



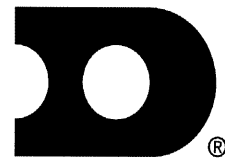
**Drag Race Timing Display
Model CH-36-DS**

Installation and Service Manual

ED-4760

**ED-4760
Product#1081
Rev. 8 - 27July98**

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DAKTRONICS, INC.

Setting New Standards Worldwide

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Table of Contents

- 1. Introduction 1-1**

- 2. Installation 2-1**
 - 2.1 Installation 2-1
 - 2.2 Beam and Footing Selection 2-2
 - 2.3 Display Mounting 2-2
 - 2.4 Electrical Installation 2-3
 - 2.4.1 Control Signal Cable 2-3
 - 2.4.2 Power Wiring 2-3
 - 2.4.3 Digit Connection for ET Display 2-4
 - 2.4.4 Power Wiring for Backlit Sponsor Panel 2-4
 - 2.5 CH-36-DS Win Light Installation for Non Daktronics Supplied Win Light 2-5

- 3. Service 3-1**
 - 3.1 Lamp Replacement 3-1
 - 3.2 Lamp Driver 3-1
 - 3.3 Digit Segmentation 3-1
 - 3.4 Schematic 3-2
 - 3.5 Troubleshooting 3-2
 - 3.6 Exchange/Replacement Parts 3-3

Section 1: Introduction

Reference Drawing: Display, CH-36-DS **Drawing A-37834**

Drawing A-37834 shows a complete Daktronics CH-36-DS display consisting of three sections: MPH display, ET display, and ADV/Sponsor Panel for advertising or drag strip logo. A typical installation includes two of these displays, one for each lane. Each display can be comprised of only the MPH section, both MPH and ET sections, or all three sections. If only the single MPH section is used, the latest versions of the Daktronics C-33 timer can display the speed and ET alternately on the same display.

This manual covers installation of the CH-36-DS display and provides information for servicing the digits and wiring. Setup of other control equipment or operation of the C-33 timer are not covered in this manual.

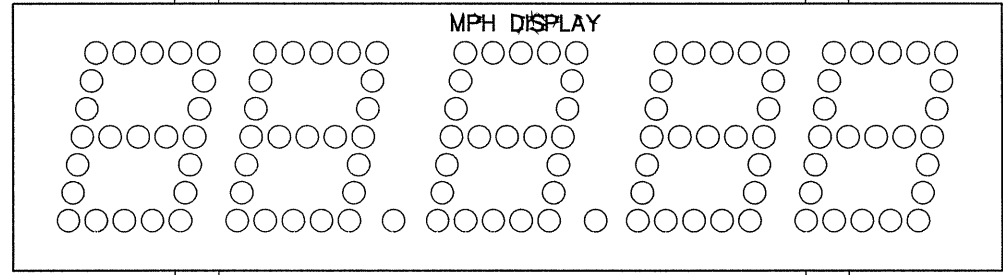
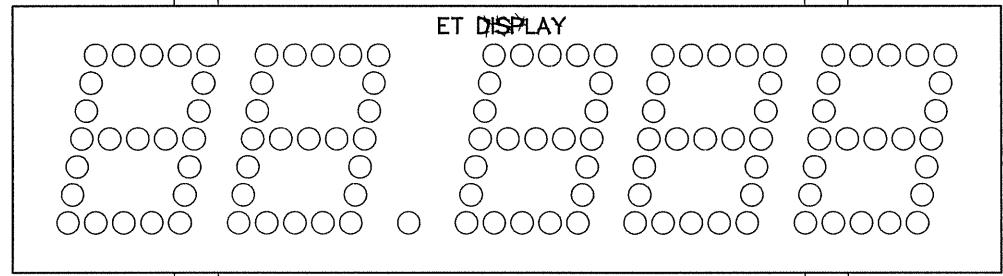
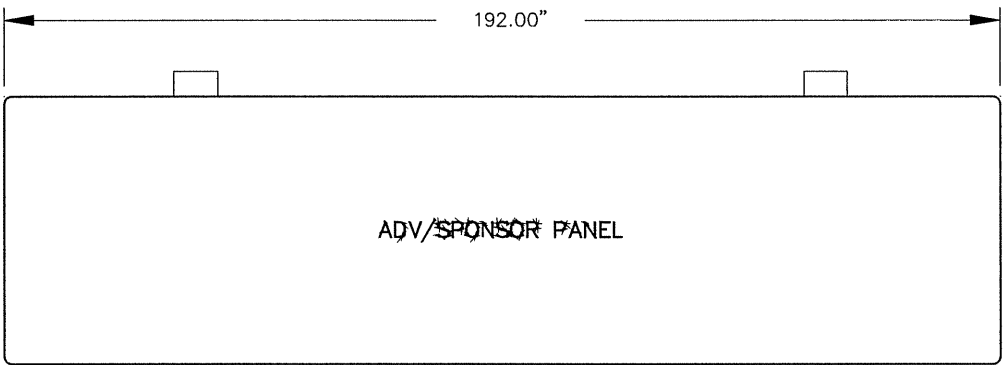
The following table shows the approximate weights of the individual sections of the CH-36-DS, as well as the maximum power requirements of each section:

Section	Uncrated Weight (lbs)	Crated Weight (lbs)		Maximum Power Demand
		1 per Crate	2 per Crate	
ET Display	290	600	975	3510 Watts
MPH Display	290	600	975	3510 Watts
Adv/Sponsor Panel	275	570	925	1500 Watts

⚠ IMPORTANT SAFEGUARDS

✓ *Do not disassemble the control console or the electronic controls of the display. If you do, the warranty will be void.*

⊘ *Disconnect power when the display is not in use, or when servicing. Prolonged power-on may shorten the life of electronic components.*



UP TO 24" MAX

OVERALL DIMENSIONS
~~48.30" H x 192.00" W x 6" D PER SECTION~~
 (UP TO 24" SPACE BETWEEN SECTIONS)

DIGITS ARE ~~36"~~ HIGH, 5 x 7 LAMP MATRICES

DIGIT LAMPS ARE ~~30W~~ FROSTED, REFLECTOR TYPE ~~30R20~~

MAXIMUM POWER DEMAND PER SECTION IS
 ADV/SPONSOR DISPLAY ~~1275W~~
 ET DISPLAY ~~3480W~~
 MPH DISPLAY ~~3510W~~

4	16 FEB 93	CHANGED ET DISPLAY TO 5 DIGITS. ADDED EXTRA DECIMAL TO MPH DISPLAY. CHANGED WATTS OF ET & MPH DISPLAY.	C FICK		DAKTRONICS, INC. BROOKINGS, SD 57006	
3	16 JUN 92	CHANGED FROM "B" TO "A" SIZE DWG. CHANGED POWER REQUIREMENTS TO WATTS PER SECTION.	C FICK		PROJ: CHRONDEK	
2	12 JUL 90	EXPANDED ON LAMP SPEC.	JLH		TITLE: DISPLAY, CH-36-DS	
REV.	DATE	DESCRIPTION	BY	APPR.	DES. BY:	DRAWN BY: ARLENE R. DATE: 4 MAY 89
					REVISION	APPR. BY:
					SCALE: NONE	1081-R08A-37834

Section 2: Installation

Reference Drawings:	Display Mounting	Drawing A-37771
	Driver Enclosure Layout	Drawing A-37773
	Beam Spacing	Drawing A-39054
	Electrical Installation	Drawing A-39066
	Installation, Adv	Drawing A-43370
	Installation, Finish Light	Drawing A-43388
	Power Wiring and Grounding	Drawing A-45220
	Control Signal Connection	Drawing A-51939
	System Layout	Drawing A-51940

2.1 General Installation

Drawing A-51940 illustrates the general system layout. The procedure for installing the CH-36-DS display is as follows:

1. Select beam and footing recommendations from **Table 1 (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 displays to the beams as described in **Section 2.3**.
5. Route power and signal wires into the displays as described in **Section 2.4**.

2.2 Beam and Footing Selection

Table 1 (on the following page) contains recommendations for beams and footings to support your display. The distance in the left column is from the ground to the bottom of the lowest section. The second column is wind velocity in miles per hour. Your choice from these columns depends upon your display location. **Drawing A-39054** shows typical beam and footing placement.

The beams listed are W-shape (wide flange) beams which provide maximum wind load strength for the weight and cost of the beams. Choose your beams under the appropriate headings for 1-Section, 2-Section, or 3-Section displays.

The calculations for footing diameters and depths assume footings in undisturbed soils, **NOT FILL SOILS**. Lateral bearing capacity of 300 psf per foot of depth in natural grade was used to derive these figures. The footing and beam recommendations for multiple section displays are figures with the maximum two foot space between sections.

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 soil and wind conditions. Daktronics recommends that W-sections of grade 36 steel be used for beams, and that 28-day (strength 3000 psi) concrete be used for footings.

❖ **DAKTRONICS ASSUMES NO RESPONSIBILITY FOR STRUCTURES INSTALLED BY OTHERS.** ❖

Table 1: Beam and Footing Selection Table

Dist. To Bottom of Lower Section	Design Wind Velocity (MPH)	ONE SECTION			TWO SECTION			THREE SECTION		
		Beam Required (2 each)	FOOTINGS		Beam Required (2 each)	FOOTINGS		Beam Required (2 each)	FOOTINGS	
			Diam (Ft)	Depth (Ft)		Diam (Ft)	Depth (Ft)		Diam (Ft)	Depth (Ft)
8	80	W8x13	2.50	4.50	W8x15	3.50	6.00	W10x21	4.50	7.50
12		W8x15	2.50	5.00	W8x17	4.00	6.50	W10x25	4.50	8.00
14		W8x17	3.00	5.50	W8x20	4.00	7.00	W12x27	5.00	8.50
16		W8x20	3.50	5.50	W8x24	4.00	7.50	W12x31	5.00	9.00
20		W8x24	3.50	6.00	W8x28	4.50	8.00	W10x39	5.50	9.00
8	90	W8x13	2.25	5.00	W8x17	4.00	6.50	W10x25	4.50	8.00
12		W8x15	2.50	5.50	W10x21	4.00	7.00	W12x27	5.00	8.50
14		W8x17	3.00	6.00	W10x21	4.50	7.50	W12x31	5.50	9.00
16		W8x20	3.00	6.50	W10x25	5.00	7.50	W12x36	5.50	9.50
20		W8x24	3.50	6.50	W10x29	5.00	8.00	W12x40	6.00	10.00
8	100	W8x13	2.50	5.50	W8x20	4.00	7.00	W12x27	5.00	8.00
12		W8x15	3.50	5.50	W10x25	4.50	7.50	W12x31	5.50	9.00
14		W8x17	3.50	6.00	W10x25	5.00	8.00	W12x36	5.50	10.00
16		W8x20	3.50	6.50	W10x29	5.00	8.50	W12x40	6.00	0
20		W8x24	4.00	7.00	W10x33	5.00	9.00	W12x50	6.00	10.00

These footing recommendations are based on an allowable soil bearing pressure of 3000 psf vertical 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 soil and wind conditions.

❖ DAKTRONICS ASSUMES NO RESPONSIBILITY FOR STRUCTURES INSTALLED BY OTHERS. ❖

2.3 Display Mounting

Drawing A-37771 shows the mounting procedure for a typical three-section display. The sections may be mounted with up to 24" of space between them.

✓ **NOTE:** The bolts that secure the display do not go through the beams, but run along both sides of the beam to clamp the section to the beams.

Start with the bottom of the lowest section and work your way up, adding brackets and sections as you go. The ET display, if included, has wires in plastic conduit that extend into the back of the MPH display. Remove the rubber hole plug from the top of the box protruding from the rear of the MPH display before lifting into place.

Once the display is in place, use mounting brackets provided and secure the bottom of the display to the beams as shown. Next secure the top of the display with another set of brackets. Make sure all bolts are tight.

Mount the next section above the first in the same manner. All three sections are mounted the same way at the desired spacing, not exceeding 24" between sections.

2.4 Electrical Installation

2.4.1 Control Signal Cable

For each display, two conductors of 24 AWG for distances up to 600 ft. or 22 AWG, for distances up to 1000 ft. are 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 to the wires leading from the connector in the cover, according to the table below and illustration in **Drawing A-51939**.

At the display, remove the cover from the box on the rear of the display, containing the enclosure as shown in **Drawing A-39054**. Remove the cover from the driver enclosure. Refer to **Drawing A-39066** for an illustration of the components inside the enclosure. Connect the signal wires to TB301 as indicated in the table below.

Signal Connections			
Control End		Display End	
J-box Term. No.	Wire Color	Display	TB301 Term No.
1	Red	Left	1 (+)
2	Black	Left	2 (-)
3	White	Right	1 (+)
4	Green	Right	2 (-)

2.4.2 Power Wiring

The display requires that two "hot" wires be run into a load center. The power demands for each display section are listed below. Add the values for each section you are installing to find the power required by each line.

Display Section	Line 1 (amps)	Line 2 (amps)
MPH	3.25	26.00
ET	24..25	4.75
Backlit ADV Panel	4.30	26.00

Install a lockable safety disconnect and load center to the display support beam as shown in **Drawing A-39066**. A three-conductor disconnect is recommended for proper protection from lightning 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 MPH display. Refer to **Drawing A-43370** for component locations. Connect wires as follows:

🔪 **NOTE:** Load Center Breaker numbers are for example only.

Load Center	Display Component	Description
Breaker 2	----	120V Main, Line 1
Breaker 3	----	120V Main, Line 2
Breaker 4A	TB401-1	Power, MPH and ET - Line 1
Breaker 4B	TB401-2	Power, MPH and ET - Line 1
Breaker 5A	TB401-5	Power MPH - Line 2
Breaker 5B	TB401-6	Power MPH - Line 2
Breaker 6	----	Power, ADV Panel - Line 1
Breaker 7	----	Power, ADV Panel - Line 2
Neutral	TB401-3 or 4	Neutral, MPH and ET
Ground	E401	Earth Ground, MPH and ET

2.4.3 Digit Connection for ET Display

Remove locknut from PVC conduit on the back of the ET display. Push plugs and cables, protruding from conduit, through the hole in the top of the driver enclosure on the back of the MPH display. Extend conduit into the top of the driver enclosure. Secure conduit with the locknut. Each plug has a number written on it. Carefully connect these plugs into the corresponding jacks on the driver enclosure jack panel.

2.4.4 Power Wiring for Backlit Sponsor Panel

The backlit sponsor/advertiser panel requires 2 "hot", 1 "neutral", and 1 "ground" wire, routed in ½" conduit (refer to **Drawings A-39066** and **A-43370** for illustrations). Connect these wires at the sponsor panel and load center as follows:

Load Center	Display Component	Description
Breaker 6	TB41-1	Power, Line 1
Breaker 7	TB41-3	Power, Line 2
Neutral	TB41-2	Neutral, both lines
Ground	E41	Earth Ground for display

✎ **NOTE:** Breaker numbers are for example only.

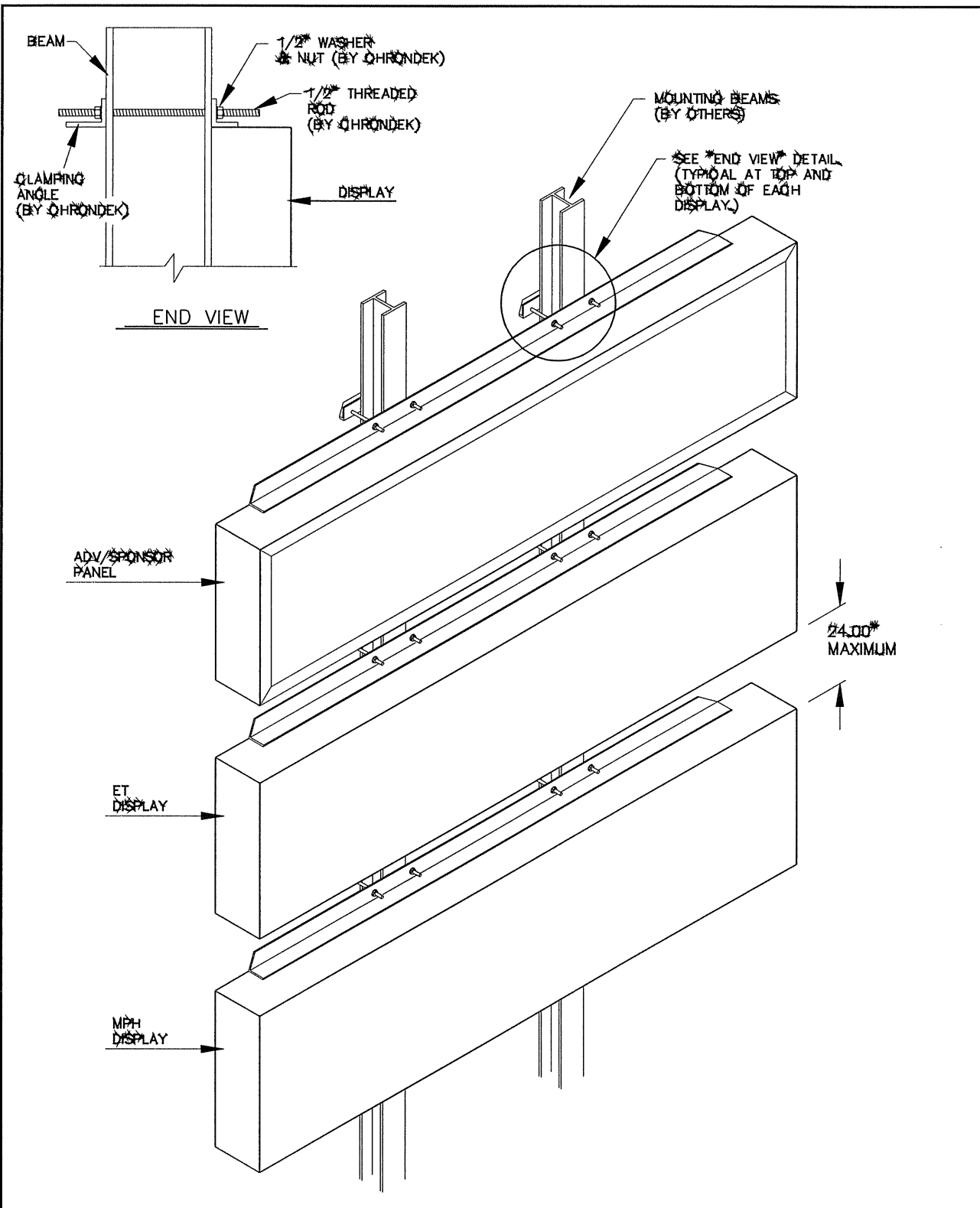
2.5 CH-36-DS Win Light Installation for Non Daktronics Supplied Win Light

NOTE: Refer to User's Manual **ED-5469** to install Daktronics supplied win lights.

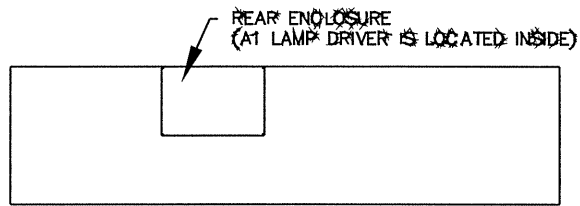
⚠ **WARNING:** Each lamp circuit can drive a maximum of 85 Watts. Therefore, a relay may be required to drive larger loads.

Drawing A-43388 describes the installation of a finish light on a CH-36-DS display.

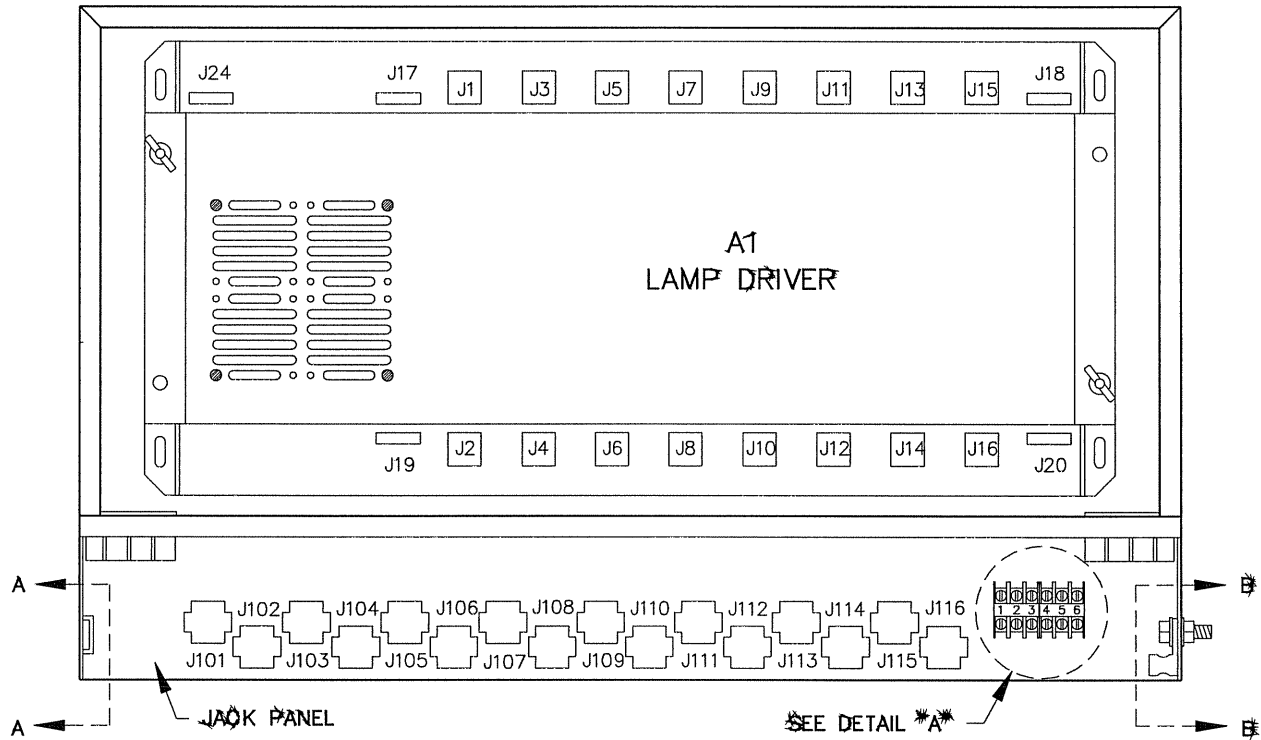
1. Drill a 1¼" diameter hole in the bottom of the rear enclosure on the 5-digit MPH display.
2. Remove the screws holding the cover on the rear enclosure and remove the cover.
3. Route cable from finish light along signal or power conduit through hole in bottom of rear enclosure on MPH display and plug into jack #110 on the connector plate (refer to **Drawing A-43388**).
4. Use cable ties to secure cable of conduit. Coil any excess cable and lay in bottom of rear enclosure.
5. Replace cover of rear enclosure and secure.



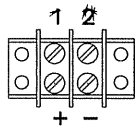
DAKTRONICS, INC. BROOKINGS, SD 57006				
2	16 JUN 92	CHANGED FROM "B" TO "A" SIZE DWG.	C FICK	
1	7 AUG 89	ADDED END VIEW DETAIL.	C FICK	
REV.	DATE	DESCRIPTION	BY	APPR.
		PROJ: CHRONDEK		
		TITLE: DISPLAY MOUNTING, CH-36-DS		
		DES. BY:	DRAWN BY: ARLENE R.	DATE: 25 APR 89
		REVISION	APPR. BY:	
			SCALE: NONE	1081-R08A-37771



REAR VIEW MPH DISPLAY

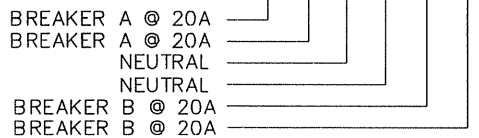


DRIVER ENCLOSURE LAYOUT



SECTION A-A
TE 401 SIGNAL

DETAIL *A*
TE 401 POWER

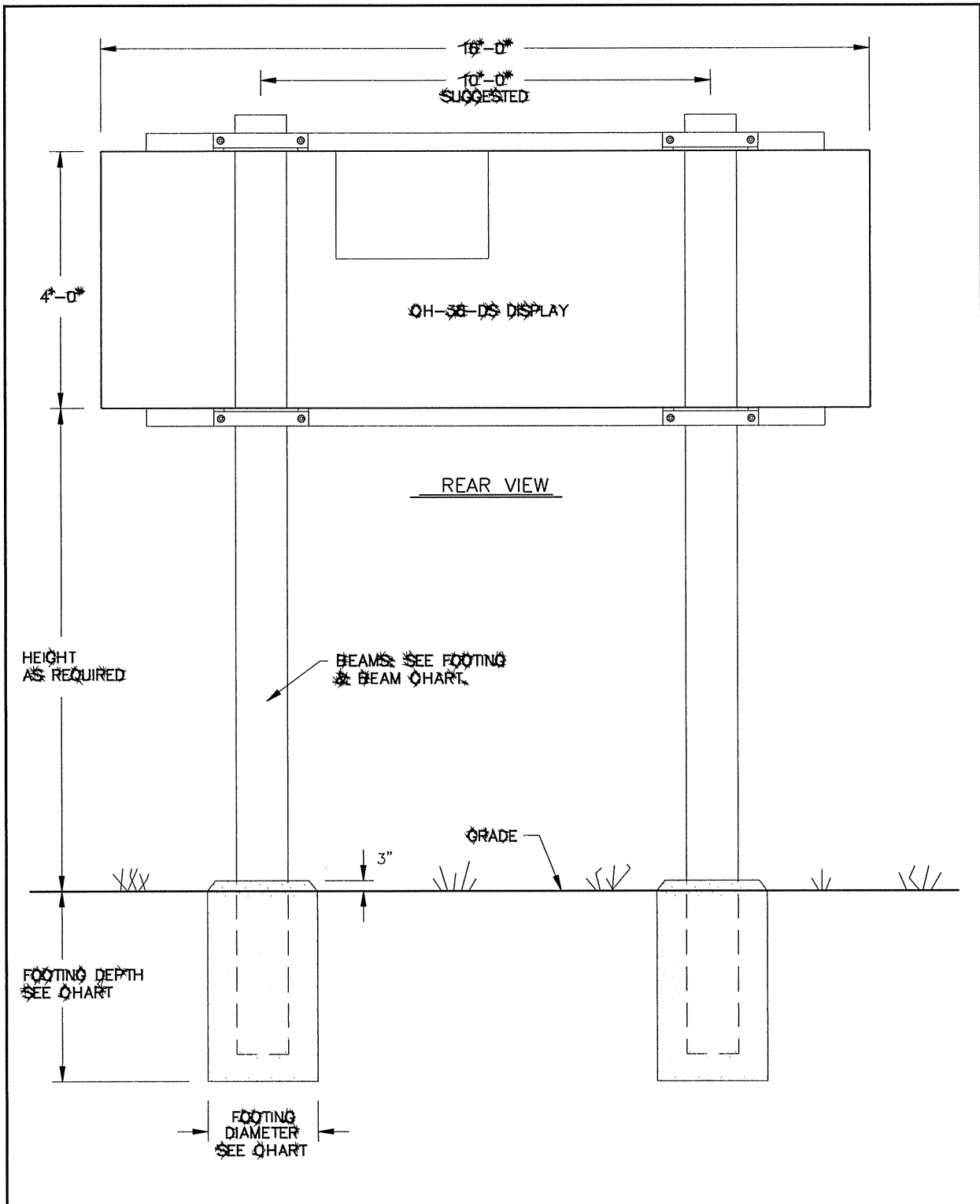


SECTION B-B
E41 EARTH GROUND

DAKTRONICS, INC. BROOKINGS, SD 57006

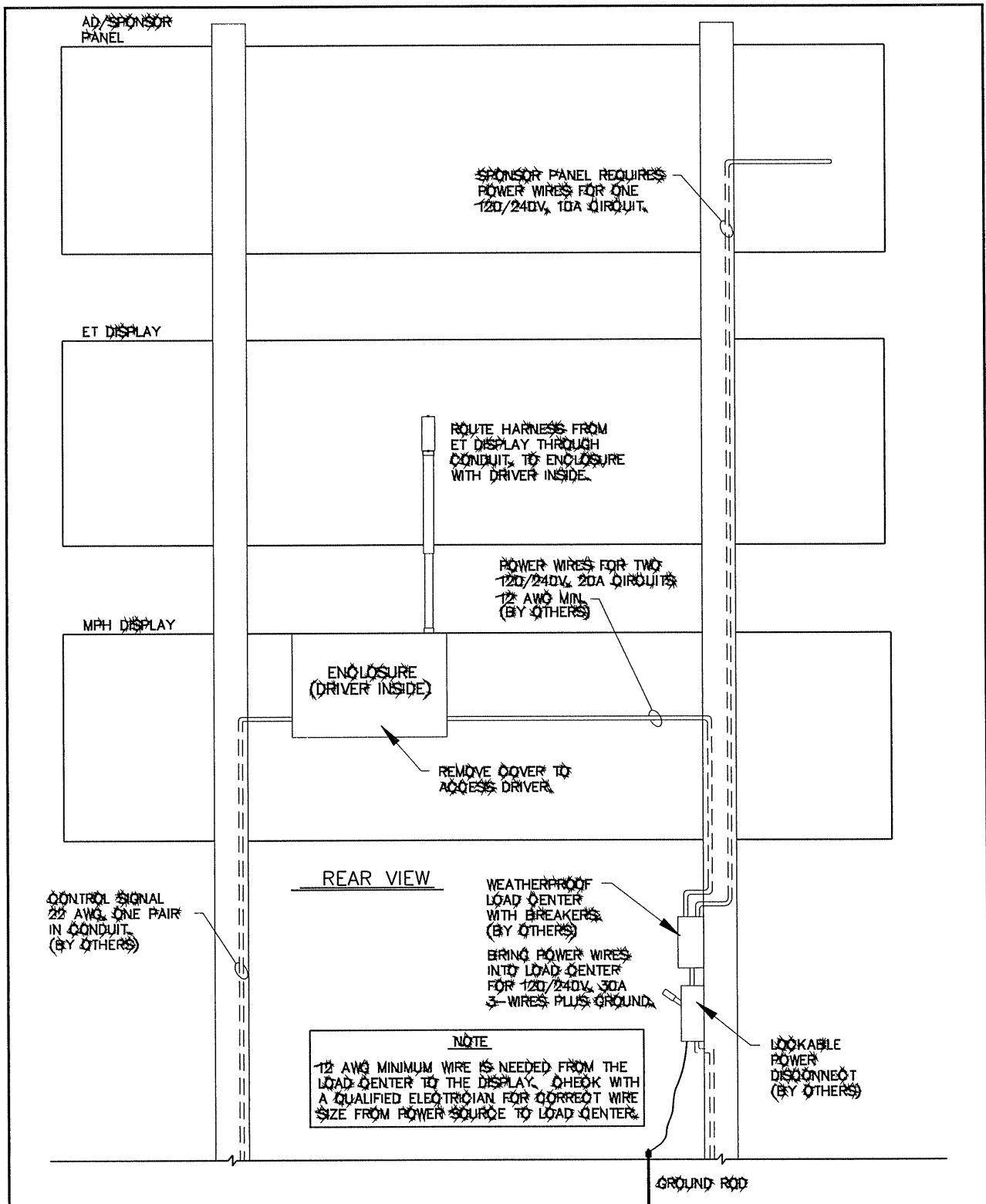
REV.	DATE	DESCRIPTION	BY	APPR.
2	15 MAR 91	REDRAWN ON AUTOCAD, CHANGED FROM "B" TO "A" SIZE DWG, ADDED DETAIL "C" E41 GND	CF	
1	7 AUG 89	ADDED TERMINAL BLOCK DETAILS, REMOVED DIGIT/JACK CHART.	JLH	AVB

PROJ: CRONDEK DISPLAYS		DATE: 27 APR 89	
TITLE: DRIVER ENCLOSURE LAYOUT			
DES. BY:	DRAWN BY: AR		
REVISION	APPR. BY:	1081-R08A-37773	
	SCALE: 1 = 1		



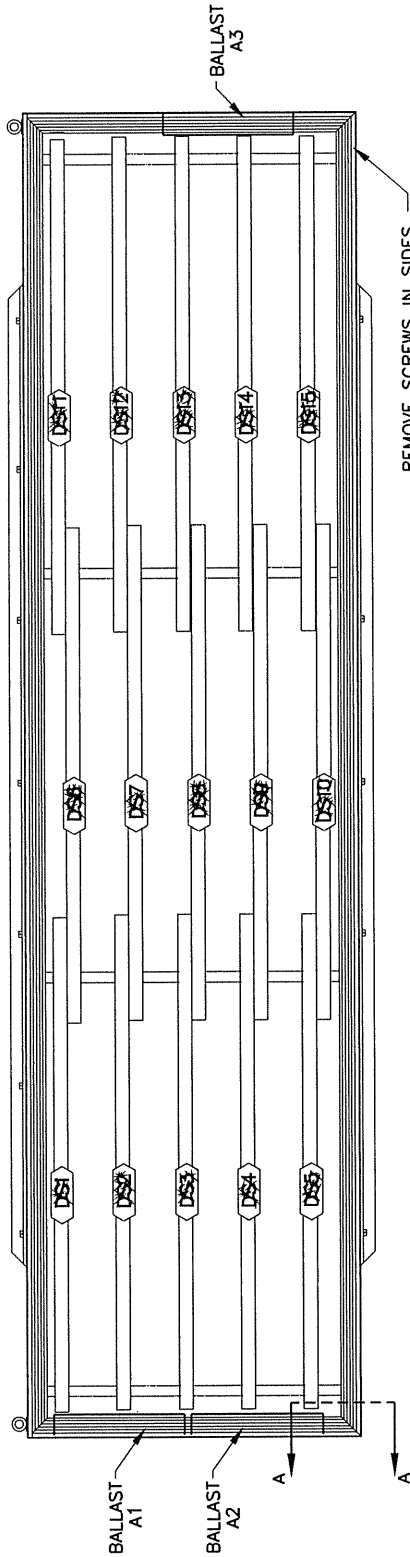
DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: CHRONDEK	
TITLE: BEAM SPACING, CH-36-DS	
DES. BY:	DRAWN BY: J HEIDERSCHIEDT DATE: 7 AUG 89
REVISION	APPR. BY:
	SCALE: NONE
1081-R08A-39054	

1	16 JUNE 92	CHANGED FROM "B" TO "A" SIZE DWG.	C FICK	
REV.	DATE	DESCRIPTION	BY	APPR.



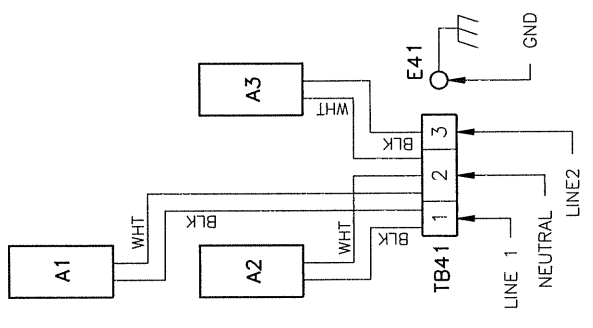
REV.	DATE	DESCRIPTION	BY	APPR.
3	17 JUN 92	CHANGED "PROVIDED BY CHRONDEK" TO "BY OTHERS" IN REFERENCE TO LOAD CENTER.	C FICK	
2	15 JUL 91	ADDED SAFETY DISCONNECT.	JLH	
1	23 MAR 91	MOVED POWER CONDUIT FOR ADV PANEL FROM CENTER OF PANEL TO END OF PANEL.	JLH	AVB

DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: CHRONDEK DISPLAYS	
TITLE: ELECTRICAL INSTALLATION, CH-36-DS	
DES. BY: JHEIDERSCHIEDT DRAWN BY: JHEIDERSCHIEDT DATE: 07AUG89	
REVISION	APPR. BY: AVB
SCALE: NONE	1081-R10A-39066

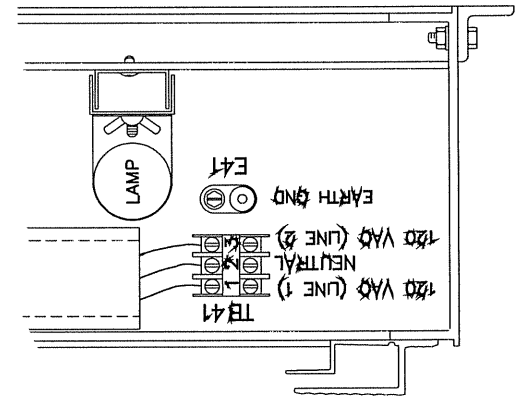


REMOVE SCREWS IN SIDES AND BOTTOM OF RETAINER. OPEN UPWARDS TO ACCESS LAMPS AND COMPONENTS.

FRONT VIEW



WIRING DIAGRAM:



SECTION END VIEW A-A

NOTES

- BALLAST A1 RUNS LAMPS DS1 - DS5.
- BALLAST A2 RUNS LAMPS DS6 - DS10.
- BALLAST A3 RUNS LAMPS DS11 - DS15.
- PUNCH HOLE IN BACK OF DISPLAY NEAR TERMINAL BLOCK, TB41.
- ROUTE POWER WIRES TO DISPLAY THROUGH 1/2" CONDUIT.
- ATTACH WIRES TO TERMINALS AS FOLLOWS:

WIRE	TERMINAL
LINE 1, HOT	TB41-1
LINE 2, HOT	TB41-3
NEUTRAL	TB41-2
GROUND	E41

REV.	DATE	DESCRIPTION	BY	APPR.
1	16MAR94	ADDED WIRING DIAGRAM	AVB	AVB

DAKTRONICS, INC. BROOKINGS, SD 57006

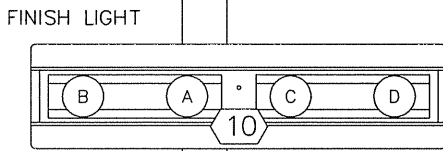
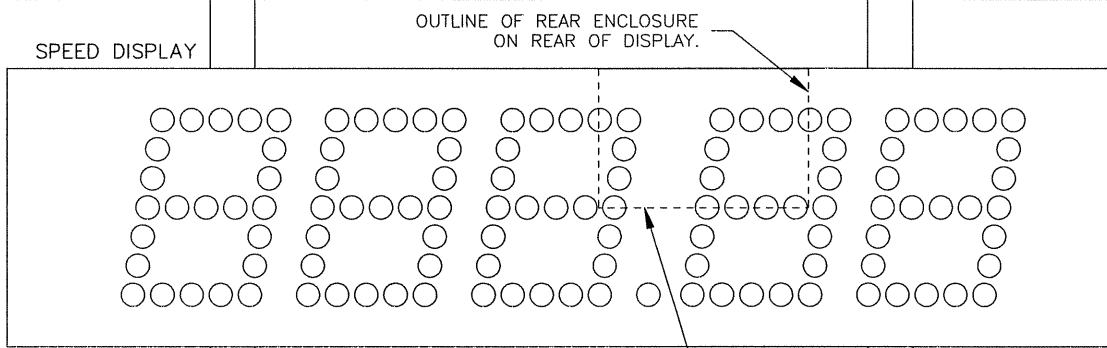
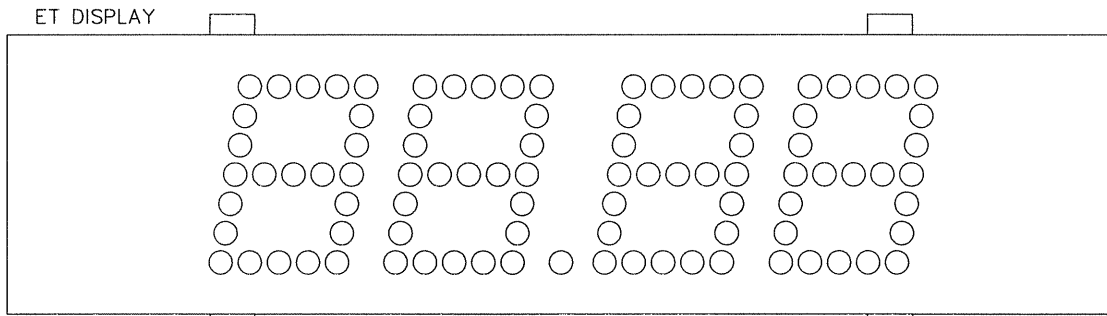
PROJ: CHRONDEK DISPLAYS

TITLE: INSTALLATION, ADV-36DS-BL

DES. BY: JHEIDERSCHIEDT DRAWN BY: JHEIDERSCHIEDT DATE: 12JUL90

REVISION APPR. BY: SCALE: 1=25

1081-R10A-43370



PUNCH OR DRILL A 1.25" MINIMUM DIAMETER HOLE IN BOTTOM OF REAR ENCLOSURE.

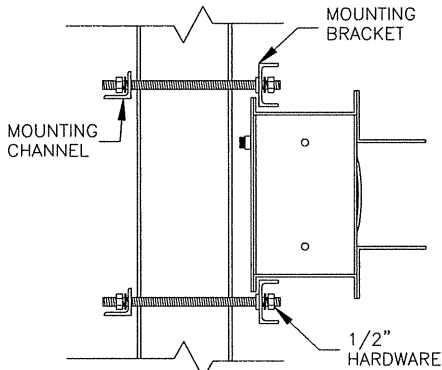
ROUTE CABLE FROM FINISH LIGHT THROUGH HOLE IN BOTTOM OF REAR ENCLOSURE.

REMOVE SCREWS ON COVER OF REAR ENCLOSURE TO ACCESS DRIVER AND COMPONENTS.

PLUG INTO JACK #110 ON CONNECTOR PLATE, INSIDE DRIVER ENCLOSURE, INSIDE DRIVER BOX.

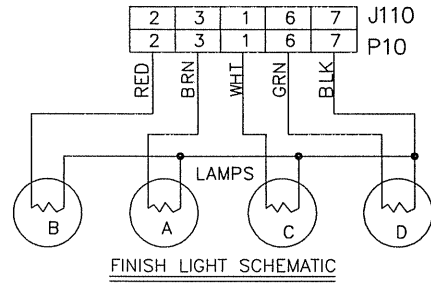
THE LETTER ON EACH LAMP IS THE SEGMENT WHICH THAT LAMP IS CONNECTED TO ON THE DRIVER. THE NUMBER ON THE FINISH LIGHT IS THE DRIVER CONNECTOR IT IS CONNECTED TO.

MOUNT FINISH LIGHT SLIGHTLY TO THE INSIDE OF CENTER ON THE POLE SO THE POWER CABLE CLEARS THE POLE.



DETAIL A
FINISH LIGHT MOUNTING
1=15

LAMP LETTER	LAMP COLOR	CHRONDEK PART NUMBER
A	RED	DS1186
B	BLUE	DS1187
C	GREEN	DS1185
D	AMBER	DS1184



DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: CHRONDEK DISPLAYS

TITLE: INSTALLATION, FIN-LIGHT, CH-36-DS

DES. BY: JHEIDERSCHIEDT DRAWN BY: JHEIDERSCHIEDT DATE: 13JUL90

REVISION

APPR. BY:

SCALE: 1=30

1081-R10A-43388

REV.	DATE	DESCRIPTION	BY	APPR.

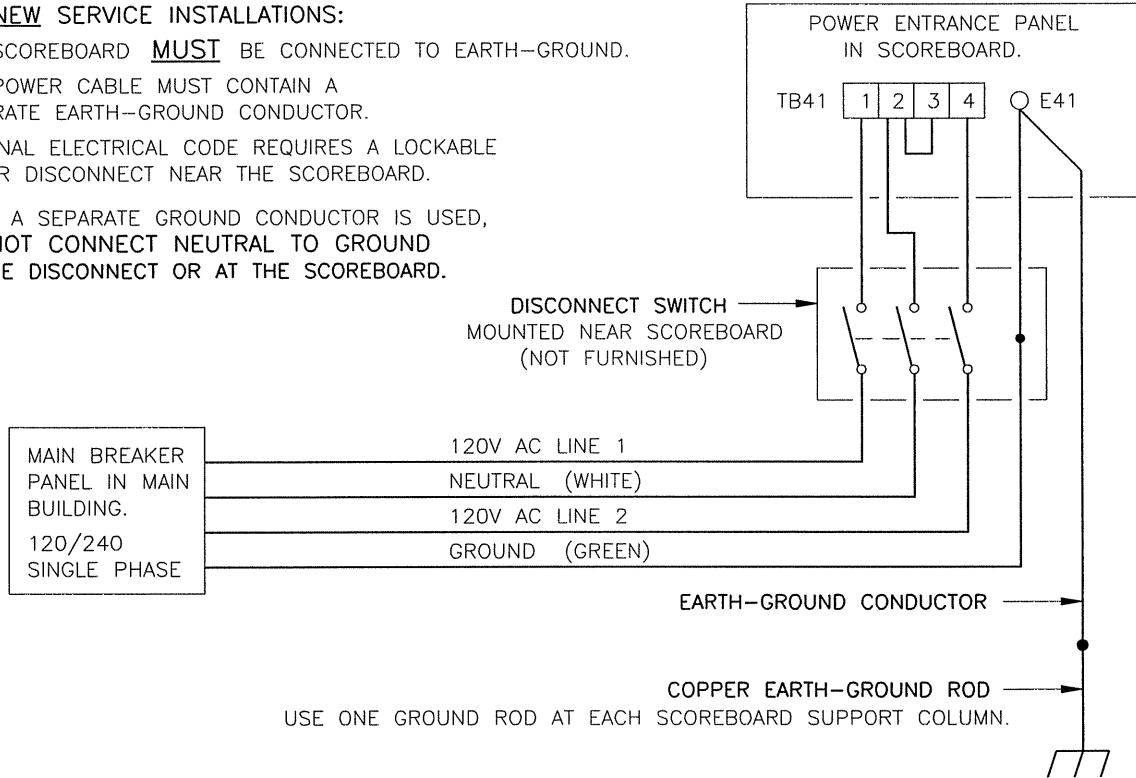
FOR NEW SERVICE INSTALLATIONS:

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.



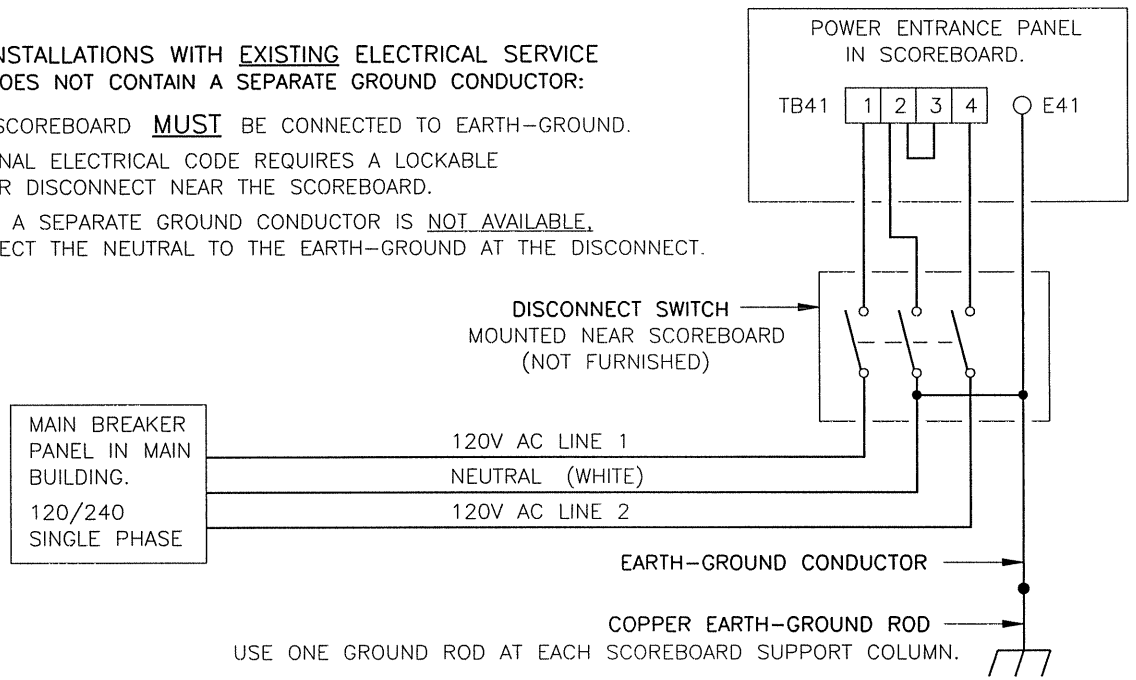
FOR LIGHTNING PROTECTION, DAKTRONICS RECOMMENDS A THREE-CONDUCTOR DISCONNECT THAT CAN BREAK BOTH HOT LINES AND THE NEUTRAL.

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

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

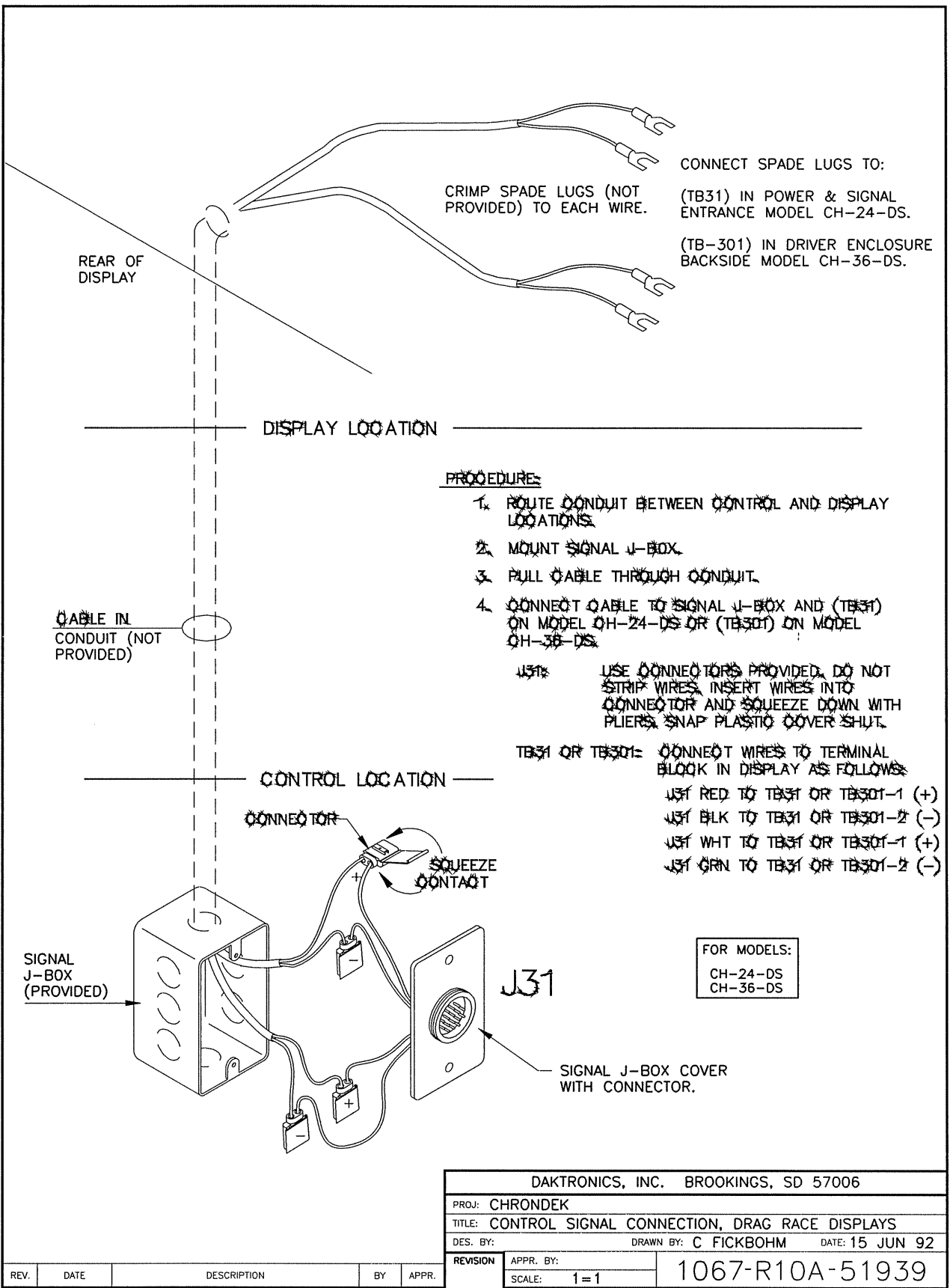
NATIONAL ELECTRICAL CODE REQUIRES A LOCKABLE POWER DISCONNECT NEAR THE SCOREBOARD.

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
REVISION	APPR. BY:	1091-R03A-45220	
	SCALE: NONE		

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



REAR OF DISPLAY

CRIMP SPADE LUGS (NOT PROVIDED) TO EACH WIRE.

CONNECT SPADE LUGS TO:

(TB31) IN POWER & SIGNAL ENTRANCE MODEL CH-24-DS.

(TB-301) IN DRIVER ENCLOSURE BACKSIDE MODEL CH-36-DS.

DISPLAY LOCATION

CABLE IN CONDUIT (NOT PROVIDED)

PROCEDURE:

1. ROUTE CONDUIT BETWEEN CONTROL AND DISPLAY LOCATIONS.
2. MOUNT SIGNAL J-BOX.
3. PULL CABLE THROUGH CONDUIT.
4. CONNECT CABLE TO SIGNAL J-BOX AND (TB31) ON MODEL CH-24-DS OR (TB301) ON MODEL CH-36-DS.

~~J31:~~ USE CONNECTORS PROVIDED. DO NOT STRIP WIRES. INSERT WIRES INTO CONNECTOR AND SQUEEZE DOWN WITH PLIERS. SNAP PLASTIC COVER SHUT.

~~TB31 OR TB301:~~ CONNECT WIRES TO TERMINAL BLOCK IN DISPLAY AS FOLLOWS:

- ~~USE RED TO TB31 OR TB301-1 (+)~~
- ~~USE BLK TO TB31 OR TB301-2 (-)~~
- ~~USE WHT TO TB31 OR TB301-1 (+)~~
- ~~USE GRN TO TB31 OR TB301-2 (-)~~

CONTROL LOCATION

CONNECTOR
SQUEEZE CONTACT

SIGNAL J-BOX (PROVIDED)

J31

FOR MODELS:
CH-24-DS
CH-36-DS

SIGNAL J-BOX COVER WITH CONNECTOR.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: CHRONDEK

TITLE: CONTROL SIGNAL CONNECTION, DRAG RACE DISPLAYS

DES. BY:

DRAWN BY: C FICKBOHM

DATE: 15 JUN 92

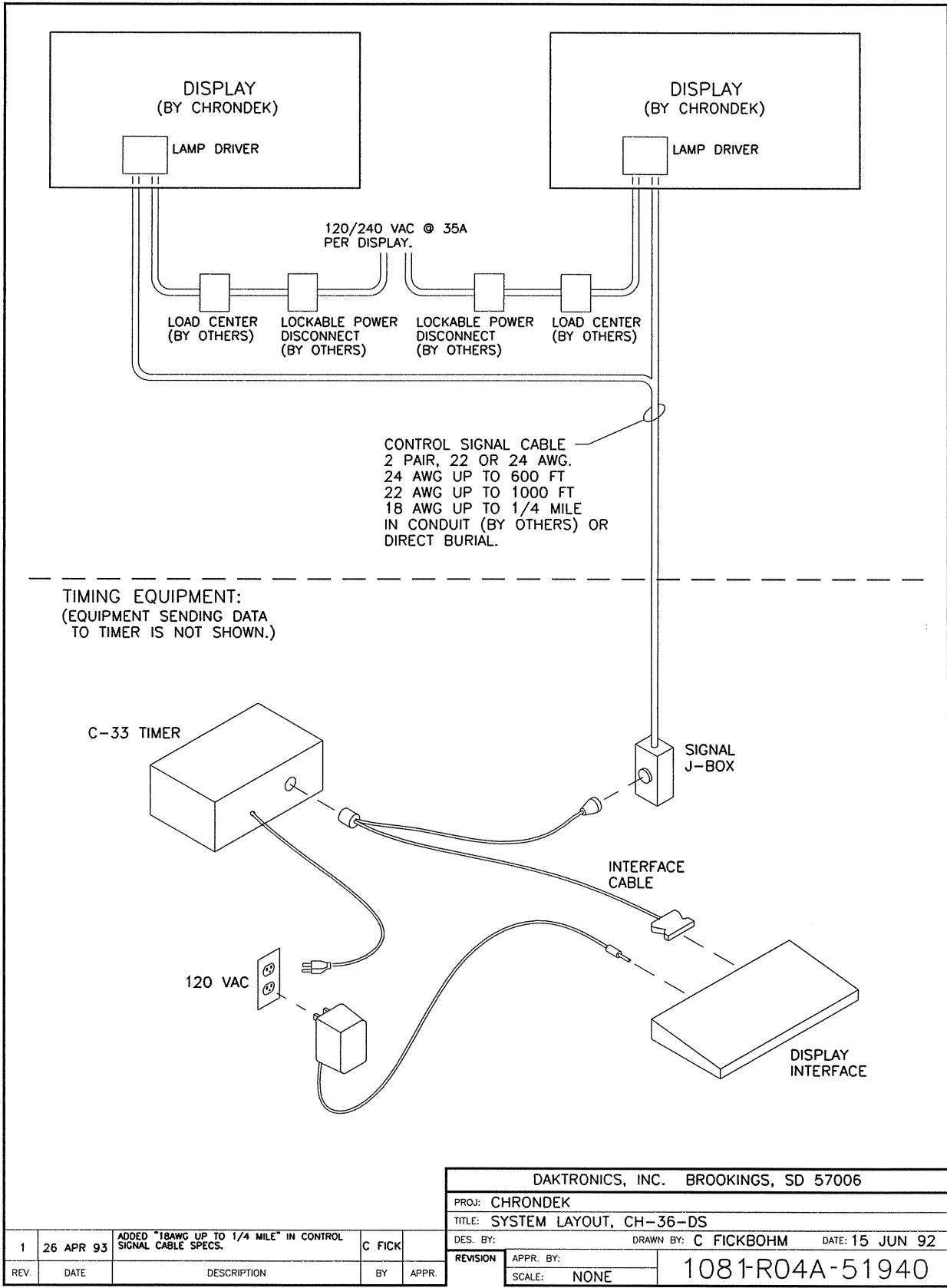
REV.	DATE	DESCRIPTION	BY	APPR.

REVISION

APPR. BY:

SCALE: 1=1

1067-R10A-51939



DAKTRONICS, INC. BROOKINGS, SD 57006				
PROJ: CHRONDEK				
TITLE: SYSTEM LAYOUT, CH-36-DS				
DES. BY:		DRAWN BY: C FICKBOHM		DATE: 15 JUN 92
REVISION	APPR. BY:	1081-R04A-51940		
SCALE:	NONE			

REV.	DATE	DESCRIPTION	BY	APPR.
1	26 APR 93	ADDED "18AWG UP TO 1/4 MILE" IN CONTROL SIGNAL CABLE SPECS.	C FICK	

Section 3: Service

Reference Drawings: Lamp Driver, 16 Col., W/Fan	Drawing A-37070
Schematic; Pwr & Sig.	Drawing A-38788
Lamp Seg. & Jack Panel Assign.	Drawing A-39067

3.1 Lamp Replacement

The primary service required by the CH-36-DS display is to replace burned-out lamps. Replacement lamps are 120V, 30W reflector, type 30R20, available at your local store, or directly from Daktronics (part no. DS-1126).

The Advertiser/Sponsor Panel uses 72 inch, 120V, 85W cool white fluorescent lamps, Daktronics part no. DS-1037. Refer to **Drawing A-43370** for an illustration of how to access lamps for replacement.

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-39066** 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 and outputs to 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

On **Drawing A-39067**, the numbers on the digits refer to the lamp driver output connector wired to each digit.

3.3 Digit Segmentation

In a digit certain lamps always go on and off together. These groupings of lamps are known as "segments". **Drawing A-39067** illustrates these segments and shows which connector pin and wire color is wired to each segment.

3.4 Schematic

Drawing A-38788 shows the power and signal inputs into the display and to the lamp driver. The component numbers correspond to those shown in **Drawing A-37773** (in **Section 2**).

3.5 Trouble Shooting

Below is a list of problems that may occur and their possible solutions:

Problem	Possible Cause
One lamp won't light	Burned out lamp Broken wire behind digit
Digit segment won't light	Broken wire (black) Poor contact at connector, pin 7 Fuse blown in driver
Half the display won't light	Service breaker tripped Main fuse blown Poor contact at main power connection P18 disconnected
Entire display won't light	Power disruption Poor signal connection Driver logic fuse blown Control not Connected to display P20 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 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 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 Exchange/Replacement Parts

Part Name or Description	Type	Daktronics Part Number
Lamp Driver		A-1033-0122
J-Box, Signal, 16-Pin		A-1010-26
Cable, Timer/Interface/J-box		A-1067-40
Fuse, Lamp Driver, 10A	AGC-10	F-1006
Fuse, Driver Logic, 1/2A	AGC-1/2	F-1000
Digit 36" w/louvers		A-1081-03
Mounting Kit		A-1081-04
Socket, Med. Base A-1081-04		X-1046
Lamp, 30W Reflector	30R20	DS-1126
Lamp, Fluorescent, 72" 85W		DS-1037

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.**

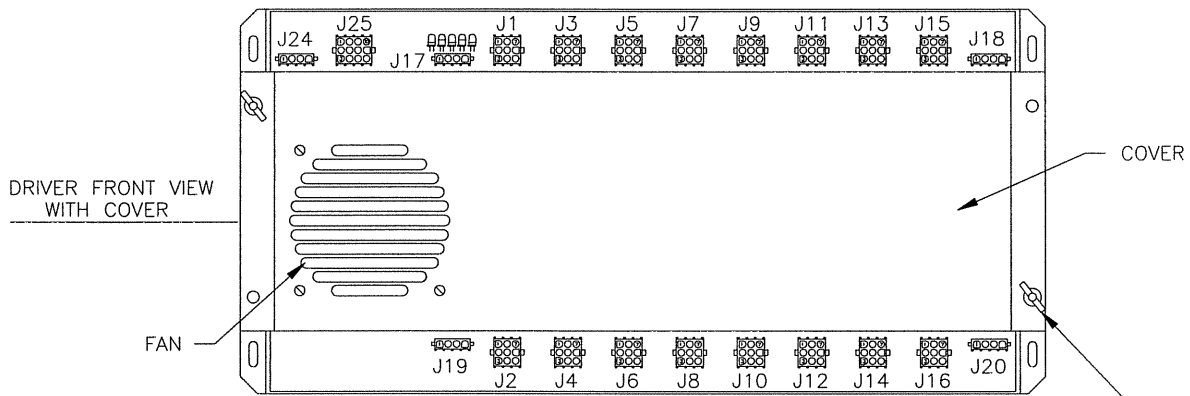
Using the UPS Blue Return tag immediately will eliminate the possibility of late charges being assessed against your account.

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



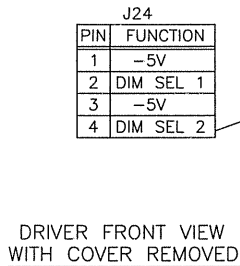
REMOVE TWO WING NUTS TO REMOVE COVER AND GAIN ACCESS TO FUSES.

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

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

- DS1-SW
- DS2-PWR
- DS3-RESET
- DS4-DATA
- DS5-RUN OR TEST

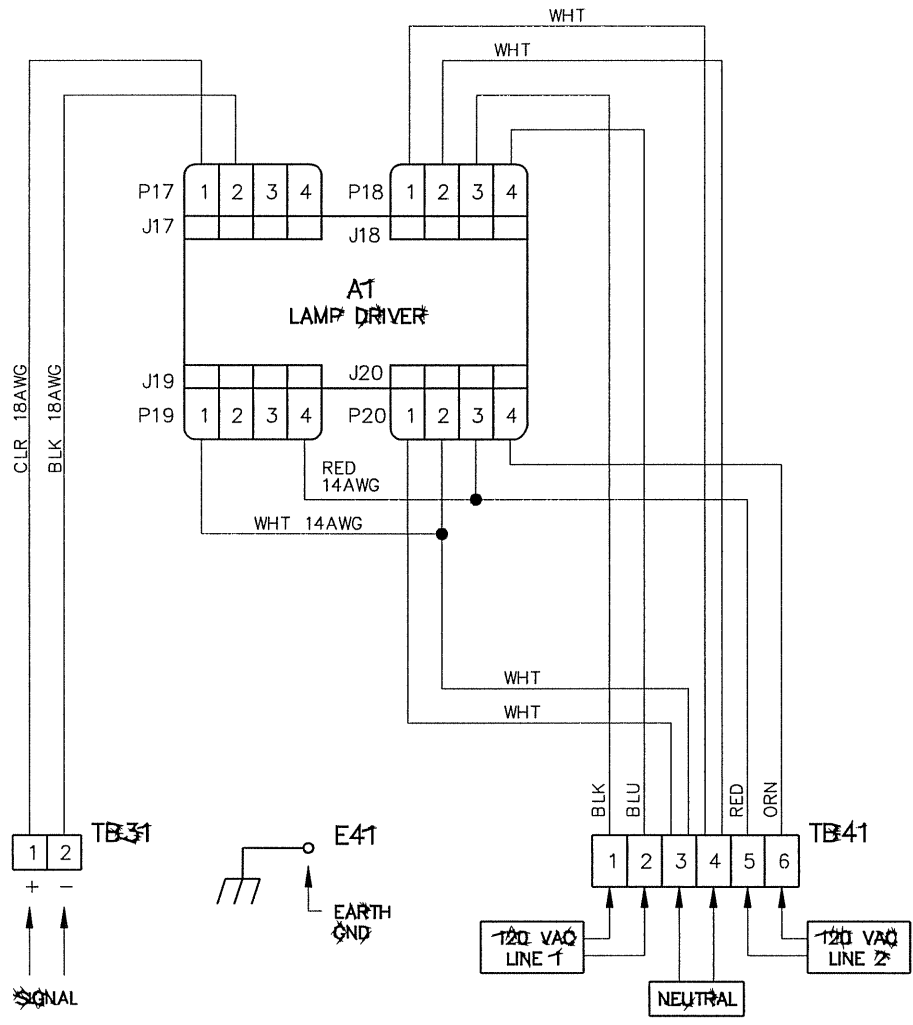
PLUG FROM FAN IN COVER CONNECTS TO J23

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

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



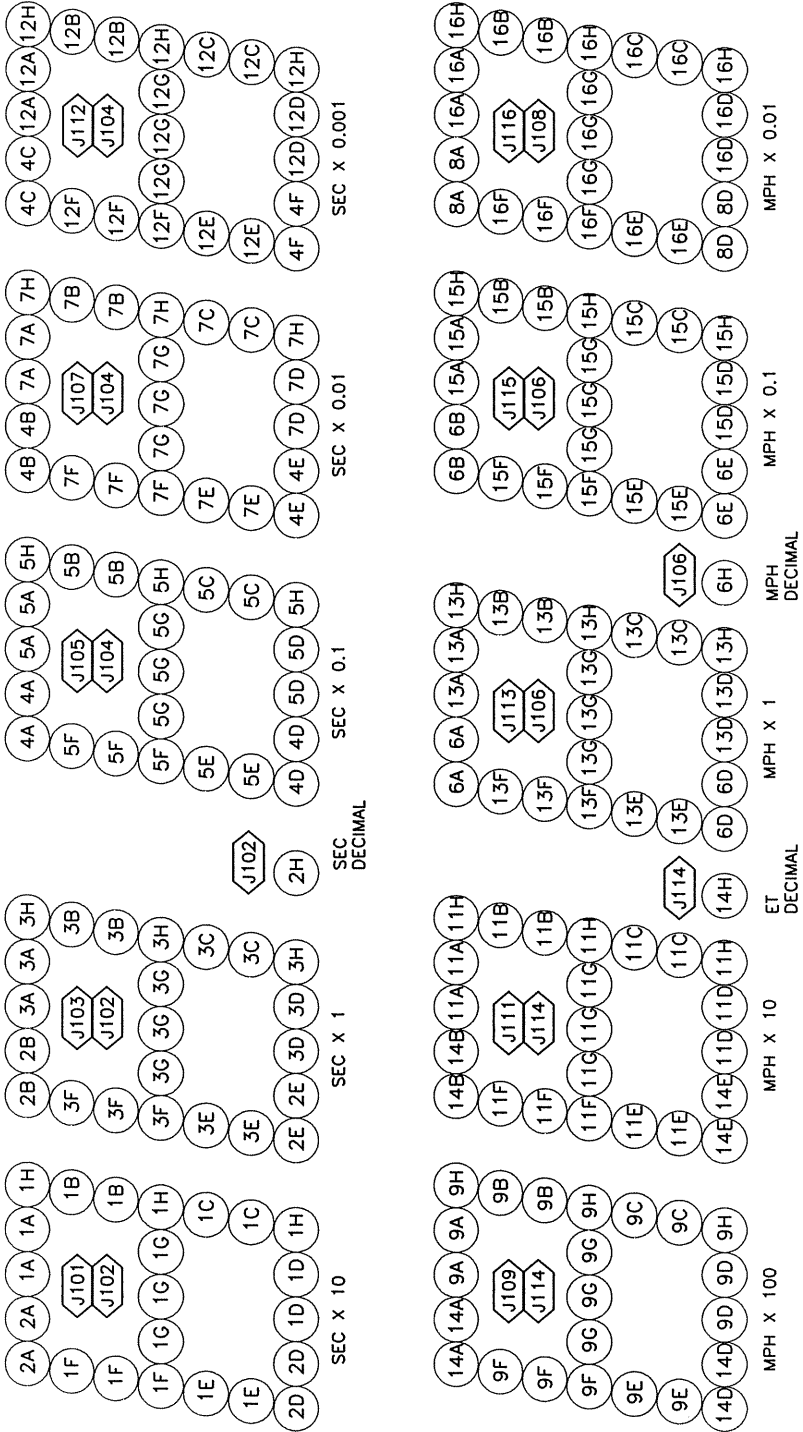
NOTES
 ALL WIRES ARE 12 AWG UNLESS
 OTHERWISE SPECIFIED.

REV.	DATE	DESCRIPTION	BY	APPR.
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	

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

REV.	DATE	DESCRIPTION	BY	APPR.
3	8 FEB 93	ADDED SEC X 0.001 DIGIT AND ET DECIMAL TO MPH DIGITS.	C FICK	
2	8 APR 91	REDRAWN	ON A	SIZE
1	4 JUN 90	CORRECTED SEG. C PIN. NO.	AVB	

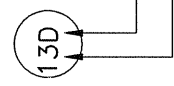
DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: CHRONDEK	
TITLE: LAMP SEG & JACK PANEL ASSIGN, CH-36DS	
DES. BY: _____	DRAWN BY: AVB
DATE: 7 AUG 89	
REVISION	APPR. BY:
SCALE: NONE	1081-R04A-39067



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

DRIVER CONNECTORS ASSIGNMENTS

◇ J101 = DRIVER ENCLOSURE JACK PLATE CONNECTOR NO. DIGIT GETS PLUGGED INTO.



CONNECTOR SEGMENT (PIN NO.)
DRIVER CONNECTOR NO.

