

INSTALLATION MANUAL
FOR
CHRONDEK, INC.
FINISH LIGHT SYSTEMS

CHRONDEK, INC.
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REV 1 - 02JUL91

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1. INTRODUCTION

This manual covers the installation of both finish light systems offered by Chrondek, Inc. The first is designed to be used with Chrondek scoring displays and timing systems. It is attached to the display and is run off of the addressable lamp driver in the display.

The other system is the independent finish light. This system is for installations having scoring displays not built by Chrondek, but using Chrondek timing equipment. It is self-contained and contains its own addressable lamp driver which receives its control signal from the Chrondek timing system.

The following table shows the approximate weights of the two types of finish light displays:

Display Type	Unpackaged Weight (lbs)	Packaged Weight (lbs)
Finish Light	40	55
Independent Finish Light	60	80

Both displays are capable of drawing a maximum of 340 watts if all lamps are lit at the same time.

2. CHRONDEK DISPLAY FINISH LIGHT

The finish light for use with a Chrondek scoring display may be used on either the CH-24-DS or the CH-36-DS. This section will describe the installation procedure for this model.

2.1 CH-24-DS

The drawing on page 5 describes the installation of a finish light on a CH-24-DS display.

Drill a 1 1/4" diameter hole in the bottom of the 5-digit MPH display, just inside whichever pole you wish to mount the finish light on.

Attach the mounting hardware to the pole as shown in detail A of the drawing. Note that the bolts do not go through the pole. They run on each side of the pole.

The finish light can be positioned as indicated, rotated 180° to reverse the lamps for the other side of the track, or inverted and mounted on one end.

Place the finish light in place on the brackets and slide the display up or down to the desired height. Tighten bolts to clamp display in place.

Loosen screws in bottom of digit number 11 and open upwards to access the connector plate.

Route cable from finish light through hole in bottom of MPH display and plug into jack #10 on the connector plate, see detail B. Coil excess cable and lay in bottom of MPH display.

Close and secure digits.

2.2 CH-36-DS

The drawing on page 6 describes the installation of a finish light on a CH-36-DS display.

Drill a 1 1/4" diameter hole in the bottom of the rear enclosure on the 5-digit MPH display.

Attach the mounting hardware to whichever pole you wish to mount the finish light on as shown in detail A of the drawing. Note that the bolts do not go through the pole. They run on each side of the pole.

The finish light can be positioned as indicated, rotated 180° to reverse the lamps for the other side of the track, or inverted and mounted on one end.

Place the finish light in place on the brackets and slide the display up or down to the desired height. Tighten bolts to clamp display in place.

Remove the screws holding the cover on the rear enclosure and remove the cover.

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, see page 7. Use cabling ties to secure cable to conduit. Coil any excess cable and lay in bottom of rear enclosure.

Replace cover of rear enclosure and secure.

3. INDEPENDENT FINISH LIGHT

See page 8 for a diagram of a typical system layout using the independent finish lights.

22 AWG signal cable will need to be run from the Display Interface location to the finish light display location. This will need to be direct burial or in conduit. The display may be mounted on an existing pole as shown on page 9.

Attach the mounting hardware to whichever pole you wish to mount the finish light on as shown. Note that the bolts do not go through the pole. They run on each side of the pole.

Place the finish light in place on the brackets and slide the display up or down to the desired height. Tighten bolts to clamp display in place.

The finish light cannot be rotated or inverted. To reverse the order of the lamps for the other side of the track, remove the wing nuts securing the lamp bracket. Pull bracket clear of the sun visor and rotate it 180°. Replace the bracket and secure with the wing nuts.

Connect power and signal wires to finish light as shown on pages 10 and 11.

4. SERVICE

Disconnect power to the display before servicing.

4.1 Lamp Replacement

The primary service required by either finish light display is to replace burned-out lamps. The lamps are 120V, 85W flood lamps, type 85PAR38. The Chrondek numbers are as follows:

Red - Chrondek Number, DS-1186
Blue - Chrondek Number, DS-1187
Green - Chrondek Number, DS-1185
Amber - Chrondek Number, DS1184

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

4.2 Lamp Driver (Independent Finish Light only)

In the display, the task of switching lamps on and off is performed by the lamp driver. Page 10 shows the location of the lamp driver in the display. Page 12 is an illustration of the lamp driver and the fuses located in it.

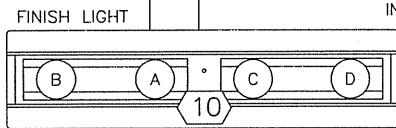
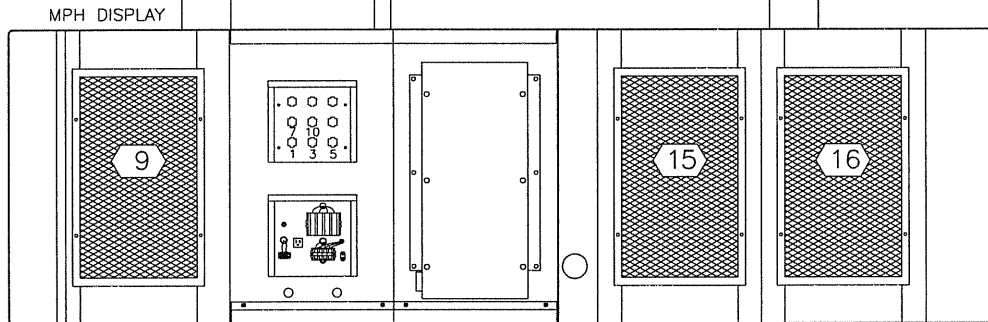
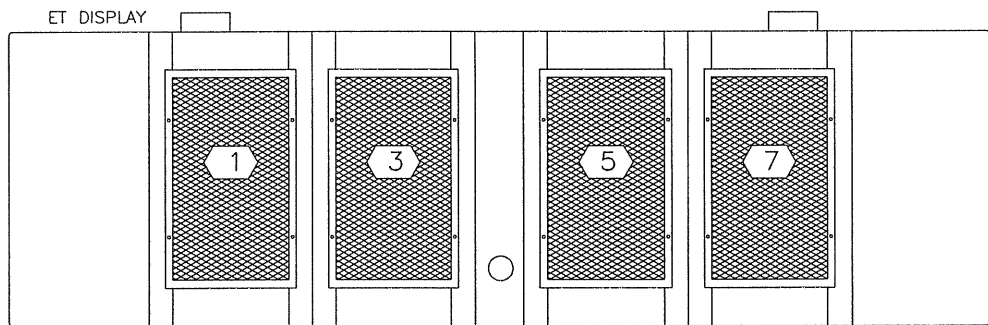
The lamp driver has 15 connectors, providing power and signal inputs to the driver and outputs to the digits and indicators. The connector functions are as follows:

<u>Connector No.</u>	<u>Function</u>
1 - 10	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 for outputs 9-16 (120V)
24	Dim option selector

On page 10, the letters on the lamps refer to the lamp driver segment of connector 10 that is wired to each lamp.

4.3 Schematic

The schematic diagrams on pages 5 and 6 show the power wiring of the finish light for Chrondek scoring displays. The Schematic on page 11 shows the power and signal inputs into the display and to the lamp driver. The component numbers correspond to those shown on page 10.



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

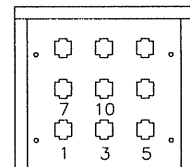
DISPLAY SHOWN WITH DIGITS 11 AND 13 REMOVED FOR DRIVER ACCESS.

ROUTE CABLE FROM FINISH LIGHT THROUGH HOLE IN BOTTOM OF MPH DISPLAY.

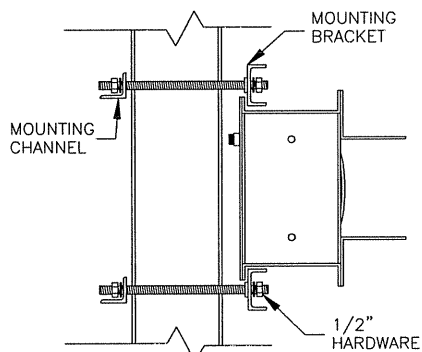
PLUG INTO JACK #10 ON CONNECTOR PLATE, SEE DETAIL B.

THE LETTER ON EACH LAMP IS THE SEGMENT WHICH THAT LAMP IS CONNECTED TO ON THE DRIVER. THE NUMBER ON THE DIGITS AND 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.



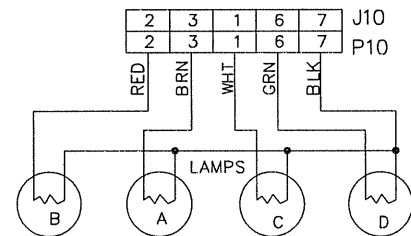
DETAIL B



DETAIL A

FINISH LIGHT MOUNTING
1=10

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



FINISH LIGHT SCHEMATIC

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: CHRONDEK DISPLAYS

TITLE: INSTALLATION, FIN-LIGHT, CH-24-DS

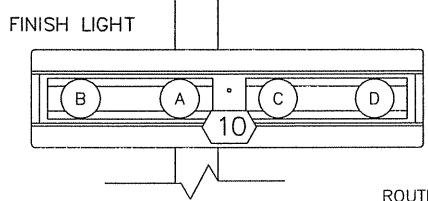
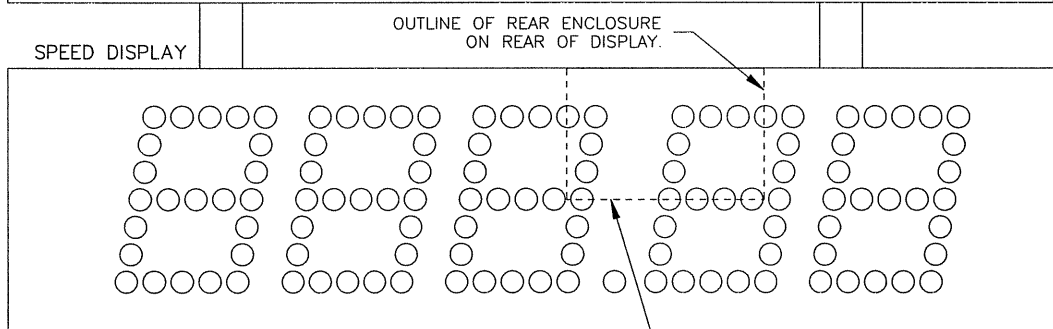
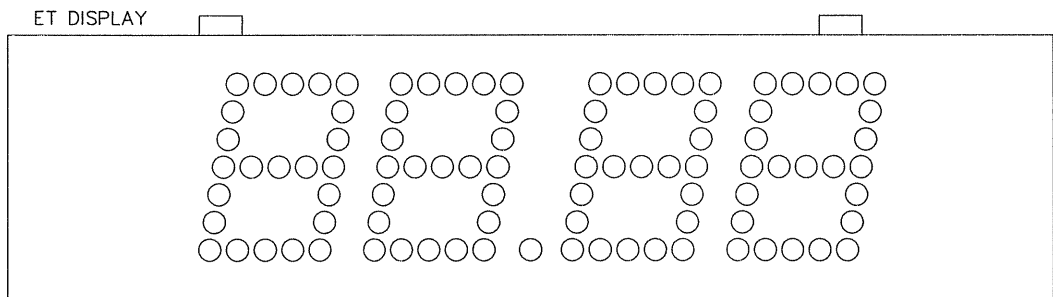
DES. BY: JHEIDERSCHIEDT DRAWN BY: JHEIDERSCHIEDT DATE: 13JUL90

REVISION APPR. BY:

SCALE: 1=20

1081-R10A-43387

REV.	DATE	DESCRIPTION	BY	APPR.



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

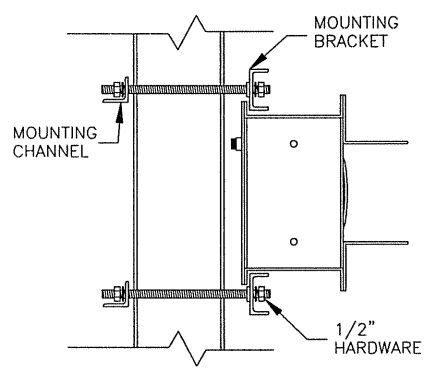
ROUTE CABLE FROM FINISH LIGHT THROUGH HOLE IN BOTTOM OF REAR ENCLOSURE.

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.

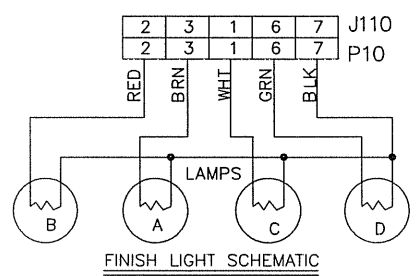
THE LETTER ON EACH LAMP IS THE SEGMENT WHICH THAT LAMP IS CONNECTED TO ON THE DRIVER. THE NUMBER ON THE FINISH LIGHT IS THE DRIVER CONNECTOR IT IS CONNECTED TO.

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

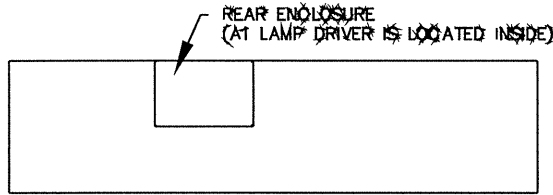
TITLE: INSTALLATION, FIN-LIGHT, CH-36-DS

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

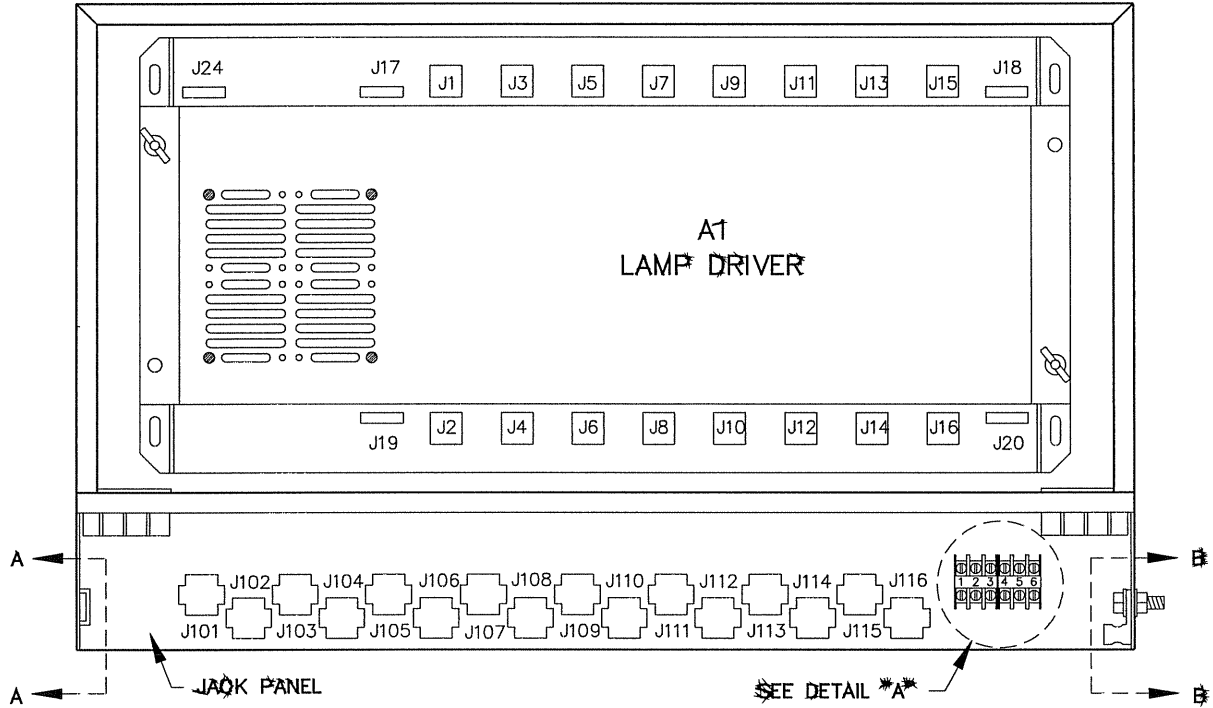
REVISION APPR. BY: SCALE: 1=30

1081-R10A-43388

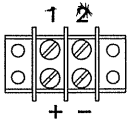
REV.	DATE	DESCRIPTION	BY	APPR.



REAR VIEW MPH DISPLAY



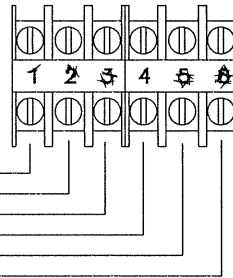
DRIVER ENCLOSURE LAYOUT



SECTION A-A
TE 301 SIGNAL

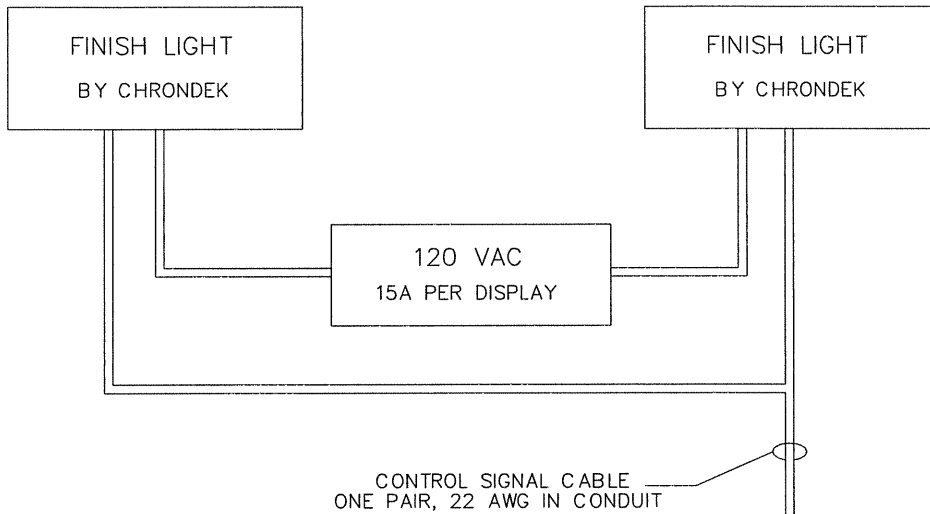
DETAIL *A*
TE 401 POWER

BREAKER A @ 20A
BREAKER A @ 20A
NEUTRAL
NEUTRAL
BREAKER B @ 20A
BREAKER B @ 20A

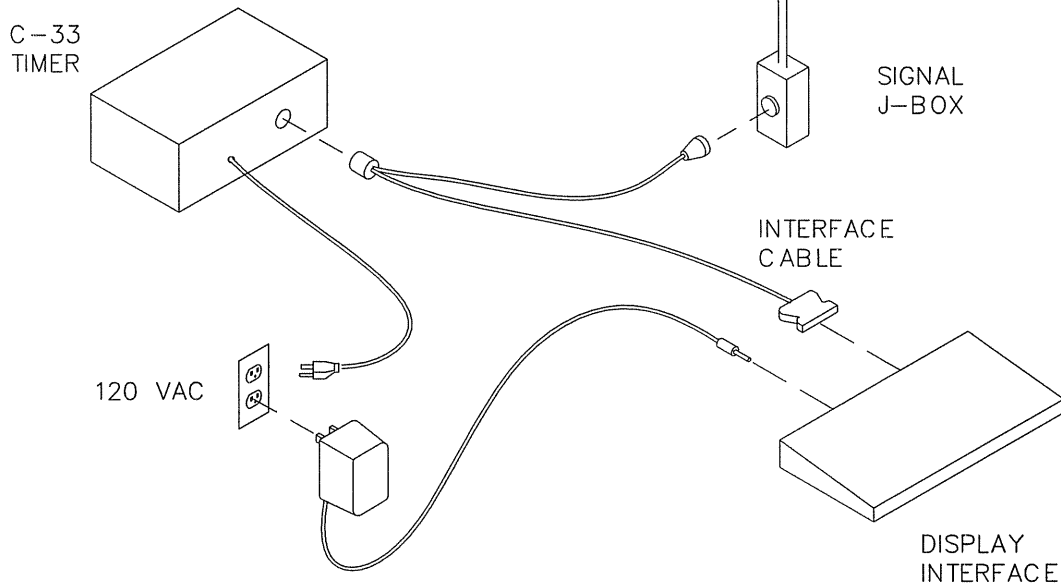


SECTION B-B
E41 EARTH GROUND

DAKTRONICS, INC. BROOKINGS, SD 57006				
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
REV.	DATE	DESCRIPTION	BY	APPR.
		PROJ: CRONDEK DISPLAYS		DATE: 27 APR 89
		TITLE: DRIVER ENCLOSURE LAYOUT		
		DES. BY: DRAWN BY: AR		
		REVISION		1 = 1
		APPR. BY:		1081-R08A-37773



TIMING EQUIPMENT:
EQUIPMENT SENDING DATA
TO TIMER IS NOT SHOWN.



DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: CHRONDEK DISPLAYS

TITLE: SYSTEM LAYOUT, INDEPENDENT FIN-LIGHT

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

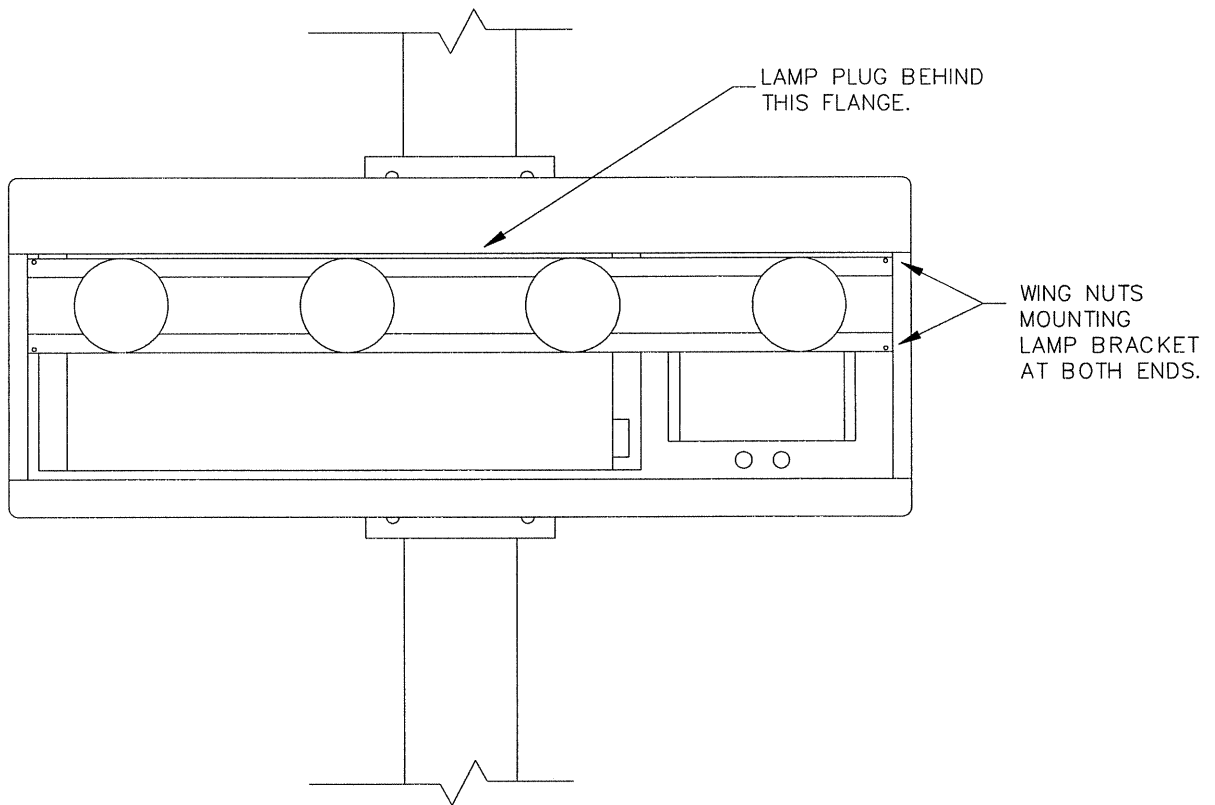
REVISION

APPR. BY:

SCALE: NONE

1081-R04A-43389

REV	DATE	DESCRIPTION	BY	APPR.

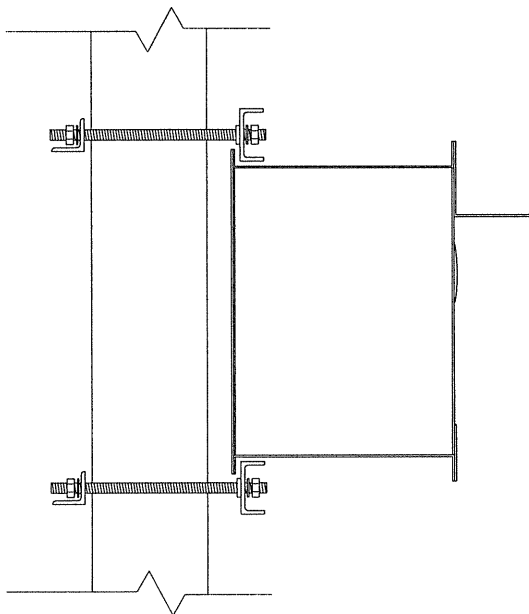


NOTES:

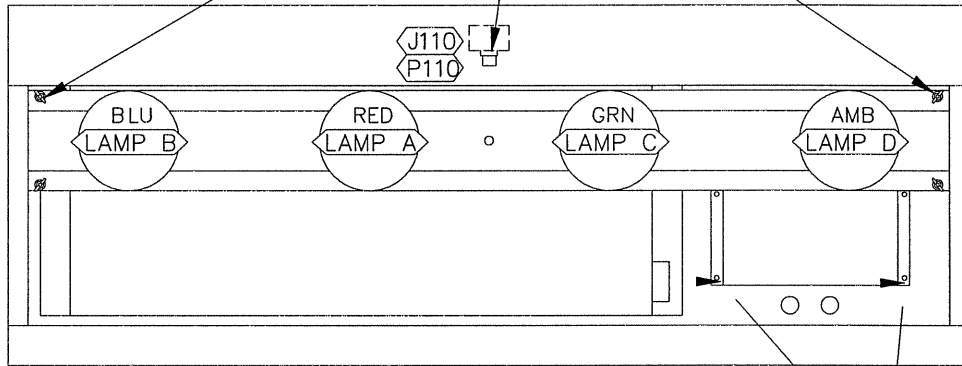
MOUNT DISPLAY ON EXISTING POLE AS INDICATED.

DISPLAY CANNOT BE ROTATED OR INVERTED.

TO REVERSE ORDER OF LAMPS, REMOVE WING NUTS SECURING LAMP BRACKET. PULL BRACKET CLEAR OF SUN VISOR AND ROTATE 180° .



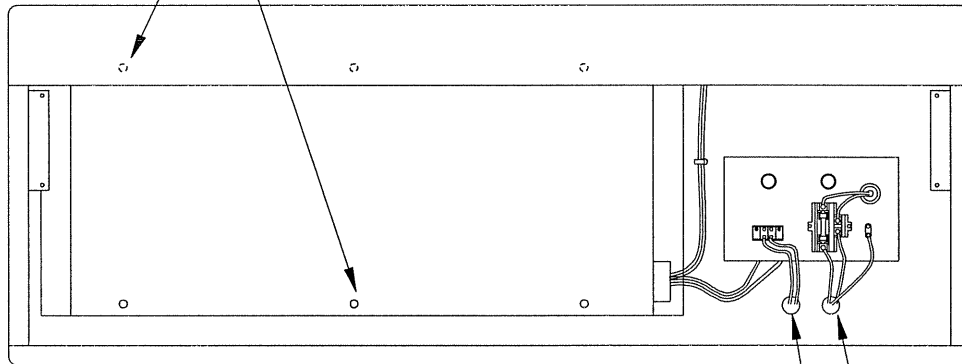
REMOVE WING NUTS AND UNPLUG LAMP HARNESS AT P110 TO REMOVE LAMP BRACKET FOR ACCESS TO DRIVER AND ENTRANCE COMPONENTS.



FRONT VIEW OF DISPLAY SHOWING SEGMENT DESIGNATION

REMOVE THESE 4 SCREWS TO GAIN ACCESS TO ENTRANCE COMPONENTS.

REMOVE ALL SCREWS IN COVER TO GAIN ACCESS TO DRIVER.

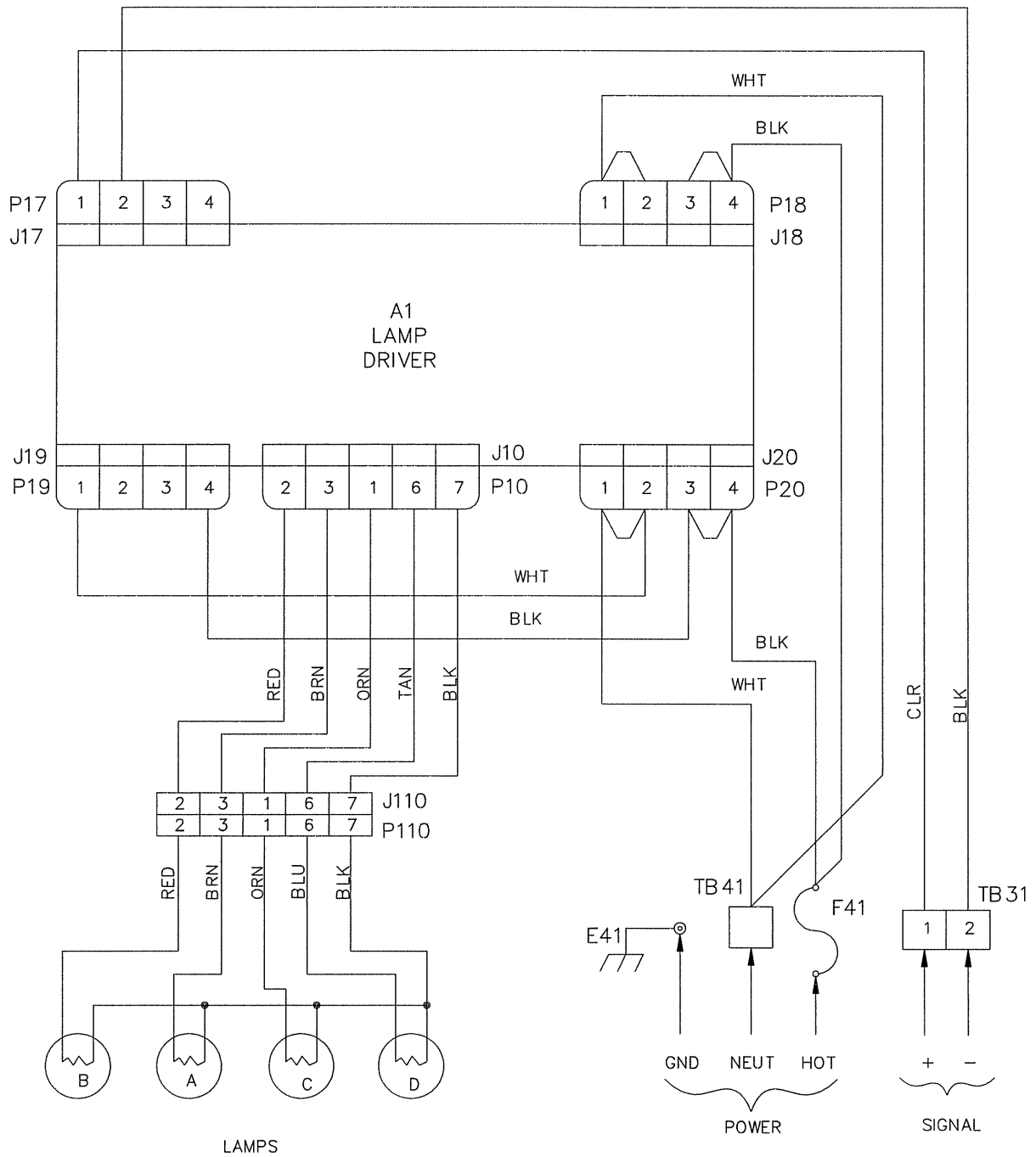


FRONT VIEW OF DISPLAY WITH LAMP BRACKET AND ENTRANCE COVER REMOVED

INCOMING POWER (HOT, NEUT, GND)

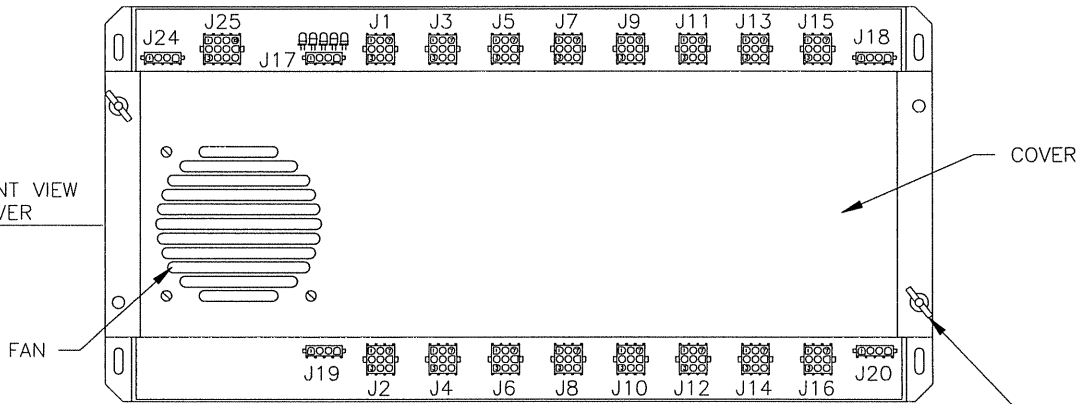
INCOMING SIGNAL

WHEN INSTALLING DISPLAY, ROUTE INCOMING POWER AND SIGNAL CABLES THROUGH KNOCKOUTS IN BACK OF DISPLAY AND ATTACH TO DESIGNATED ENTRANCE COMPONENTS AS INDICATED IN THE SCHEMATIC.



DAKTRONICS, INC. BROOKINGS, SD 57006				
2		07JUN95	UPDATED WIRING FOR NEW DRIVERS. CHANGED TO MATCH ADDENDUM.	MGG
1		13JUL90	REDREW ON A-SIZE BORDER. ADDED POWER AND SIGNAL LABEL.	JLH
REV.	DATE	DESCRIPTION		BY APPR.
PROJ: CHRONDEK DISPLAYS TITLE: SCHEMATIC, FIN-LGT, IND DES. BY: JHEIDERSCHIEDT DRAWN BY: JHEIDERSCHIEDT DATE: 30MAY89 REVISION APPR. BY: AVB SCALE: NONE				
				1081-R03A-38157

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.

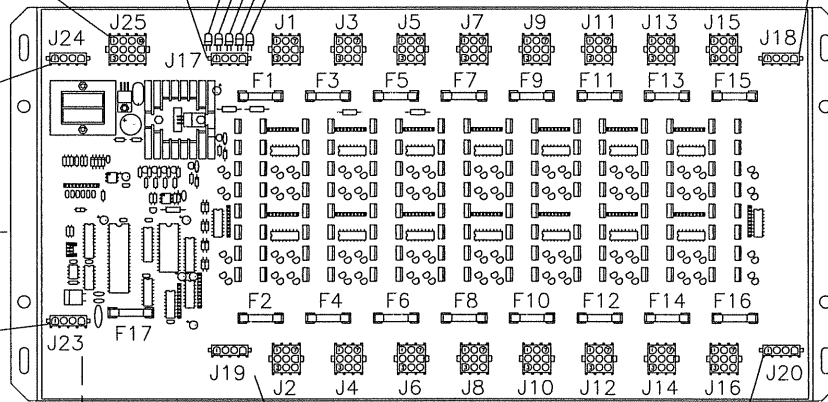
J1 - J16	
PIN	FUNCTION
1	SEG C
2	SEG B
3	SEG A
4	SEG F
5	SEG E
6	SEG D
7	COMMON
8	SEG H
9	SEG G

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



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
REVISION	DATE	DESCRIPTION	BY	APPR.
1	5 MAR 91	CHANGED FROM "B" TO "A" SIZE DWG.	CF	
2	29 APR 97	ADDED TABLES OF PINS AND FUNCTIONS.	AVB	AVB
SCALE: 1=5			1033-R04A-37070	

4.4 Troubleshooting

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. Broken wire. Poor contact at driver connector. Internal driver malfunction.
No lamps will light	Broken wire (black). Poor contact at connector, pin 7. Fuse blown in driver. Power disruption. Poor signal connection. Driver logic fuse blown. Control not connected to display. P20 disconnected.
Lamp stays lit	Broken wire behind digit. Internal driver malfunction.
Erratic display	Control malfunction. Internal driver malfunction.

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 Chrondek or an authorized service center.

4.5 Replacement Parts

<u>Part Name or Description</u>	<u>Type</u>	<u>Chrondek Part Number</u>
Lamp Driver		A-1033-50
J-Box, Signal, 16-Pin		A-1010-26
Fuse, Lamp Driver, 10A	AGC-10	F-1006
Fuse, Driver Logic, 1/2A	AGC-1/2	F-1000
Socket, Med. Base		X-1046
Lamp, 85W Amber Flood	85PAR38	DS-1184
Lamp, 85W Green Flood	85PAR38	DS-1185
Lamp, 85W Red Flood	85PAR38	DS-1186
Lamp, 85W Blue Flood	85PAR38	DS-1187

For parts not listed, or for more information about installation or service, please call Chrondek. Our phone number is (605) 692-5866, or call toll-free 1-800-854-6556.

Chrondek, Inc. is a subsidiary of Daktronics, Inc.