AGC-1/2	F-1000
Digit Lampbank, 24" 4x7		0A-1027-0071
Digit Screen, 24" 4x7		0S-1064-0002
Socket, Med. Base		X-1046
Lamp, 25W Frosted		DS-1029
Lamp 30W Reflector	30R20	DS-1126
Lamp, 55W Clear Flood	85PAR38	DS-1101
Lamp, 85W Amber Flood	85PAR38	DS-1184
Lamp, 85W Green Flood	85PAR38	DS-1185
Lamp, 85W Red Flood	85PAR38	DS-1186

### 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 fails, Daktronics will send the customer a replacement. The customer, in turn, sends the failed component to Daktronics. This not only saves money but 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. **Driver Packaging Instructions:** 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). The shipping box (Daktronics part number PK-1006) should be used along with the foam.
3. **Where to Send:** Contact your local representative prior to shipment to acquire a Return Material Authorization Number (RMA#). This will speed up the repair of your unit.

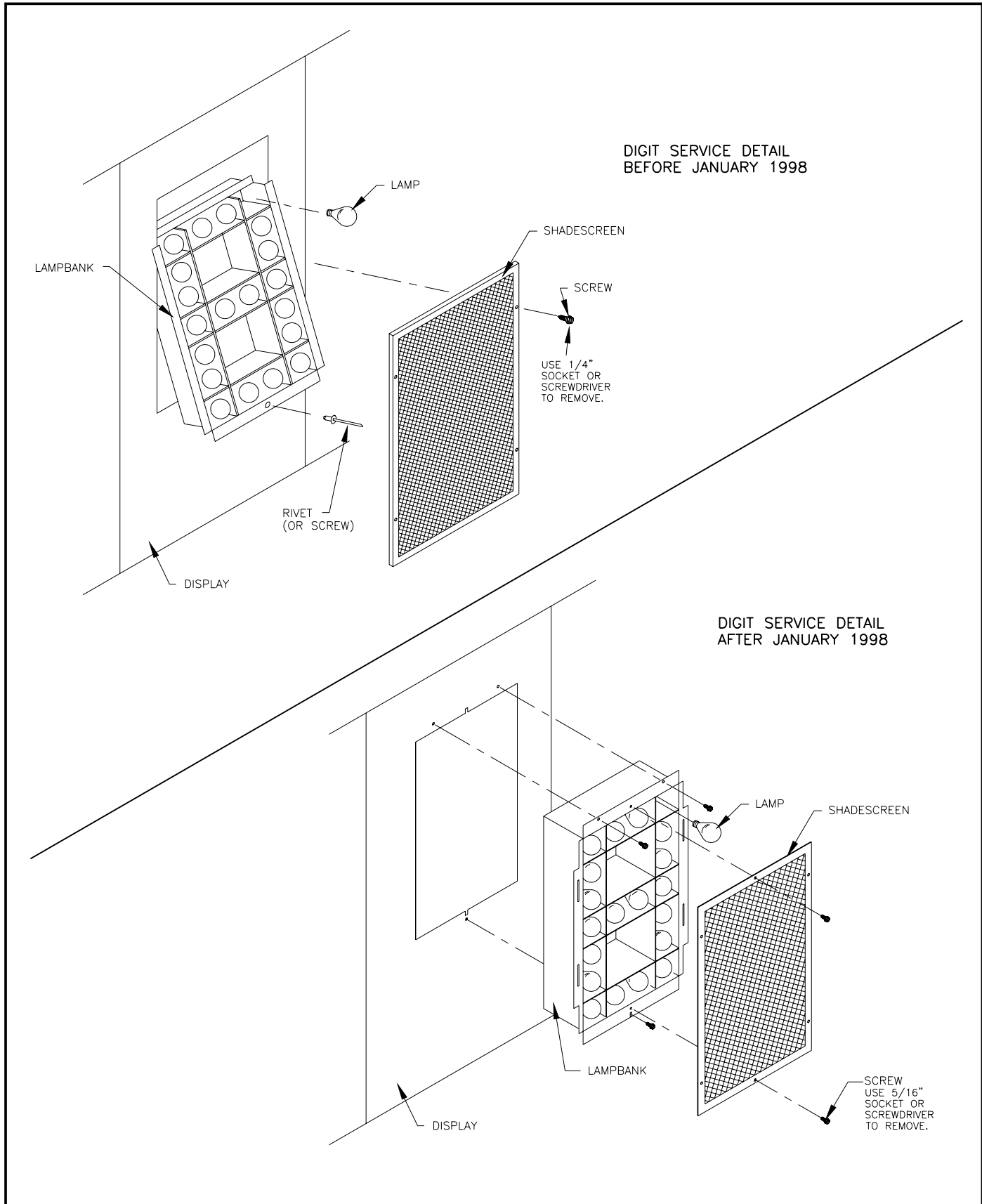
When returning defective items under the exchange program, please use the UPS Blue Return Tags found in the package containing the exchange unit sent from Daktronics. This will speed up the transaction and help avoid confusion when the part is returned to Daktronics. **The defective item must be returned 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 32<sup>nd</sup> Avenue  
Brookings, SD 57006

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

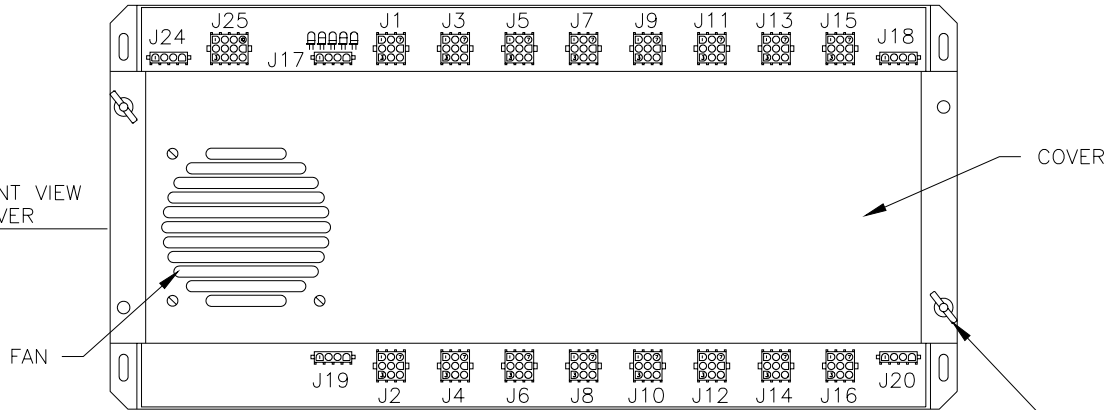
**Customer Service Fax:** 1-605-697-4444

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



DAKTRONICS, INC. BROOKINGS, SD 57006				
PROJ: OUTDOOR SCOREBOARDS				
TITLE: DIGIT SERVICE				
DES. BY:		DRAWN BY: TERRY P.		DATE: 31 JULY 86
REVISION	APPR. BY:	1064-E10A-27674		
SCALE: 1=15				
2	10 NOV 97	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	
REV.	DATE	DESCRIPTION	BY	APPR.

DRIVER FRONT VIEW WITH 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

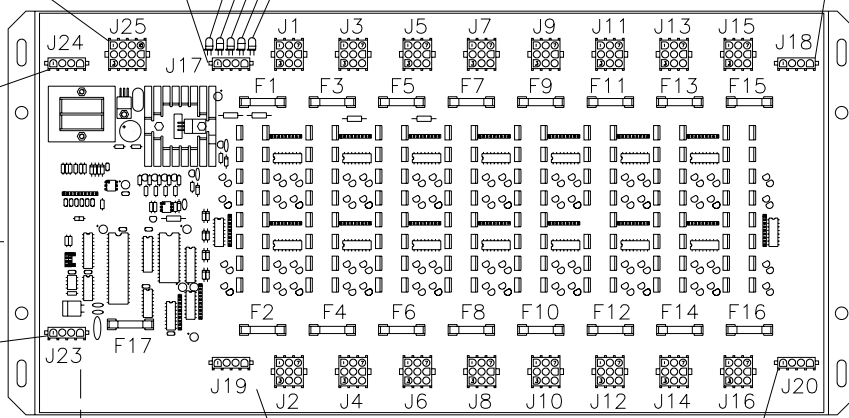
J24

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



J19

PIN	FUNCTION
1	NEUTRAL
2	NEUTRAL
3	120V HOT
4	120V HOT

J20

PIN	FUNCTION
1	LAMP NEUT
2	LAMP NEUT
3	LAMP HOT 9,11,13,15
4	LAMP HOT 10,12,14,16

PLUG FROM FAN IN COVER CONNECTS TO J23

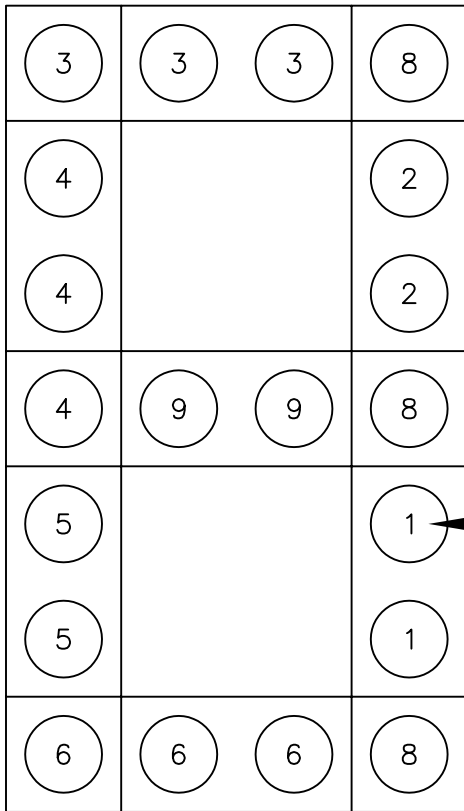
F1 THRU F16 ARE TYPE AGC-10, DAKTRONICS PART NUMBER F-1006. F17 IS TYPE AGC-1/2, DAKTRONICS PART NUMBER F-1000

REV.	DATE	DESCRIPTION	BY	APPR.
2	29 APR 97	ADDED TABLES OF PINS AND FUNCTIONS.	AVB	AVB
1	5 MAR 91	CHANGED FROM "B" TO "A" SIZE DWG.	CF	

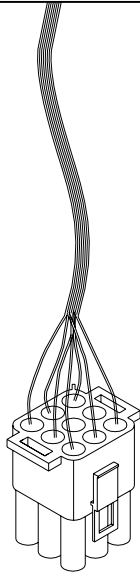
DAKTRONICS, INC. BROOKINGS, SD 57006				
PROJ:	MULTIPLEX CONTROLLERS			
TITLE:	LAMP DRIVER, 16 COL., W/FAN			
DES. BY:	JLH	DRAWN BY:	JLH	DATE: 20 FEB 89
REVISION	APPR. BY:	1033-R04A-37070		
	SCALE: 1=5			





4 x 7 LAMP MATRIX DIGIT

CONNECTOR PIN NUMBER  
WIRED TO THAT SEGMENT

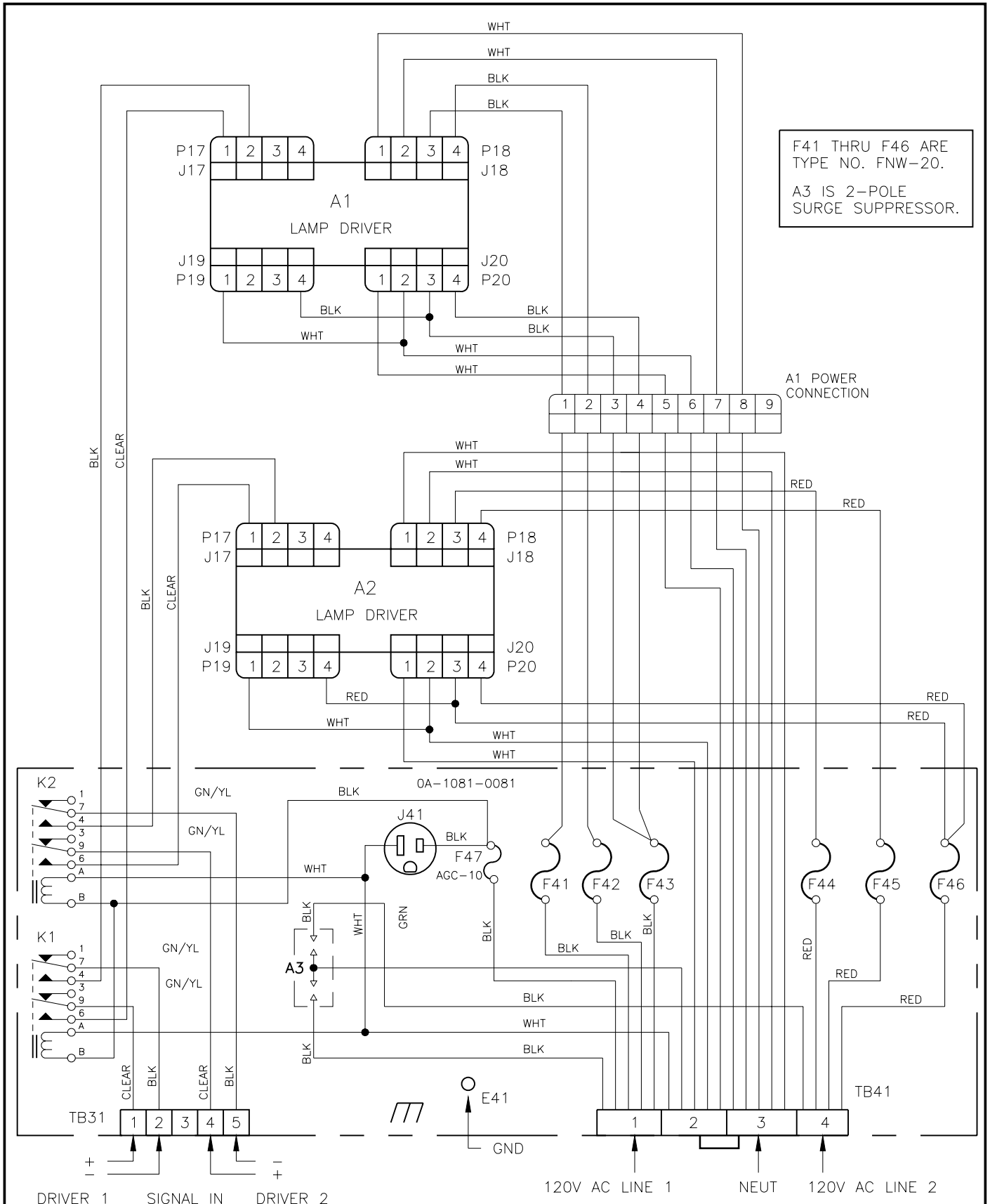


LAMP DRIVER  
CONNECTOR

COLOR CODE		
PIN NO.	WIRE COLOR	DRIVER SEGMENT
1	ORANGE	C
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:	1064-R04A-37685
	SCALE: 1=1	

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



F41 THRU F46 ARE  
TYPE NO. FNW-20.  
A3 IS 2-POLE  
SURGE SUPPRESSOR.

A1 POWER  
CONNECTION

DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: CHRONDEK DISPLAYS	
TITLE: SCHEMATIC, PWR & SIG, CH-2024V	
DES. BY: AVB	DRAWN BY: CF
DATE: 26 FEB 91	
REVISION	APPR. BY: AVB
SCALE: 1=1	1081-R03A-46347

REV.	DATE	DESCRIPTION	BY	APPR.
2	22FEB95	ADDED PHANTOM LINE TO SHOW OA-1081-81 ASSEMBLY.	RLONG	
1	13 MAY 91	ADDED "A1 POWER CONNECTION"	CF	