Four-Sided Indoor Hockey LED Scoreboards

Installation and Maintenance Manual

ED-11992

Model Numbers
H-2024-9 H-2026-9 H-2031-9

ED-11992
Product 1152
Rev 3 – 29 June 2001

Display Serial No. _____

Display Model No. _____

Date Installed _____

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Section 1: Introduction

1.1 How to Use This Manual

This manual explains the installation and maintenance of Daktronics four-sided hockey LED scoreboards. For questions regarding the safety, installation, operation or service of your display system, refer to the telephone numbers listed on the cover page of this manual and in **Section 3.10**.

Important Safeguards:

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

The box at right illustrates the Daktronics drawing numbering system. The drawing number is located in the lower-right corner of the drawing label (in the example, 7087-P08A-69945). In this manual, drawings are referenced by their last set of digits and the letter preceding them. In **Figure 1**, the drawing would be referred to as **Drawing A-69945**. Drawings are grouped and inserted in alphanumerical order in the **Appendix**.

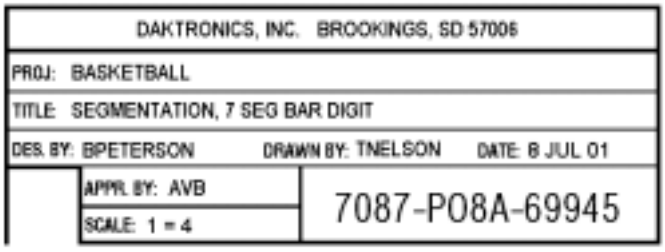


Figure 1: Daktronics Drawing Label

The serial and model number of a Daktronics scoreboard can be found on the identification label, which is located on the display. This label will be similar to the one shown in **Figure 2**. When calling Daktronics Customer Service, please have this information available to ensure that your request is serviced as quickly as possible. For future reference, take time now to note your scoreboard's serial number, model and installation date on the first page of this manual.

Figure 2: Scoreboard ID Label

This manual covers a range of models which are constructed using the same components. The installation and maintenance sections apply to all of the models. The **Appendix** contains reference drawings which offer more specific installation and maintenance information for each model. Carefully read the installation and service sections and review the model-specific drawings before proceeding with the installation or maintenance of any display.

☛ ***NOTICE:*** *The four-sided scoreboards covered in this manual are designed to be suspended above players or spectators; consequently, there are serious liability considerations. It is imperative that the roof support system be able to bear the weight of the scoreboard and all other attachments.* ***Therefore, the roof support system must be certified by a licensed engineer. Suspension cables and hoist or attachment structures must also be designed and certified by a licensed engineer.***

Daktronics is not responsible for structures and suspension systems designed and installed by others.

1.2 Scoreboard Overview

The Daktronics four-sided hockey LED scoreboards are part of a family of scoreboard systems designed to offer simple installation, easy readability and reliability. Microprocessor control assures consistent operation and accuracy.

This manual covers the All Sport® indoor LED scoreboard displays. These models contain 7", 10" and 13" LED digits. (LEDs, or light-emitting diodes, are low-energy, high-intensity, solid-state lighting components.) The reference drawings list dimensions and weight for each model. Scoreboard model number and electrical requirements can be found on a label on the front of the scoreboard, typically below the home penalty clock.

1.3 Product Safety Approval

Daktronics Indoor LED Scoreboards are ETL-listed, tested to CSA standards and CE-labeled for indoor use. Contact Daktronics with any questions regarding the testing procedures.

Section 2: Mechanical and Electrical Installation

Following is an overview of the entire installation process. Each step is detailed in the numbered text sections that follow. The instructions are presented in the general order in which events should occur.

1. Plan and install the hoist or static-suspension structure.
2. Provide power circuit(s) and outlet(s) at the scoreboard location.
3. Provide a power outlet at the control location.
4. Route signal cable from the control location to the scoreboard location and install the junction box.
5. Assemble the scoreboard frame (10' models only).
6. Attach the lower ad panel supports to the frame, if required, and mount the lower ad panels.
7. Mount the scoreboard sections to the frame and join them at the top.
8. Mount the upper ad panels or message centers, if required.
9. Mount ad panels atop the message center, if required.
10. Make power and signal connections between sections.
11. Attach the corner shrouds.
12. Lift the scoreboard assembly and static-mount, or lower the hoist and attach it to the scoreboard.
13. Make the final power and signal hookups for each tier of the display.

2.1 Four-Sided Mounting Options

The method by which the scoreboard is to be suspended must be determined at the time of purchase. There are two primary methods of installing a center-hung scoreboard: creating a static-hung system or using a hoist. Each method has its own benefits and drawbacks. Refer to the publication **SL3710** in **Appendix B** and call Daktronics for help in making the best choice for your installation.

☛ ***Note:*** *Do not attach items to the scoreboard without prior approval.* To properly review and approve a proposed attachment, Daktronics requires information on the size, weight and method by which the item will be attached to the scoreboard. (Engineering time to review attachments will be charged out at a "time and expenses" rate.)

Static Mounting Systems

Static-mounted displays are typically hung with two or four static cables. Two cables may be used when mounting the scoreboard below a large beam or centered between a pair of beams. Four cables are used to further distribute weight. For either method, the mount cables must be symmetrically distributed to maintain a level and a square configuration.

Cable assemblies must have a nominal strength greater than six times the actual load. All other rigging components must be sized within the working load limits published by the component manufacturer.

☛ ***Note:*** *Daktronics strongly recommends that only components from reputable domestic suppliers be used to permanently suspend the scoreboard.*

Remove immediately and *do not use* an assembly that shows evidence of excessive wear or broken wires as defined by the component manufacturer.

1. Have a structural engineer certify that the building can safely support the additional display loading and that the connection points are designed to safely carry the scoreboard weight.
2. Attach the cable sling to the scoreboard while it is on the arena floor.
3. Hang the ends that attach to the ceiling over the sides of the scoreboard. If an end is too short, attach a rope to the end so it can be returned from the top.
4. The scoreboard can be lifted into place many different ways.

   ☛**Note:** It is the installer's responsibility to ensure that the installation is safe and that the display meets OSHA or local regulations.

Lifting Method Example: A common method of *temporarily* lifting the scoreboard is to use a pair of chain-lift motors mounted on the ceiling. Prior approval should be secured from the facility management regarding location and acceptable loads for each rigging point.

1. Attach the chain hoist hooks to the sling master link or sling to the corner eyebolts. Be sure the angle of the sling is greater than 45 degrees.
2. Use the chain hoist to lift the scoreboard to the appropriate height.
3. From the lift, retrieve the sling cables draped over the sides of the scoreboard and attach them to the appropriate locations in the ceiling.
4. Hook up power and signal to outlets and junction boxes in the ceiling.
5. Level the scoreboard by adjusting the turn bracket on the sling.
6. Lower the weight of the display onto the slings.
7. Remove the chain motors.

Electric Hoist Systems

Installing an electric hoist system is more complex and may expose the customer to greater liability. **SL-3610** (found in **Appendix B**) discusses recommended minimum hoist specifications and points that must be considered when selecting a hoist system.

- A building engineer must review and approve the combined weight of the scoreboard, hoist and a minimum impact factor of 15 percent.
- The hoist must be accessible for periodic inspections and maintenance as required by ANSI and OSHA. ☛ **Note:** Records of period inspections must be on file to be accessible for OSHA (see **Section 3.1** of this manual).
- Electrical service and control wiring must be run to the hoist location.
- Additional structures are often required in the ceiling to accommodate the hoist.
- If an existing hoist is to be used, or if a hoist is to be purchased directly by the end user, the user assumes all responsibility and liability for the hoist system.
- The hoist must be inspected and certified in writing by the hoist manufacturer, manufacturer's representative or other qualified hoist inspector.
- Daktronics will inspect hoists installed by Daktronics.
- Daktronics will certify the scoreboard weight but will require a liability waiver signed by the customer before the scoreboard is shipped.

Once the hoist is installed according to the specifications of the hoist manufacturer and the building engineer:

1. Lower the hoist hooks to the scoreboard.

2. Hook the master links to the hook blocks, ensuring that the hook safety latches are closed and operating correctly.
3. Raise the scoreboard 1' to 2' and level it by adjusting the sling turnbuckles.
4. The hoist installer must set upper and lower primary limits and all safety limits. Daktronics recommends maintaining a minimum distance of 2' between the scoreboard and the nearest obstruction.

WARNING:

- ***Never ride in or work on or below the scoreboard while the hoist is powered up. Daktronics recommends having an audible horn warning to indicate that the hoist system is on.***
- ***Never operate the hoist system during public events or when there are people below the scoreboard.***
- ***When using the hoist the operator must have an unobstructed view from ceiling to floor (to ensure free scoreboard travel). Hoist operators should be trained according to the hoist manufacturer's specifications.***

2.2 Assembly Details

Reference Drawings:

Shop Drawing; H-2024 & H-2026.....**Drawing B-106746**
Shop Drawing; Hockey W/24" Ad Panels.....**Drawing B-108189**

The assembly kit includes the following:

- One frame (in two pieces), 10'
- Four corner shrouds
- Four top corner brackets
- Twenty-four 1/4" bolts
- Sixteen 3/8" bolts
- Forty-eight 3/8" Phillips pan head screws
- Sixteen 3/8" nuts
- Sixteen 3/8" washers

An installation may include:

- The four-sided scoreboard
- Upper and lower ad panels
- A message center at the top of the scoreboard

Ad panels may be painted metal without power or they may be backlit, requiring a 120V circuit. A message board requires power as well as signal wiring. The scoreboard itself requires power and signal wiring. The scoreboard tilts outward at a 10 degree angle while the ad panels or message centers are vertical.

☛ ***Please review the following section completely before beginning assembly.***

10' Frame Assembly

Reference Drawing:

Frame Assembly; 4-Sided ..... **Drawing A-107157**

The 10' frame is shipped as two 5' x 10' sections (refer to **Drawing A-107157)**. Note that each section has two corners with a brace across the corner and two corners without a brace. The eyebolts in the braced corners will be on the top side. The optional sheet metal floor is attached to the top side of the frame sections at the factory.

1. Lay out the two sections with the unbraced sides together.
2. Join the sections along their common side, using two 3/8-16 x 1" bolts toward the middle, and 3/8-16 x 1-1/2" bolts at the corners.
3. Join the two sections at the ends with the splice plates and bolts.
4. Use 1-1/2" bolts where the bolt must pass through the reinforcing angles in the corners.

Attaching Optional Lower Ad Panels

Reference Drawing:

Bottom 4-Side Ad Panel Mounting ..... **Drawing A-107664**

This step is required only if the scoreboard has ad panels or auxiliary scoreboard displays attached to the bottom. Refer to **Drawing A-107664**. Support brackets are attached to the bottom of the frame, and the ad panel sections are to be attached to these brackets. The support brackets are designed to be able to support the weight of the whole scoreboard after it is assembled on the arena floor. The bottom ends of the supports should extend about 1/16" beyond the bottom of the lower ad panels so that the scoreboard's weight is not resting on the ad panels.

1. Raise the frame and support it on blocks or stands.
2. Locate the four holes near each corner of the frame on the bottom side.
3. Insert the 3/8" bolts through the frame holes and secure the support brackets to the bottom of the frame with washers and nuts.
4. Repeat for all four corners.
5. Attach the ad panels to the support brackets with3/8" bolts, washers, and nuts.

Mounting Scoreboard Sections to the Frame

Reference Drawing:

4 Sided Installation Details ..... **Drawing A-107887**

Refer to **Drawing A-107887** for an illustration of the parts used in this procedure. Each side of the frame has an angle to attach the bottom of each scoreboard section to the frame. The tops of the scoreboard sections are joined at their corners by special brackets.

1. Lift one scoreboard section into place on the frame, with the angles on the frame inside the bottom channel of the scoreboard section. The angle on the frame has 1/4-20" threaded inserts mounted in it.
2. Align the holes along the bottom of the back of the scoreboard section with the inserts and install the 1/4" bolts as shown in **Detail B** on **Drawing A-107887**.
3. Support that scoreboard section to prevent it from tipping while the second section is put into place and secured to the frame.

4. Join the two sections at their common top corner using a top bracket with ⅜″ bolts, washers and nuts as shown in **Detail A** on **Drawing A-107887**. Once the two sections are joined, they will not require additional support during assembly.
5. Repeat for the third and the fourth sections, attaching each to the frame at the bottom and to the other sections at the top corners.

Mounting an Optional Top Ad Panel or Message Center

Reference Drawing:

Top; 4-Side Ad Panel Mounting..... **Drawing A-107665**

Drawing A-107665 illustrates the parts used in this procedure. The ad panels or the message centers are attached to the top of the scoreboard with mounting strips and then joined at the top with special brackets.

1. Attach the mounting strips to the top of the scoreboard. The mounting strips are fitted with 1/4-20" threaded inserts.

Position a mounting strip inside the top channel of the scoreboard section, aligned with the holes in the back.

Insert a tapered washer between the mounting strip and the scoreboard and attach with a bolt. The tapered washers allow the ad panel or message center to be supported in a vertical position while the scoreboard tilts out 10 degrees.

Leave the bolts a little loose until the ad panel or message center is in place. Each scoreboard section and ad panel or message board requires two mounting strips.

1. Lift one ad panel or message board section into place atop the scoreboard section. Align the holes along the back bottom of the display with the threaded inserts in the mounting strips.
2. Install and tighten the 1/4" bolts. Support the ad panel or message center section to prevent it from tipping while a second section is positioned and secured.
3. Join the tops of the two sections with a top bracket and 3/8" bolts, washers and nuts. Once the two sections are joined at the top, they will not require additional support during assembly.
4. Repeat for the third and the fourth sections, mounting the bottoms to the mounting strips on the top of the scoreboard and joining the tops to the other sections with the top brackets and 3/8" hardware.

Mounting Optional Ad Panel on the Message Center

Repeat the mounting procedures in preceding subsection. Tapered washers are not required. The message centers and the ad panels are both vertical and do not require the alignment angle change provided by tapered washers.

Connecting Power and Signal Between Sections

Reference Drawing:

Ad Panel, Message Cntr Hookup ..... **Drawing A-109746**

Connect the power cords from one backlit ad panel or message board section to the next as shown in **Drawing A-109746**. Ad panel and message center power and signal connectors are located on the ends of the sections. Inputs are on the left end (as viewed from the front) and outputs are on the right end. Scoreboard power and signal connectors are in the back of the scoreboard sections.

To connect the power and signal:

1. Connect the signal cables provided to the jacks in the back, matching the input and output numbers as labeled. Message board signal connections use the six-position plugs provided with the displays. Connect as shown in **Drawing A-109746.**
2. Connect the power cord from one section to the receptacle on the next. The first section in each row is to be connected to a power outlet previously installed for this purpose, and signal wire is to be routed to a box at the control location.
3. The last section in each row has nothing connected to its output jacks. Actual power and signal connections will wait until the scoreboard assembly is suspended.

☛ **Note:** If a hoist is used, power and signal cables must be long enough to allow the scoreboard to be lowered. The optional sheet metal floor will contain the cables when the scoreboard is raised. If the scoreboard is static-mounted, the cables need only to be long enough to provide service. Excess lengths should be neatly tied out of the way.

Attaching Corner Shrouds

Corner shrouds are metal panels that cover the outside corners of the four-sided assembly. Separate shrouds are provided for each tier of the assembly.

1. Position each corner shroud across the appropriate corner and mark the locations of the holes on the scoreboard, ad panel or message center.
2. Drill 9/64″ (3.5mm) holes as guide holes for the screws.
3. Secure the corner shrouds to the corners with the #8 tapping screws provided.
4. Leave one corner of the scoreboard open to allow access until the whole assembly is ready to be suspended.

Attaching Suspension Cables

The roof of the facility and any structures fabricated for the purpose of suspending the scoreboard, as well as the suspension cable slings, must be designed by or inspected and approved by a qualified engineer.

If the scoreboard is to be static-hung (suspended from fixed cables without a hoist):

1. Attach the cables to the four 5/8" eyebolts at the corners of the frame. The cables may be joined together to make two attachment points, or all four cables may attach directly to the roof trusses or the mounting structure. Eyebolts must be aligned with cable to prevent side pull.
2. Hang the top ends of the cables over the sides of the scoreboard to get them out of the way and to make them accessible when hooking up.
3. Lift the scoreboard using an appropriate means, such as a chain hoist, to the correct suspension height.
4. Attach the top ends of the cables to the previously prepared mounting points.
5. Remove the temporary lifting apparatus and level the scoreboard by adjusting the turnbuckles built into the slings.

If the scoreboard is to be suspended from a hoist:

1. Start by attaching the cable sling to the four eyebolts in the corners of the frame.
2. Lower the hoist cables and attach them to the cable slings.
3. Raise the scoreboard a foot or two from the floor and level the scoreboard by adjusting the turnbuckles built into the slings.

☛ ***WARNING*: *Never raise or lower the scoreboard when a person is under it!***

2.3 Power

Reference Drawings:

Electrical Specs, H-2024 **Drawing A-126742**
Electrical Specs, H-2024 w/TNMC ..... **Drawing A-126677**
Electrical Specs, H-2026 **Drawing A-126743**
Electrical Specs, H-2026 w/TNMC ..... **Drawing A-126681**
Electrical Specs, H-2031 **Drawing A-126744**
Electrical Specs, H-2031 w/TNMC ..... **Drawing A-126682**

Refer to the appropriate electrical specification drawings located in the **Appendix**.

1. Install a grounded receptacle near the display so that it is accessible to plug in the power cord. Each scoreboard is equipped with a 120V AC, three-prong plug for power in and power out.
2. Determine which section is the closest to the grounded 120V AC receptacle. Connect the power cord that is on the right side (when viewed from the rear) of the section and plug it into the left side of the next section.
3. Continue to connect each section to the next until all the sections are connected.
4. Connect the remaining power cord to the grounded 120V AC receptacle.

2.4 Grounding

The circuit outlets must contain connections to earth-ground. Proper grounding assures reliable and safe equipment operation. Proper grounding will also protect the equipment from damaging electrical disturbances and lightning. The grounding connection on the three-prong plug power cord connects to the shell of the scoreboard.

☛ ***Note:** The customer is responsible for properly grounding the 120V AC outlet per Article 250 of the National Electrical Code®. **Failure to ground the 120V AC outlet voids the warranty for the scoreboard.***

2.5 Signal

Reference Drawings:

Signal Connection, Installation.....**Drawing A-28124**
Rear View, A/S 5010 Connectors .....**Drawing A-102142**
Electrical Specs, H-2024.....**Drawing A-126742**
Electrical Specs, H-2024 w/TNMC.....**Drawing A-126677**
Electrical Specs, H-2026.....**Drawing A-126743**
Electrical Specs, H-2026 w/TNMC.....**Drawing A-126681**
Electrical Specs, H-2031.....**Drawing A-126744**
Electrical Specs, H-2031 w/TNMC.....**Drawing A-126682**

Signal installation requires routing control cables from the scoreboard control console to a signal junction box. Refer to the signal connection and electrical specification drawings located in the **Appendix**.

1. Use a paired, 24 AWG (minimum) shielded cable and connect the cable to the junction box at the control end.
2. Route the cable from the junction box to a signal junction box located near the display.
3. Route the signal wires from the junction box near the display to the first section.
4. Insert the plug into the jack labeled "Signal In" located on the right side of the scoreboard.
5. Begin with one signal cord and plug it into the jack labeled "Signal Out."
6. Insert the signal cord into the "Signal In" jack on the display next to it.
7. Continue to connect each section to the next one until all the sections are connected.

Displays without team name message centers have three signal jacks on the cabinet back panels. Displays with team name message centers have four signal jacks. Refer to **Drawing A-28124** for more information.

☛ **Special Note to Users of Daktronics All Sport 4000 Series and Daktronics Pro Sport 6000 Control Consoles:**
Current standard models in the Daktronics scoring and timing display lines are configured at the manufacturing plant to operate with the All Sport Series 5000 Control Console. If you receive one of these standard scoreboards, you may need to remove the address plug before your scoreboard can properly receive signal. Simply unplug the address plug, P19, from connector J19 on the LED driver. (The plug is typically looped into the connector cable harness.) If you have problems in this regard, contact the Daktronics Help Desk or your project manager.

Section 3: Maintenance and Troubleshooting

Important Notes

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

3.1 Suspension System Periodic Inspection

Static System

The static mounted system should be inspected one year after initial installation and once every five years thereafter.

- Inspect cable assemblies for broken wires, crushes or kinks.
- Components should be inspected for deformations per manufacturer's recommendations.
- The four-sided scoreboard structural framework should be inspected for any loose or missing bolts.
- Inspect the attachment bracket for loose bolts or cracks in members or welds.
- Check torque on all wire rope clips.

Hoist System

The hoist systems must be inspected annually per OSHA requirements. Some local governing bodies require more frequent inspections. See the hoist manufacturer's manual for inspection procedures.

- Inspect cable assemblies for broken wires, crushes or kinks.
- Inspect connections for loose bolts or cracks in members or welds.

☛ ***Note:*** *Document all inspections. Any irregularities must be addressed immediately. For installation problems call the original installer; for hoist problems, the hoist manufacturer.*

3.2 LED Driver

Reference Drawing:

LED Driver ..... **Drawing A-119205**

The LED driver (refer to **Drawing A-119205**) switches LEDs on and off. Each driver has 19 connectors providing power and signal inputs/outputs to digits and indicators. The following table shows the function of these connectors

Connector No.	Function
1-16	Output to digits and indicators
17	Control signal and power input
18	Control for horn
19	Address

Output connectors 1 through 16 each have nine pins. Pin 7 provides power to the digit or the indicators wired to that connector. The other eight pins provide switching connections.

☛ **Special Note to Users of Daktronics All Sport 4000 Series and Daktronics Pro Sport 6000 Control Consoles:**
Current standard models in the Daktronics scoring and timing display lines are configured at the manufacturing plant to operate with the All Sport Series 5000 Control Console. If you receive one of these standard scoreboards, you may need to remove the address plug before your scoreboard can properly receive signal. Simply unplug the address plug, P19, from connector J19 on the LED driver. (The plug is typically looped into the connector cable harness.) If you have problems in this regard, contact the Daktronics Help Desk or your project manager.

3.3 Segmentation and Digit Designation

Reference Drawings:
Segmentation, 7 Segment Bar Digit.....**Drawing A-38532**

In each digit, certain LEDs always turn on and off together. These groupings of LEDs are referred to as *segments*, and each digit is divided into seven segments. The bar digit drawing, **A-38532,** shows the number of each connector pin wired to each digit segment as well as the wiring color code used throughout the display.

The electrical specification drawings for the individual scoreboards show the digit layout for each hockey scoreboard; the number inside the lower portion of each digit indicates the "digit designation," that is, which driver connection is wired to that digit.

3.4 Component Locations

Reference Drawings:
Electrical Specs, H-2024 ..... **Drawing A-126742**
Electrical Specs, H-2024 w/TNMC..... **Drawing A-126677**
Electrical Specs, H-2026 ..... **Drawing A-126743**
Electrical Specs, H-2026 w/TNMC..... **Drawing A-126681**
Electrical Specs, H-2031 ..... **Drawing A-126744**
Electrical Specs, H-2031 w/TNMC..... **Drawing A-126682**

The reference drawings listed in this section are located in the **Appendix**.. They show the component locations and block diagrams for the scoreboard models covered in this manual.

3.5 Schematics

Reference Drawings:

Schematic, LED Driver II Plate x/XFMR ..... **Drawing A-115502**
Schematic, LED TNMC for AS5000 ..... **Drawing A-125174**
Schematic, LED 2 Driver for AS5000 ..... **Drawing A-125172**
Schematic, LED 3 Drivers ..... **Drawing A-125173**

The reference drawings listed in this section are located in the **Appendix**. They are the schematic diagrams for the scoreboard models covered in this manual.

☛ ***Note: Disconnect power before servicing the display!*** Disconnect the power, too, when the display is not in use. Leaving the power on when the display is not in use decreases the life of some electronic components.

3.6 Adjusting Horn Volume

Horn volume is set at its maximum level at the factory. If the horn is too loud, reduce its volume by adjusting the setscrew mounted in the front of the horn. A plastic tip on the screw touches the horn's diaphragm, reducing the volume. Turn the screw clockwise and test the volume by operating the horn from the scoreboard control console. Continue adjusting and testing until the desired volume level is obtained.

Four-sided scoreboards have a horn in each of the four sides (faces).

If the standard electronic horn is not loud enough for your facility, a trumpet horn can provide significantly greater volume. On a four-sided scoreboard, a single trumpet horn may be mounted behind one of the scoreboard faces, pointing down at the playing area. Contact Daktronics for more information and pricing.

☛ ***Caution!*** *The horn is a 120V AC device. Turn off the power to the scoreboard before adjusting the horn!*

3.7 Troubleshooting

Daktronics scoreboards are built for long life and require little maintenance. However, from time to time, a display may malfunction, and certain components will require replacement. The replacement parts list in **Section 3.8** includes part numbers of components it may be necessary to reorder. Most display components also have a white label that lists the part number. Finally, refer to the drawings in this manual to obtain the correct replacement part number for any damaged component.

For assistance with troubleshooting and to order replacement components, *first contact your service provider*. The service provider may have spare equipment on hand and, in the event of an emergency, may offer same-day service. Call the Daktronics Help Desk – (877) 605-1115 if directed by your service technician or if no service provider is available.

For faster service, note the model of the scoreboard and any problem-area assembly numbers, as shown on the scoreboard spec sheet. If replacement components will be required, have a purchase order number or any other purchase information in hand when calling.

Symptom/Condition	Possible Cause	Corrective Action
Scoreboard will not light.	■ Console not connected or poor connection. ■ No power to control console. ■ No power to the scoreboard. ■ Wrong code entered into All Sport	■ Check signal cable. ■ Check power to console ■ Check power to scoreboard ■ Verify code to console
Garbled display.	■ Internal driver logic malfunction. ■ Control console malfunction.	■ Check power. ■ Verify code to console
Digit will not light.	■ Black wire to digit broken/ Poor contact at driver connection.	■ Verify power harness in display
Segment will not light.	■ Broken LED or connection ■ Driver shift register failure. ■ Broken wire between LED driver and digit/ Poor contact at driver connector	■ Replace digit. ■ Replace driver. ■ Secure pins tightly in plugs
Segment stays lit.	■ Driver shift register failure. ■ Short circuit on digit.	■ Replace driver. ■ Replace digit

3.8 Replacement Parts List

The following parts list includes components used by many different types of LED scoreboards. For the exact components needed for your scoreboard, refer to the drawings in this manual.

Description	Part No.
Main clock, start/stop switch	0A-1166-0003
Shot clock, start/stop switch	0A-1166-0004
Horn, 120V AC	0A-1152-0332
Transformer, 120P/16S, 63A	T-1066
Junction box; phone jack	0A-1196-0013
LED driver, 16-column	0P-1150-0127
Arrow, 3", red LED	0P-1150-0128
Arrow, 3", green LED	0P-1150-0129
Cable, 20' phone plug	W-1236
Cable, 50' phone plug	W-1237
Cable, 30' phone plug	W-1238
Cable, 10' phone plug	W-1340
Digit, 7" red, 7 seg	0P-1150-0187

Description	Part No.
Digit, 7" green, 7 seg	0P-1150-0037
Digit, 7" amber, 7 seg	0P-1150-0082
Digit, 7" red, 2 seg	0P-1150-0188
Digit, 7" green, 2 seg	0P-1150-0040
Digit, 7" amber, 2 seg	0P-1150-0041
Digit, 10" red, 7 seg	0P-1150-0189
Digit, 10"green, 7seg	0P-1150-0043
Digit, 10" amber, 7 seg	0P-1150-0083
Digit, 10" red, 2 seg	0P-1150-0190
Digit, 10" green, 2 seg	0P-1150-0046
Digit, 10" amber, 2 seg	0P-1150-0047
Digit, 13" red, 7 seg	0P-1150-0191
Digit, 13" green, 7 seg	0P-1150-0049
Digit, 13" amber, 7 seg	0P-1150-0084
Digit, 13" red, 2 seg	0P-1150-0192
Digit, 13" green, 2 seg	0P-1150-0052
Digit, 13" amber, 2 seg	0P-1150-0053

3.9 Warranty and Maintenance Program

Daktronics recommends that each customer keep an inventory of essential parts in case problems arise. If equipment fails, the customer's local service technician can get the equipment operational again with spare parts kept on hand. The failed components can then be shipped to Daktronics for parts exchange.

To provide parts quickly, Daktronics introduced a parts exchange program more than 20 years ago. The program offers a fast and economical way to replenish the customer's spare parts inventory if a component fails; it saves money and reduces downtime. Under normal circumstances, Daktronics sends a reconditioned replacement part within a 24-hour period. In urgent situations, Daktronics ships using the fastest method available.

Under the warranty and maintenance program, the customer must send all failed components within 15 days of receiving the exchange components from Daktronics. If the parts have not been received by Daktronics within 30 days, the customer will be billed for the replacements at full price.

For assistance, contact the Daktronics Help Desk at (877) 605-1115. A Daktronics technician is on-call from Friday evening until Monday morning. A special call-diverting system notifies the on-call technician during the weekend. The call-diverting system asks the customer to leave a message and telephone number, including area code, for the technician to call back. In emergency situations, Daktronics makes every effort to ship replacement equipment immediately. Daktronics leads the industry with this unique weekend service.

For specific information on your Daktronics scoreboard, refer to the warranty in the original purchase packet shipped with the scoreboard. Unless specifically stated in the warranty agreement, *the warranty does not cover on-site labor.*

3.10 Daktronics Exchange/Repair and Return Programs

To serve customers' repair and maintenance needs, Daktronics offers both an exchange program and a repair and return program.

Daktronics' unique exchange program is a quick, economical service for replacing key components in need of repair. If a component fails, Daktronics sends the customer a replacement, and the customer, in turn, sends the failed component to Daktronics. This not only saves money but decreases scoreboard downtime. This service is provided to qualified customers who follow the program guidelines explained below.

Daktronics provides this service to ensure users get the most from their Daktronics products. Please call the Help Desk – (877) 605-1115 – if you have questions regarding the exchange program or any other Daktronics service.

When you call the Daktronics Help Desk, a trained service technician will work with you to solve the equipment problem. You will work together to diagnose the problem and determine which exchange replacement part to ship. If, after you make the exchange, the equipment still causes problems, please contact our Help Desk immediately.

If the replacement part fixes the problem, package the defective part in the same box and wrapping in which the replacement part arrived, fill out and attach the enclosed UPS shipping document, and *RETURN THE PART TO DAKTRONICS*. In most circumstances, you will be invoiced for the replacement part at the time it is shipped. This bill is due when you receive it.

Daktronics expects immediate return of an exchange part if it does not solve the problem. The company also reserves the right to refuse equipment that has been damaged due to acts of nature or causes other than normal wear and tear.

If the defective equipment is not shipped to Daktronics within 30 working days from the invoice date, it is assumed you are purchasing the replacement part, and you will be invoiced for it. This second invoice represents the difference between the exchange price and the full purchase price of the equipment. The balance is due when you receive the second invoice. If you return the exchange equipment after 30 working days from the invoice date, you will be credited for the amount on the second invoice, minus a restocking fee.

To avoid a restocking charge, please return the defective equipment within 30 days from the invoice date.

Daktronics also offers a Repair and Return program for items not subject to exchange.

Return Materials Authorization: To return parts for service, contact your local representative prior to shipment to acquire a Return Material Authorization (RMA) number. If you have no local representative, call the Daktronics Help Desk for the RMA. This expedites repair of your component when it arrives at Daktronics.

Packaging for Return: Package and pad the item well so that it will not be damaged in shipment. Electronic components such as printed circuit boards should be installed in an enclosure or placed in an antistatic bag before boxing. (Antistatic foam packaging and circuit-board shipping boxes are available from Daktronics). Please enclose your name, address, phone number and a clear description of symptoms.

This is how to reach us:

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

Phone: Daktronics Help Desk: 1 (877) 605-1115 (toll free)
or 1 (605) 697-4036

Fax: 1 (605) 697-4444

E-mail: helpdesk@daktronics.com

Appendix A: Reference Drawings

A Drawings

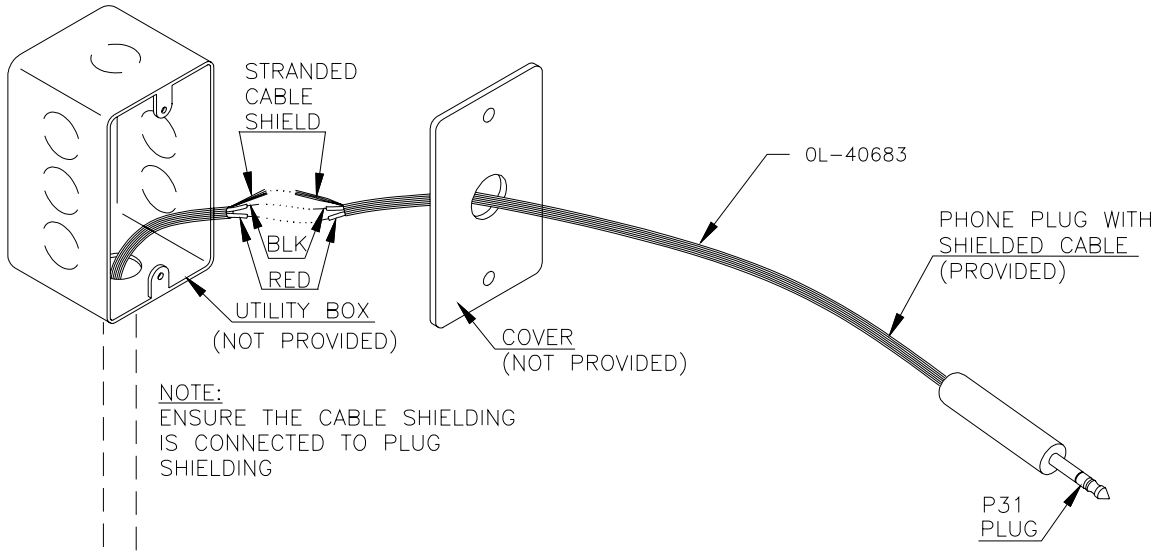
Signal Connection, Installation ..... **Drawing A-28124**
Segmentation, 7 Segment Bar Digit..... **Drawing A-38532**
Rear View, A/S 5010 Connectors ..... **Drawing A-102142**
Frame Assembly; 4-Sided ..... **Drawing A-107157**
Bottom 4-Side Ad Panel Mounting ..... **Drawing A-107664**
Top; 4-Side Ad Panel Mounting..... **Drawing A-107665**
4 Sided Installation Details ..... **Drawing A-107887**
Mechanical Spec; 4-Side Hockey ..... **Drawing A-107991**
Ad Panel, Message Cntr Hookup..... **Drawing A-109746**

LED Driver ..... **Drawing A-119205**
Schematic, LED TNMC for AS5000..... **Drawing A-125174**
Electrical Specs, H-2024 w/TNMC..... **Drawing A-126677**
Electrical Specs, H-2026 w/TNMC..... **Drawing A-126681**
Electrical Specs, H-2031 w/TNMC..... **Drawing A-126682**
Electrical Specs, H-2024 ..... **Drawing A-126742**
Electrical Specs, H-2026 ..... **Drawing A-126743**
Electrical Specs, H-2031 ..... **Drawing A-126744**

B Drawings

Shop Drawing; H-2024 & H-2026 ..... **Drawing B-106746**
Shop Drawing; Hockey W/24" Ad Panels..... **Drawing B-108189**
Schematic, LED Driver II Plate x/XFMR..... **Drawing B-115502**
Schematic, LED 2 Driver for AS5000..... **Drawing B-125172**
Schematic, LED 3 Drivers..... **Drawing B-125173**

DISPLAY LOCATION

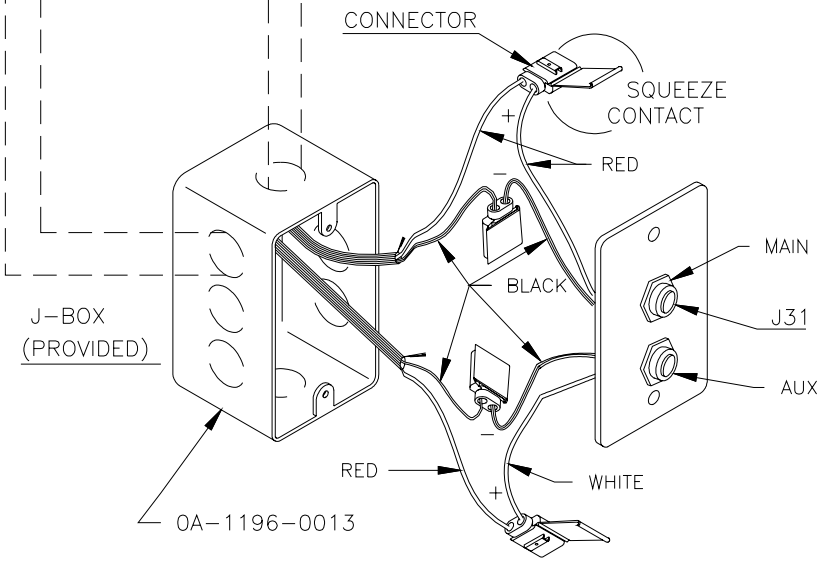


NOTE:
ENSURE THE CABLE SHIELDING IS CONNECTED TO PLUG SHIELDING

TO MAIN BOARD

SHIELDED CABLE IN CONDUIT (NOT PROVIDED)

TO AUX BOARD



PROCEDURE

1. ROUTE CONDUIT BETWEEN CONTROL AND DISPLAY LOCATIONS.
2. MOUNT BOXES.
3. PULL CABLE THROUGH CONDUIT.
4. CONNECT CABLE TO J31 AND P31

J31: USE CONNECTORS PROVIDED. INSERT WIRES INTO CONNECTOR AND SQUEEZE CONTACT DOWN WITH PLIERS. SNAP PLASTIC COVER SHUT.

P31: CONNECT WIRES TO CABLE AS FOLLOWS:

J31 RED TO P31 RED (+)

J31 BLK TO P31 BLK (–)

J31 SHIELD TO P31 SHIELD

NOTE!!

DO NOT CONNECT CABLE SHIELD AT CONTROL CONSOLE END

CONTROL LOCATION

REV.	DATE	DESCRIPTION	BY	APPR.
05	30 JUL 03	BOLD FACED GROUNDING NOTE	TLH	
04	17 JUN 03	CHANGED GROUDING PROCEDURES	JJC	MWM
3	17 JAN 02	ADDED AUX TO J-BOX	JJS	
2	25 MAR 92	CHANGED WHITE TO RED	JTC	
1	05 NOV 91	REDREW ON A-SIZE ON ACAD.	JLH	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: BASKETBALL

TITLE: SIGNAL CONNECTION; INSTALLATION

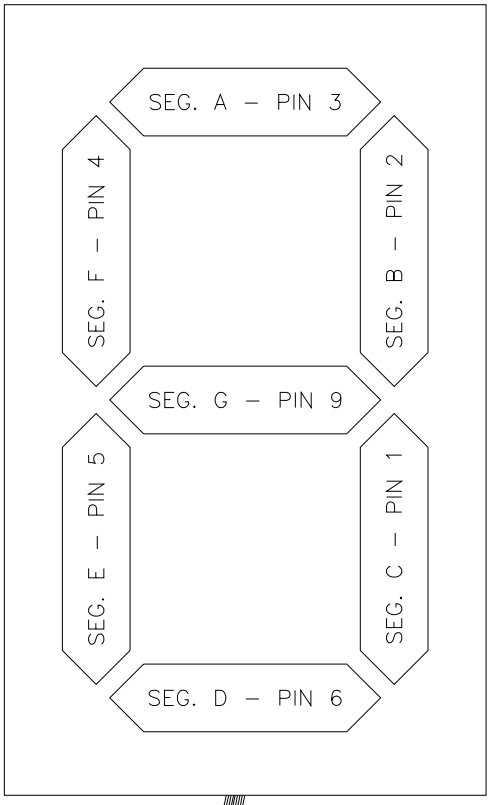
DES. BY: AVB DRAWN BY: MHART DATE: 15SEP86

REVISION 05

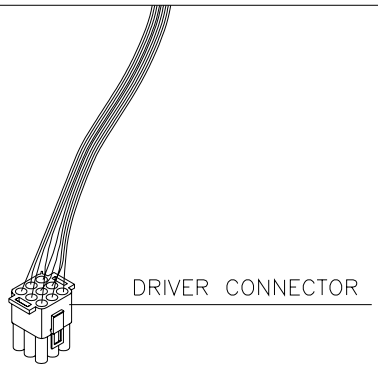
APPR. BY: AVB

SCALE: NONE

1009-R10A-28124

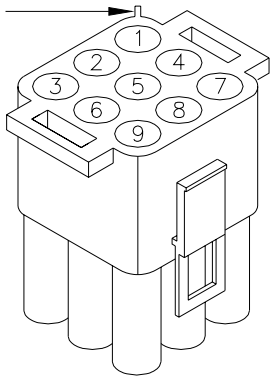


7 SEGMENT BAR DIGIT
FRONT VIEW



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

CONNECTOR PIN NUMBERING
NOTE SPLINE NEAR NO. 1



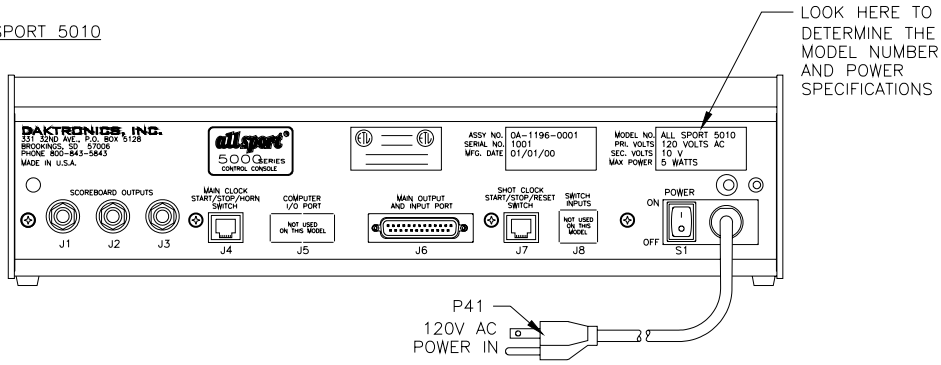
NOTE: "H" SEGMENT, GRAY WIRE IS NOT USED ON 7 SEGMENT BAR DIGIT.

DAKTRONICS, INC. BROOKINGS, SD 57006

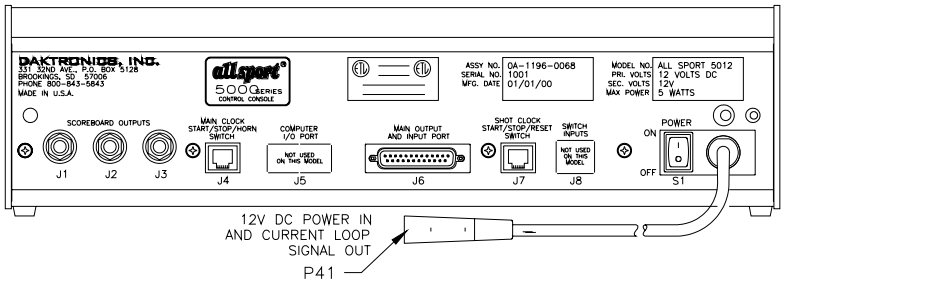
REV.	DATE	DESCRIPTION	BY	APPR.
2	30 APR 97	ADDED SEGMENT DESIGNATIONS TO DIGIT FIGURE.	AVB	AVB
1	2 JAN 92	CHANGED FROM B-SIZE TO A-SIZE DWG.	C FICK	

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

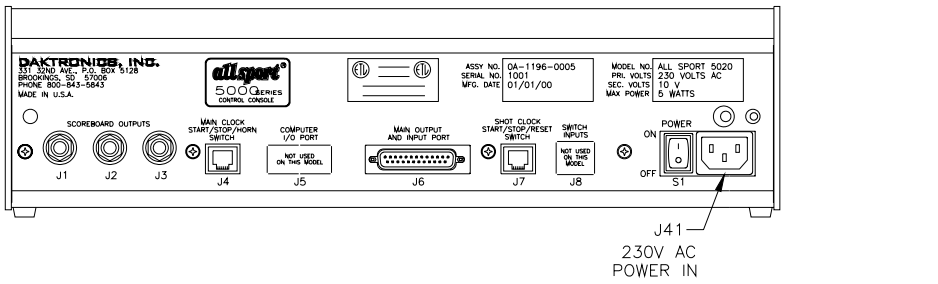
ALL SPORT 5010



ALL SPORT 5012



ALL SPORT 5020



J1–J3 – OUTPUT #1–#3

CONTACT	FUNCTION
TIP	CURRENT LOOP OUTPUT 1 +
RING	CURRENT LOOP OUTPUT 1 –
SHAFT	GND

J4 – START/STOP/HORN

PIN #	FUNCTION
1	SWITCH INPUT 2 –
2	SWITCH INPUT 1 –
3	RELAY OUTPUT –
4	RELAY OUTPUT +
5	SWITCH INPUT 1 +
6	SWITCH INPUT 2 +

J6 – MAIN PORT

PIN #	FUNCTION
1	EARTH
2	RS232 RECEIVE +
3	RS232 TRANSMIT +
4	NOT USED
5	NOT USED
6	NOT USED
7	C. L. OUTPUT 4 –/RS232 GND
8	SWITCH INPUT 1 +
9	CURRENT LOOP INPUT +
10	CURRENT LOOP INPUT –
11	RELAY OUTPUT +
12	NOT USED
13	NOT USED
14	CURRENT LOOP OUTPUT 1 +
15	CURRENT LOOP OUTPUT 1 –
16	CURRENT LOOP OUTPUT 2 +
17	CURRENT LOOP OUTPUT 2 –
18	CURRENT LOOP OUTPUT 3 +
19	CURRENT LOOP OUTPUT 3 –
20	NOT USED
21	SWITCH INPUT 1 –
22	CURRENT LOOP OUTPUT 4 +
23	RELAY OUTPUT –
24	10V AC/DC INPUT–P
25	10V AC/DC INPUT–N

J7 – SHOT/PLAY CLOCK

PIN #	FUNCTION
1	SWITCH INPUT 5 –
2	SWITCH INPUT 4 –
3	SWITCH INPUT 3 –
4	SWITCH INPUT 3 +
5	SWITCH INPUT 4 +
6	SWITCH INPUT 5 +

FOR STANDARD CODES, THESE FUNCTIONS ARE USUALLY ASSIGNED TO THE FOLLOWING TASKS:

FUNCTION	USUAL TASK
SW IN 1	MAIN CLOCK STOP/START
SW IN 2	MAIN CLOCK HORN
SW IN 3	NOT USED
SW IN 4	SHOT/PLAY CLOCK STOP
SW IN 5	SHOT/PLAY CLOCK RESET
SW OUT	CLOCK STOP OUT
CL OUT 1	SCOREBOARD OUTPUT
CL OUT 2	SCOREBOARD OUTPUT
CL OUT 3	SCOREBOARD OUTPUT
CL OUT 4	DATA STREAM

ALL SPORT 5000 SERIES MODELS

MODEL #	FUNCTION
5010	120V, STANDARD PROGRAMMING
5020	230V, STANDARD PROGRAMMING

REV.	DATE	DESCRIPTION	BY	APPR.
3	05 OCT 01	ADDED A/S 5012 TO LAYOUT CHANGED DWG SCALE FROM 1=3 TO 1=4	NW	
2	24 APR 99	CHANGED TO BE FOR A/S 5010 CONSOLES ONLY	EB	
1	13 APR 99	ADDED J10 ADDED A/S 5010 LAYOUT	EB	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: ALL SPORT 5000 SERIES CONSOLES

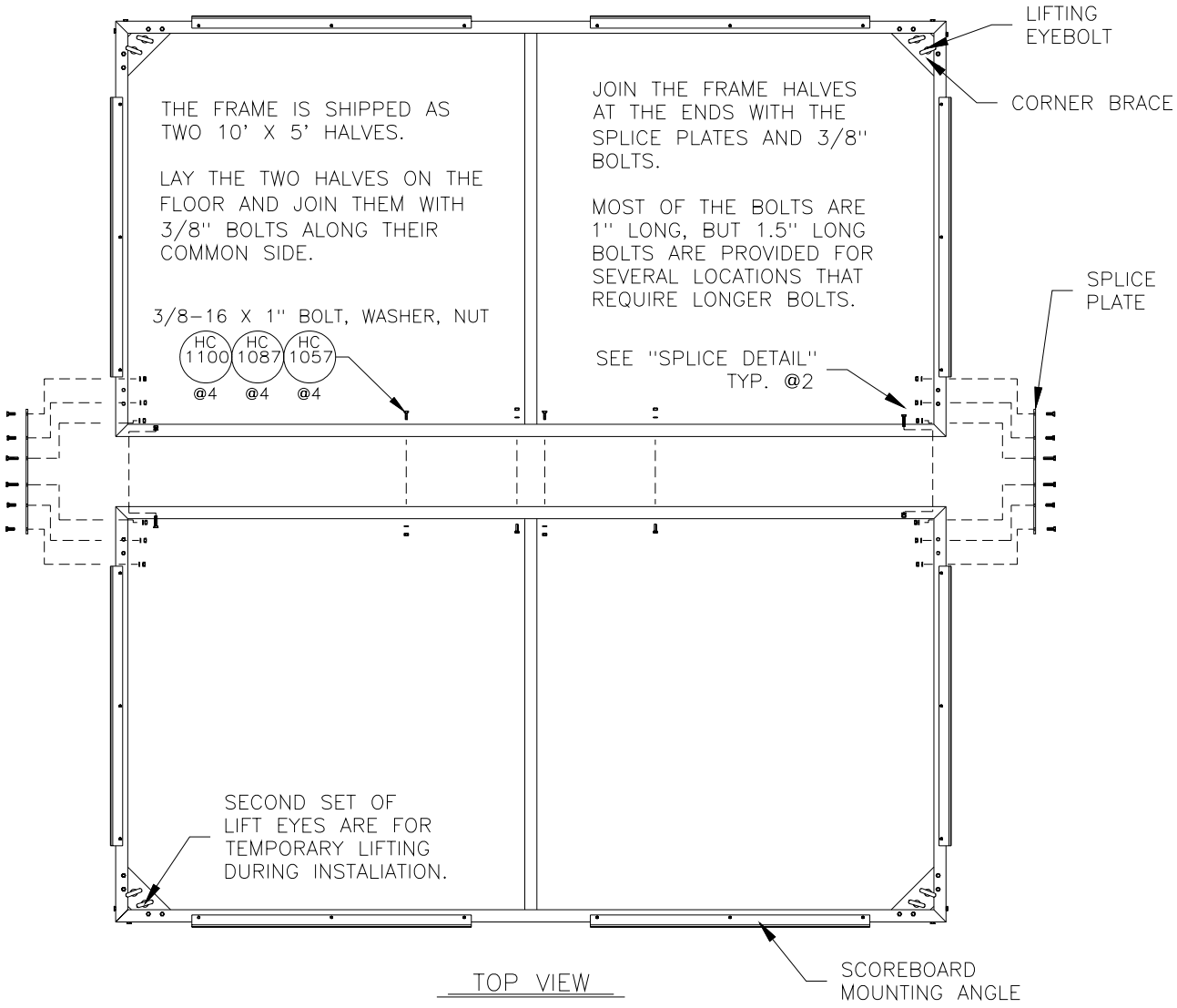
TITLE: REAR VIEW, A/S 5010 CONNECTOR ASSIGNMENTS

DES. BY: EBRAVEK DRAWN BY: EBRAVEK DATE: 27APR98

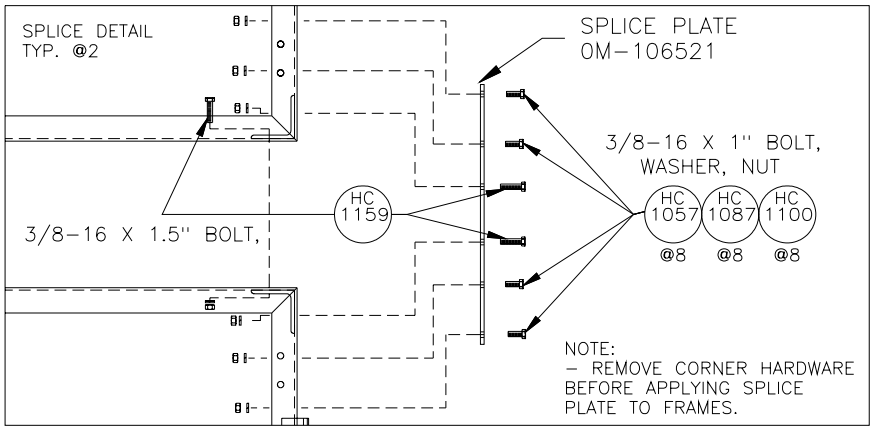
REVISION APPR. BY:

SCALE: 1=4

1196-R04A-102142



TOP VIEW



SPLICE DETAIL

REV.	DATE	DESCRIPTION	BY	APPR.
02	18 OCT 01	ADDED HC-1100 @2, HC-1087 @2, AND HC-1057 @2. UPDATED CORNER ANGLES.	JJS	
01	11JUN01	CHANGED TITLE TO INCLUDE 8'	BDP	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: STANDARD INDOOR LED SCOREBOARDS

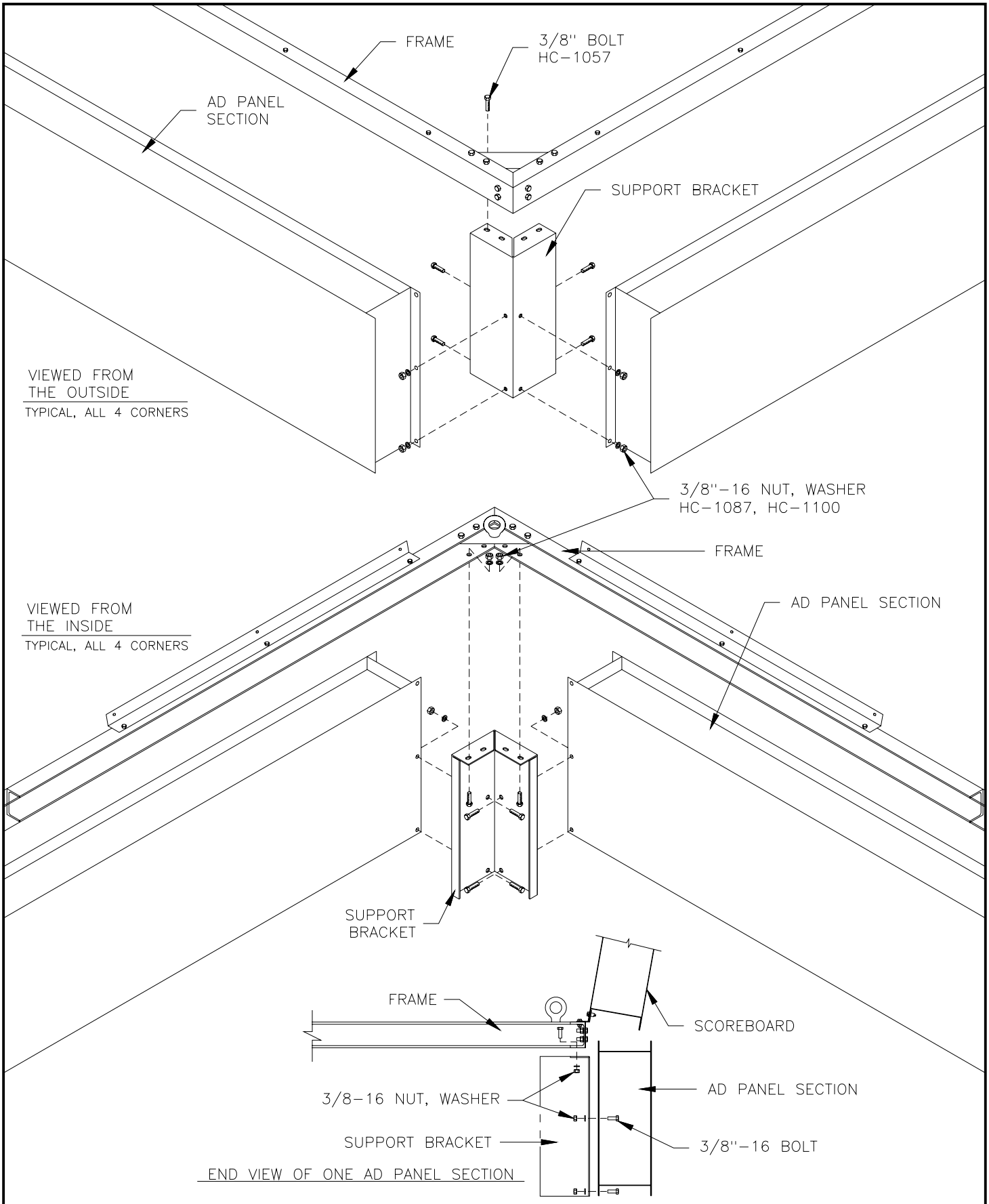
TITLE: FRAME ASSEMBLY, 4-SIDE, 8' & 10' SQUARE

DES. BY: AVB DRAWN BY: MJORDAN DATE: 21 OCT 98

REVISION APPR. BY:

SCALE: 1=25

1152-R10A-107157



REV.	DATE	DESCRIPTION	BY	APPR.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ:

TITLE: BOTTOM 4-SIDE AD PANEL MOUNTING

DES. BY: AVB DRAWN BY: A VANBEMMEL DATE: 12 OCT 98

REVISION APPR. BY:

SCALE: 1=15

1009-E10A-107664

ASSEMBLY PROCEDURE:

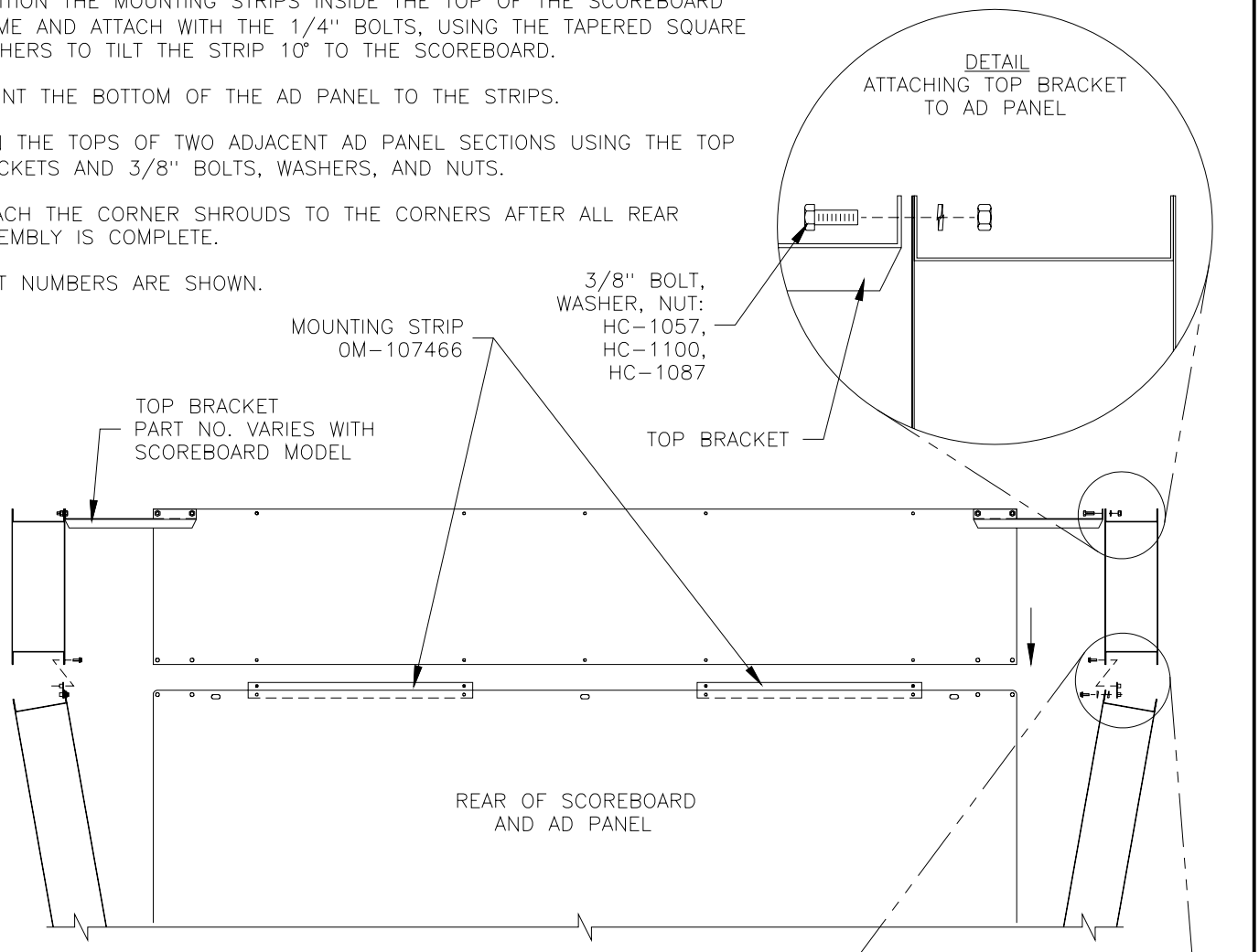
POSITION THE MOUNTING STRIPS INSIDE THE TOP OF THE SCOREBOARD FRAME AND ATTACH WITH THE 1/4" BOLTS, USING THE TAPERED SQUARE WASHERS TO TILT THE STRIP 10° TO THE SCOREBOARD.

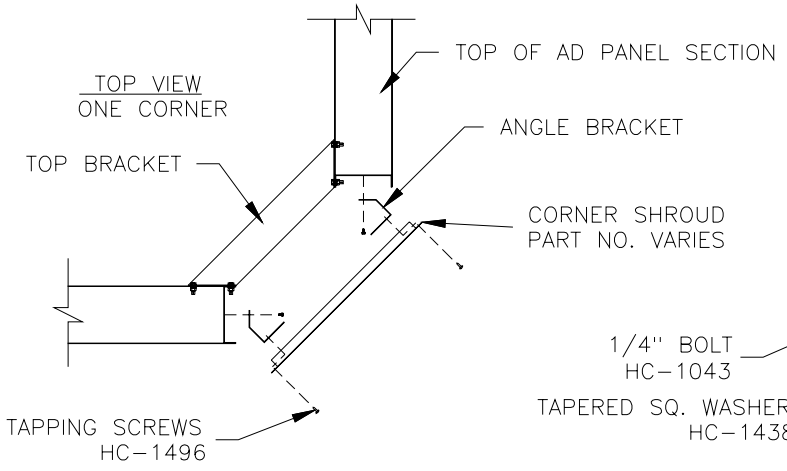
MOUNT THE BOTTOM OF THE AD PANEL TO THE STRIPS.

JOIN THE TOPS OF TWO ADJACENT AD PANEL SECTIONS USING THE TOP BRACKETS AND 3/8" BOLTS, WASHERS, AND NUTS.

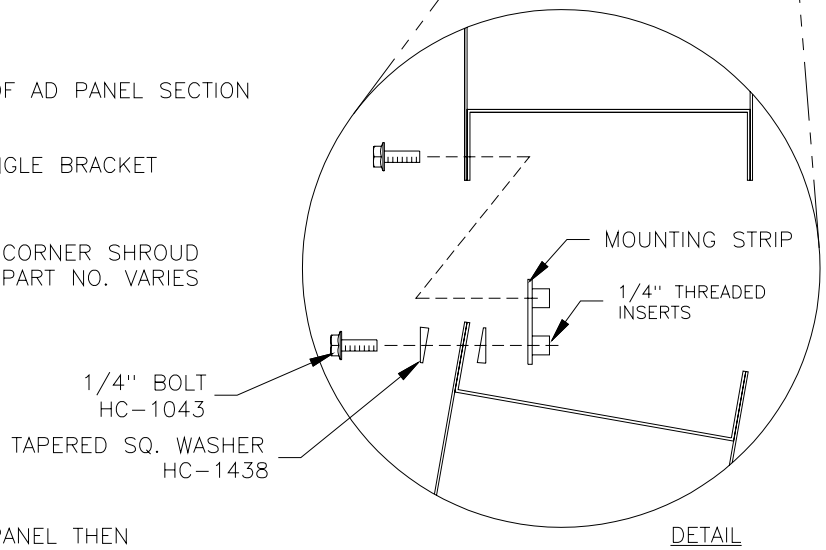
ATTACH THE CORNER SHROUDS TO THE CORNERS AFTER ALL REAR ASSEMBLY IS COMPLETE.

PART NUMBERS ARE SHOWN.





MOUNT THE ANGLE BRACKETS TO THE AD PANEL THEN POSITION THE CORNER SHROUD AGAINST THE ANGLE BRACKETS, MARK AND DRILL 9/64" ø HOLES. SECURE CORNER SHROUD WITH TAPPING SCREWS PROVIDED.



DETAIL
JOINING AD PANEL TO
TOP OF SCOREBOARD

REV.	DATE	DESCRIPTION	BY	APPR.
03	07 AUG 02	UPDATED ANGLE BRACKETS AND CHANGED TAPPING SCREW FROM HC-1073 TO HC-1496	ALG	
02	12 DEC 01	LABLED ANGLE BRACKETS, AND MODIFIED MOUNTING INSTRUCTIONS	ALG	
01	10 NOV 00	FIXED CORNER SHROUDING ATTACHMENT.	EPR	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ:

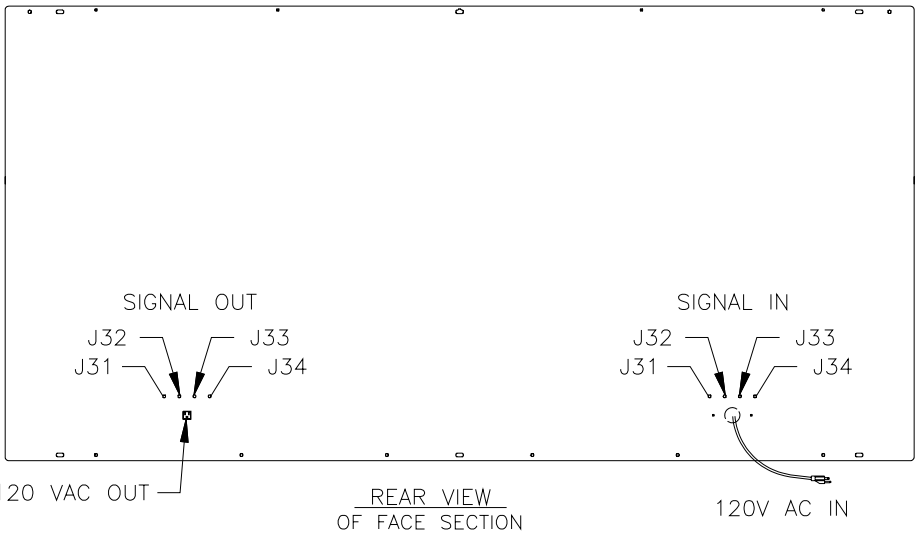
TITLE: 4-SIDE TOP AD PANEL MOUNTING

DES. BY: AVB DRAWN BY: A VANBEMMEL DATE: 08 OCT 98

REVISION APPR. BY:

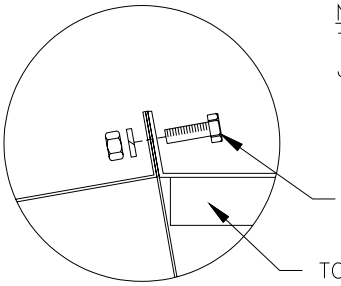
SCALE: 1=20

1009-E10A-107665

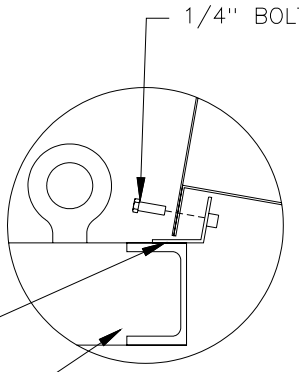


REAR VIEW
OF FACE SECTION

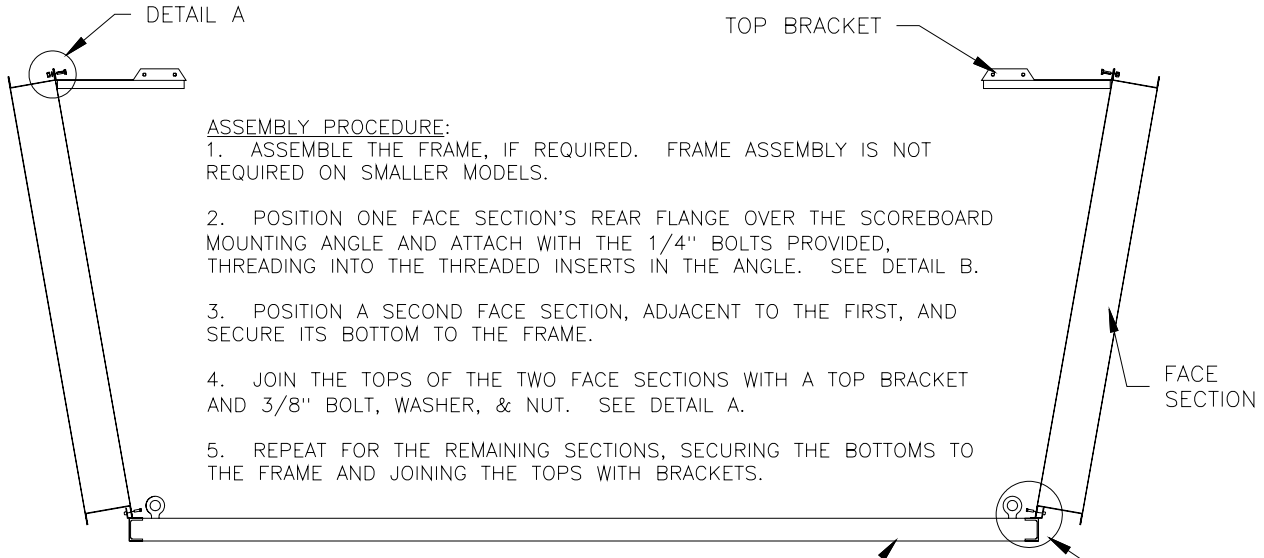
NOTE:
THE NUMBER OF SIGNAL JACKS (SHOWN AS J31 THROUGH J38) VARIES, DEPENDING ON MODEL AND OPTIONS.



DETAIL A



DETAIL B



ASSEMBLY PROCEDURE:

1. ASSEMBLE THE FRAME, IF REQUIRED. FRAME ASSEMBLY IS NOT REQUIRED ON SMALLER MODELS.

2. POSITION ONE FACE SECTION'S REAR FLANGE OVER THE SCOREBOARD MOUNTING ANGLE AND ATTACH WITH THE 1/4" BOLTS PROVIDED, THREADING INTO THE THREADED INSERTS IN THE ANGLE. SEE DETAIL B.

3. POSITION A SECOND FACE SECTION, ADJACENT TO THE FIRST, AND SECURE ITS BOTTOM TO THE FRAME.

4. JOIN THE TOPS OF THE TWO FACE SECTIONS WITH A TOP BRACKET AND 3/8" BOLT, WASHER, & NUT. SEE DETAIL A.

5. REPEAT FOR THE REMAINING SECTIONS, SECURING THE BOTTOMS TO THE FRAME AND JOINING THE TOPS WITH BRACKETS.

CROSS SECTION OF ASSEMBLED SCOREBOARD

REV.	DATE	DESCRIPTION	BY	APPR.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: STANDARD INDOOR SCOREBOARDS

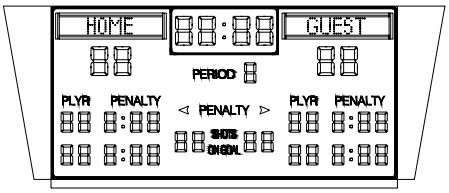
TITLE: 4-SIDE INSTALLATION DETAILS

DES. BY: AVB DRAWN BY: MJORDAN DATE: 24 SEP 98

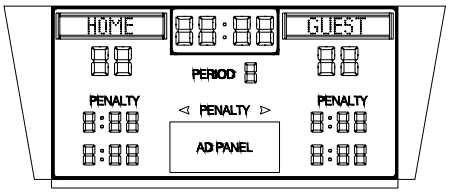
REVISION APPR. BY:

SCALE: 1=25

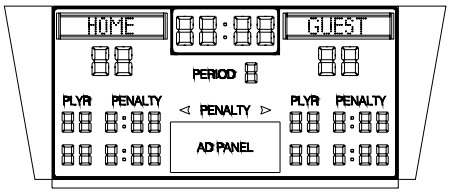
1152-E10A-107887



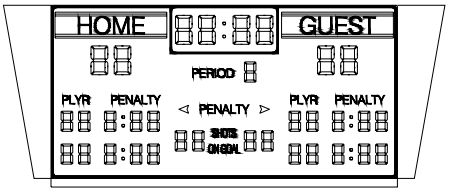
H–2024–9 W/ TNMC



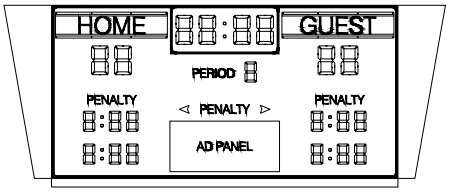
H–2026–9 W/ TNMC



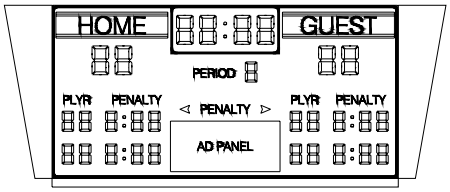
H–2031–9 W/ TNMC



H–2024–9



H–2026–9



H–2031–9

MODEL #	APPROX. WEIGHT	POWER MAX POWER	SIGNAL # OF PAIRS	DIMENSIONS WIDTH (max)	DIMENSIONS HEIGHT (max)
H–2024–9	980 Lbs.(445 kg)	800 WATTS	1	153"(389cm)	63"(160cm)
H–2024–9 W/ TNMC	980 Lbs.(445 kg)	1200 WATTS	1	153"(389cm)	63"(160cm)
H–2026–9	980 Lbs.(445 kg)	600 WATTS	1	153"(389cm)	63"(160cm)
H–2026–9 W/ TNMC	980 Lbs.(445 kg)	1000 WATTS	1	153"(389cm)	63"(160cm)
H–2031–9	980 Lbs.(445 kg)	800 WATTS	1	153"(389cm)	63"(160cm)
H–2031–9 W/ TNMC	980 Lbs.(445 kg)	1200 WATTS	1	153"(389cm)	63"(160cm)

OPTIONS:

AD PANELS

DESCRIPTION	APPROX. WEIGHT	POWER MAX POWER	DIMENSIONS WIDTH	DIMENSIONS HEIGHT
18" x 10' BACKLIT AD	270 Lbs. (122kg)	1200 WATTS	120"(305cm)	18"(46cm)
24" x 10' BACKLIT AD	340 Lbs. (154kg)	1200 WATTS	120"(305cm)	24"(61cm)
18" x 10' PAINTED AD	120 Lbs. (54 kg)	--	120"(305cm)	18"(46cm)
24" x 10' PAINTED AD	130 Lbs. (59 kg)	--	120"(305cm)	24"(61cm)

GALAXY DISPLAYS

DESCRIPTION	APPROX. WEIGHT	POWER MAX POWER	SIGNAL # OF PAIRS	DIMENSIONS WIDTH	DIMENSIONS HEIGHT
16 x 64 MATRIX	600 Lbs. (275 kg)	1040 WATTS	2	120"(305cm)	24"(61cm)
16 x 80 MATRIX	600 Lbs. (275 kg)	1300 WATTS	2	120"(305cm)	24"(61cm)
16 x 96 MATRIX	600 Lbs. (275 kg)	1560 WATTS	2	120"(305cm)	24"(61cm)
16 x 112 MATRIX	600 Lbs. (275 kg)	1820 WATTS	2	120"(305cm)	24"(61cm)

REV.	DATE	DESCRIPTION	BY	APPR.
2	04OCT01	UPDATED WEIGHTS	BDP	
1	21 OCT 98	CHANGED POWER RATING ON 24" AD PANEL.	MWJ	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: STANDARD INDOOR SCOREBOARDS

TITLE: MECHANICAL SPEC; 4–SIDE HOCKEY

DES. BY: AVB DRAWN BY: MJORDAN DATE: 14 OCT 98

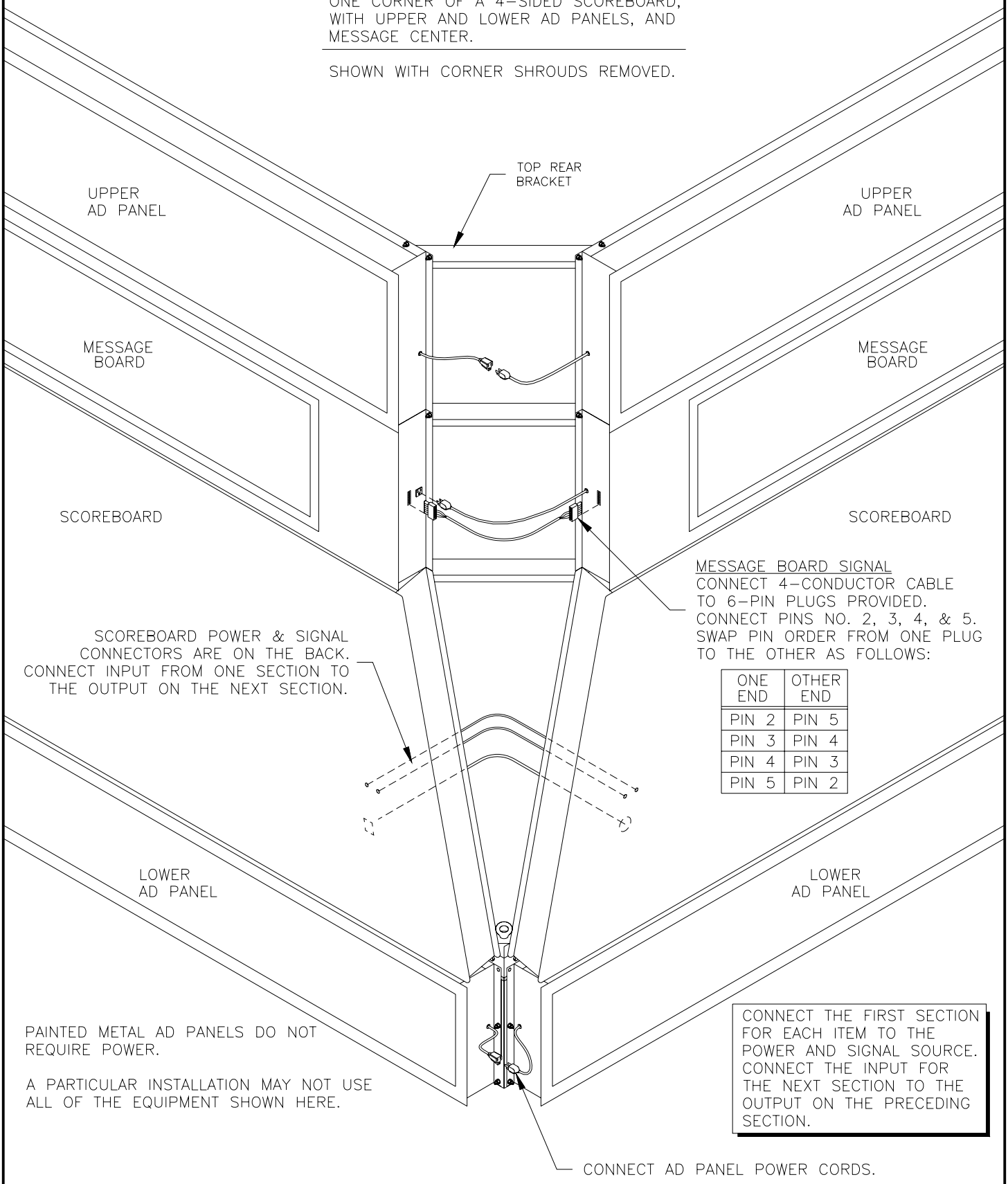
REVISION APPR. BY:

SCALE: 1=65

1152-R08A-107991

ONE CORNER OF A 4-SIDED SCOREBOARD, WITH UPPER AND LOWER AD PANELS, AND MESSAGE CENTER.

SHOWN WITH CORNER SHROUDS REMOVED.



MESSAGE BOARD SIGNAL
CONNECT 4-CONDUCTOR CABLE TO 6-PIN PLUGS PROVIDED. CONNECT PINS NO. 2, 3, 4, & 5. SWAP PIN ORDER FROM ONE PLUG TO THE OTHER AS FOLLOWS:

ONE END	OTHER END
PIN 2	PIN 5
PIN 3	PIN 4
PIN 4	PIN 3
PIN 5	PIN 2

SCOREBOARD POWER & SIGNAL CONNECTORS ARE ON THE BACK. CONNECT INPUT FROM ONE SECTION TO THE OUTPUT ON THE NEXT SECTION.

PAINTED METAL AD PANELS DO NOT REQUIRE POWER.

A PARTICULAR INSTALLATION MAY NOT USE ALL OF THE EQUIPMENT SHOWN HERE.

CONNECT THE FIRST SECTION FOR EACH ITEM TO THE POWER AND SIGNAL SOURCE. CONNECT THE INPUT FOR THE NEXT SECTION TO THE OUTPUT ON THE PRECEDING SECTION.

CONNECT AD PANEL POWER CORDS.

REV.	DATE	DESCRIPTION	BY	APPR.
1	10 DEC 98	CHANGED SIGNAL CABLE CONNECTION SPEC. INDICATED THAT PIN NUMBERS ARE SWAPPED ON SIGNAL PLUGS. ADDED TABLE.	AVB	AVB

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ:

TITLE: AD PANEL/ MESSAGE CENTER HOOKUP OVERVIEW, 4-SIDE

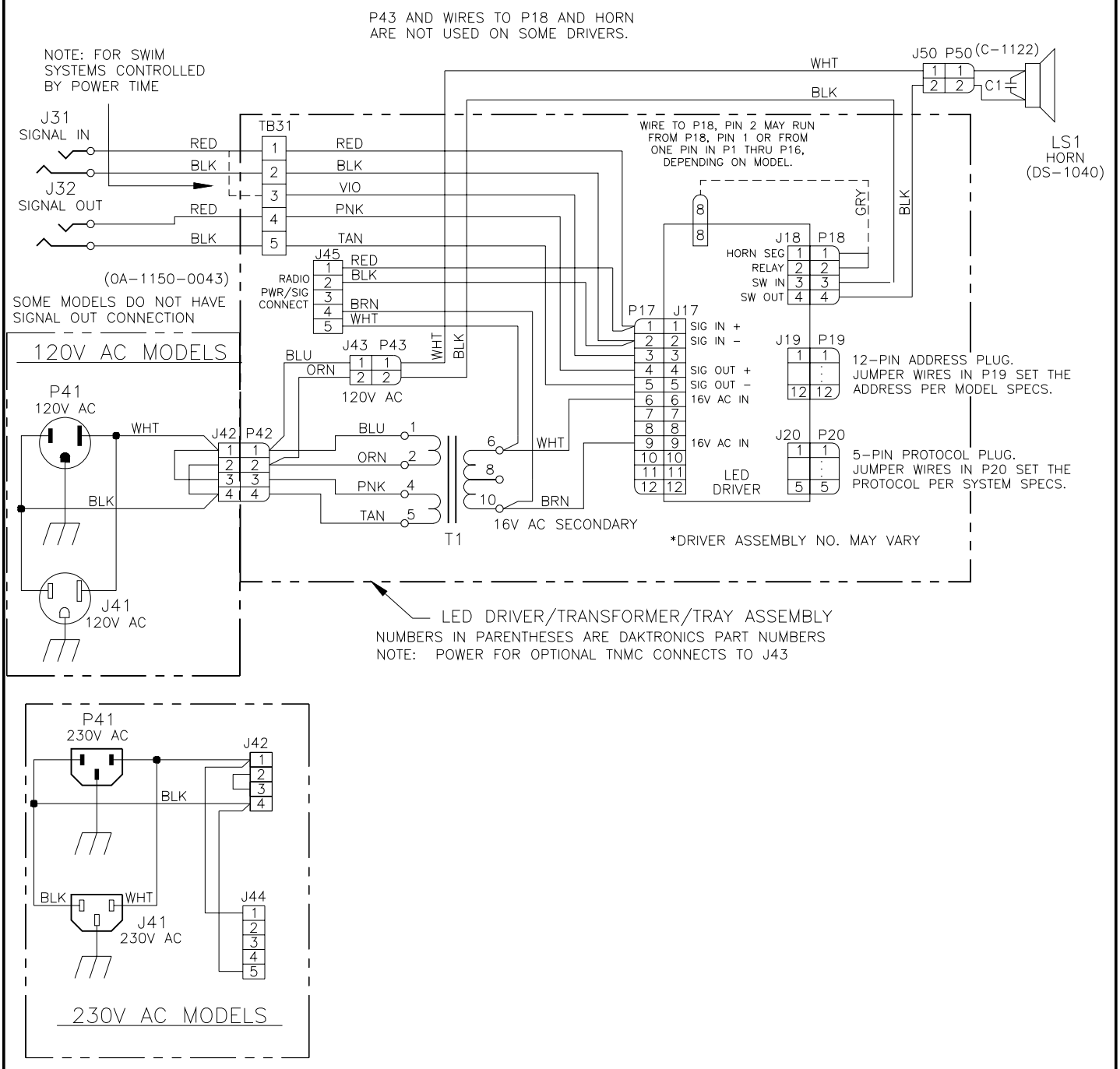
DES. BY: AVB DRAWN BY: A VANBEMMEL DATE: 23 NOV 98

REVISION APPR. BY:

SCALE: 1=20

1152-R10A-109746

120V AND 230VAC MODELS



REV.	DATE	DESCRIPTION	BY	APPR.
13	13 FEB 03	MOVED TAP 8 TO A DOULBLE CRIMP ON TAP 10 ON TRANSFORMER TI CONNECTED TO J45.	CME	
12	18 OCT 01	CHANGED DWG FROM B TO A, MOVED J31 IN TO TB31-1 AND ADDED HATCH LINE TO TB31-3	NMB	RDA
11	06 JUN 01	CHANGED SIGNAL IN TERMINATION	GWS	
10	21 MAY 01	UPDATED LABELS OF HORN PLUG & JACK	RDA	CMC
09	18 MAY 01	ADDED PLUG & JACK FOR HORN	RDA	CMC
08	30 APR 01	UPDATED DWG FROM A TO B SIZE, SO ALL REV BLOCKS ARE PRESENT	ORS	HBB
07	08 FEB 01	CHANGED BLK WIRE TO BRN TO MATCH HARNESS	RDA	
06	27 NOV 00	UPDATED TRANSFORMER WIRE COLORS TO ELIMINATE WIRE LABELS	CJB	
05	07 SEP 00	ADDED INFORMATION FOR 4 COLUMN DRIVER & CHANGED DOUBLE CRIMP ON TB31 TO P17	RDA	CMC
04	13 JUL 00	ADDED J45 FOR POWER AND SIGNAL FOR RADIO INTERFACE	CMC	
03	13 MAR 00	UPDATED SIGNAL WIRES, ADDED VIOLET WIRE FOR RS485, UPDATED COLORS TO BE DIFFERENT FOR EACH SIGNAL WIRE COMING IN	CJB	
02	10 FEB 00	CHANGED REFERENCE TO P18 WIRING	AVB	
01	09 DEC 99	UPDATED WIRING FOR TNMC, UPDATED WIRING FOR 230VAC MODEL	CJB	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ:

TITLE: SCHEMATIC; LED DRIVER II PLATE W/XFMR; 16 COLUMN

DES. BY: AVB DRAWN BY: A VANBEMMEL DATE: 12 MAY 99

REVISION APPR. BY:

SCALE: NONE

1152-R03A-115502

J17

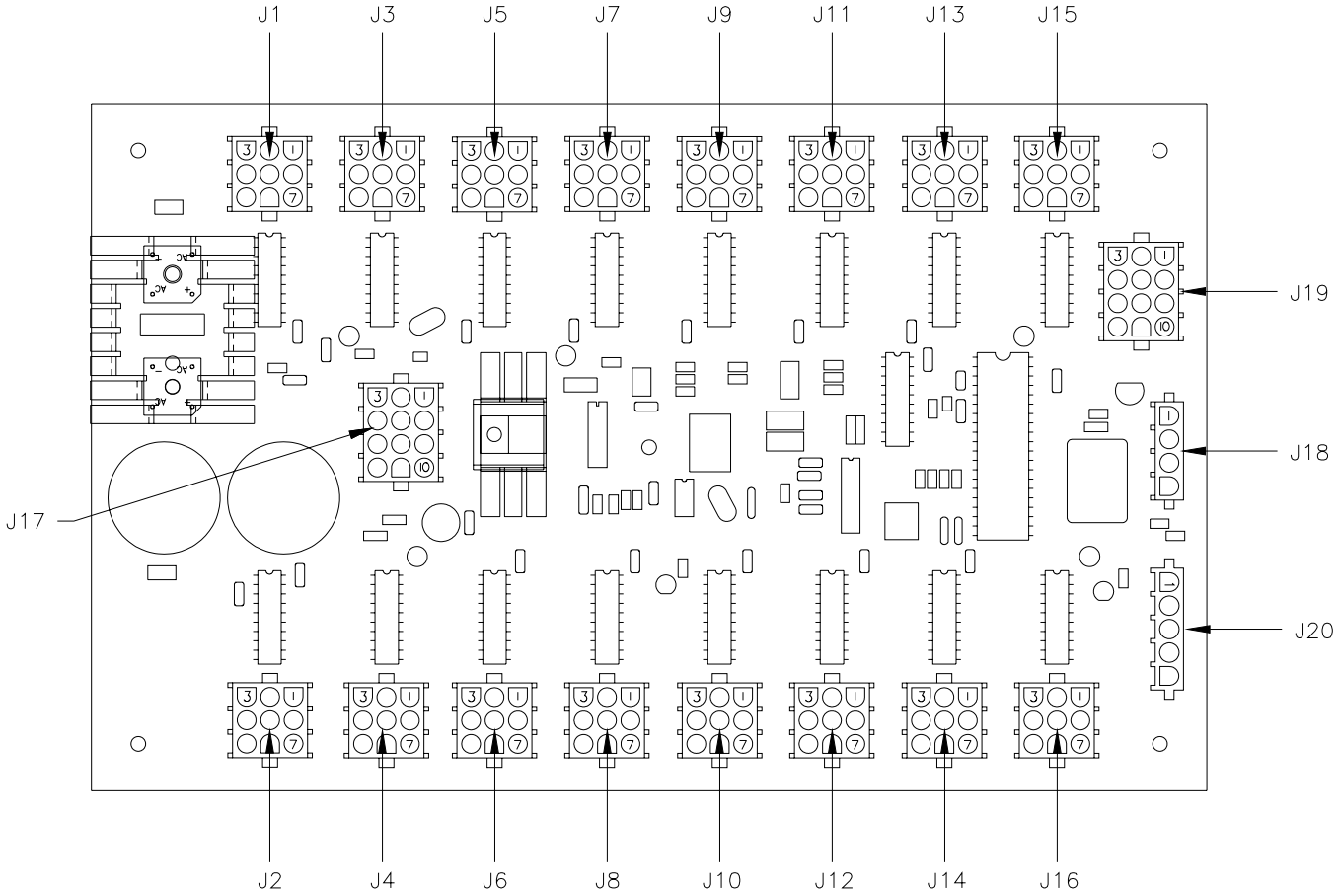
PIN	FUNCTION
1	SIGNAL IN +
2	SIGNAL IN −
3	GND
4	SIGNAL OUT +
5	SIGNAL OUT −
6	16V AC IN
7	GND
8	EARTH
9	16V AC IN
10	GND
11	+VCC +
12	+VBB +

J18

PIN	FUNCTION
1	AUTO HORN K1 OUT
2	K1 IN, 16V DC (−)
3	120V HOT IN
4	120V SWITCHED OUT

J19

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



J1 THROUGH J16

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

J20

PIN	FUNCTION
1	GND−N
2	PR0−N
3	PR1−N
4	PR2−N
5	PR3−N (TOD)

REV.	DATE	DESCRIPTION	BY	APPR.
01	20 OCT 03	UPDATED J20 PIN OUT CHART	MWM	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ:

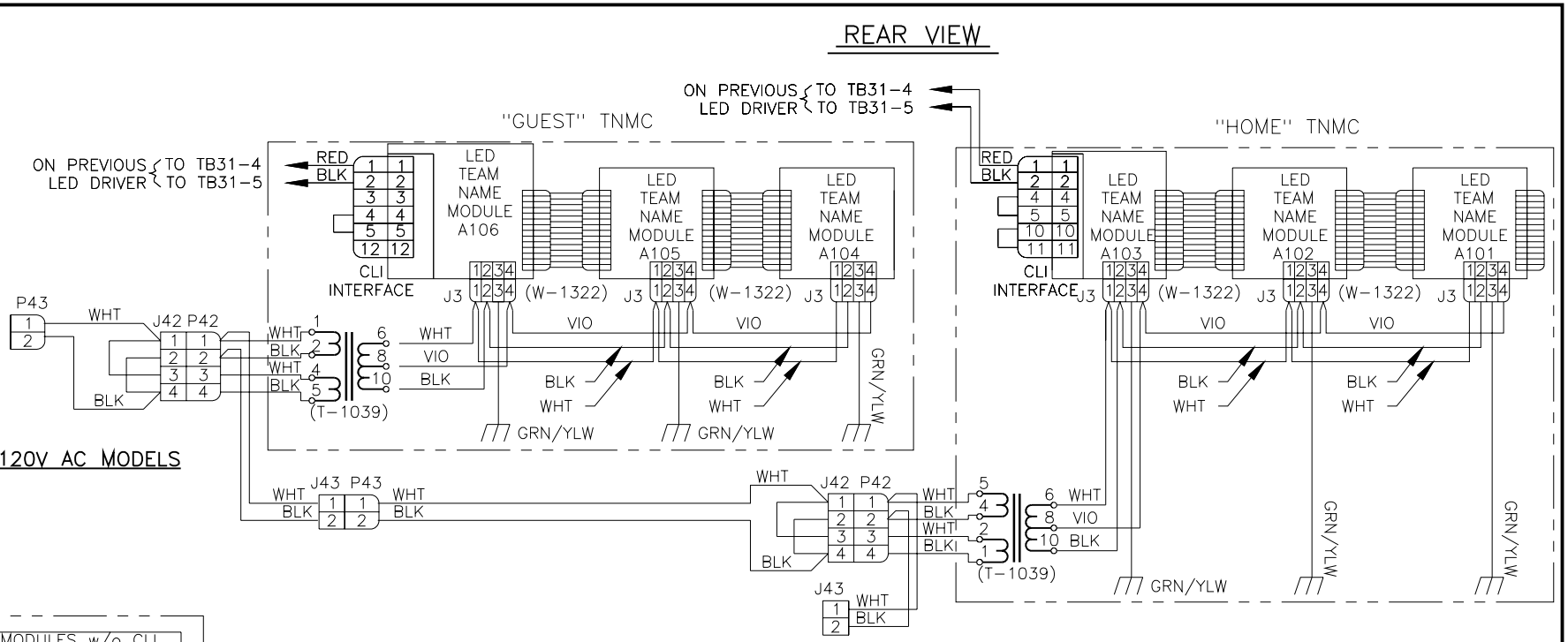
TITLE: LED DRIVER II, 16 COLUMN

DES. BY: DRAWN BY: MJORDAN DATE: 26 JUL 99

REVISION 01 | APPR. BY: | SCALE: 1=2

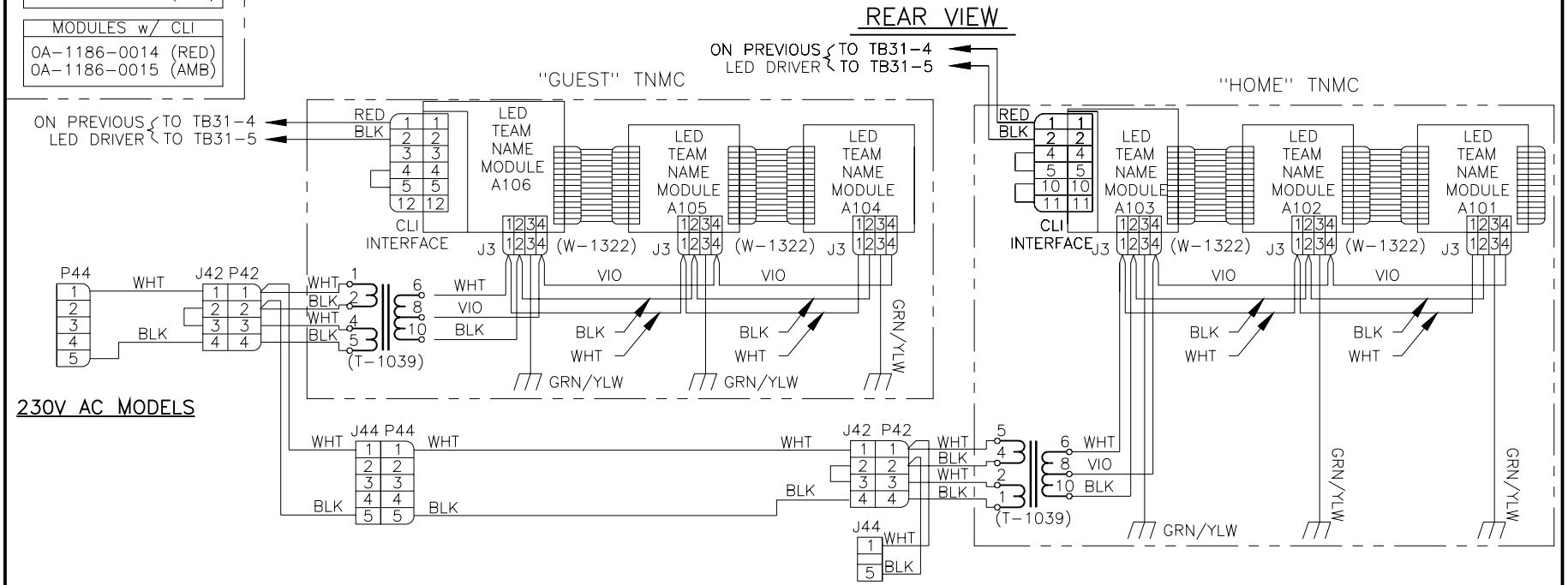
1150-R04A-119205

REV.	DATE	DESCRIPTION	BY	APPR.
2	10NOV00	REMOVED A-1152-0168 CABLE & CHANGED TO MASTER - MASTER CONFIGURATION	RASMUS	
1	29 DEC 99	UPDATED NOTES. CHANGED LAYOUT.	CJB	



MODULES w/o CLI
0A-1186-0005 (RED)
0A-1186-0006 (AMB)

MODULES w/ CLI
0A-1186-0014 (RED)
0A-1186-0015 (AMB)



DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ:

TITLE: SCHEMATIC; LED TNMC FOR A/S 5000

DES. BY: CBRECZI DRAWN BY: CBRECZI DATE: 21 DEC 99

APPR. BY:

SCALE: 1=1

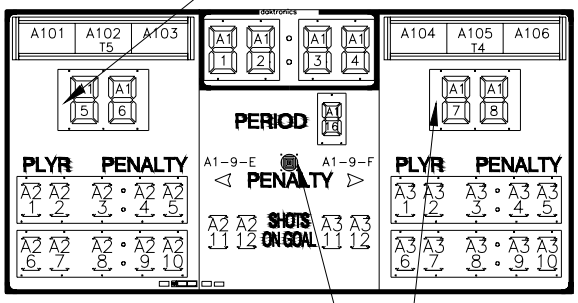
REVISION

1152-R03A-125174

H-2024 FACE SECTION

ELECTRICAL/SIGNAL SPEC

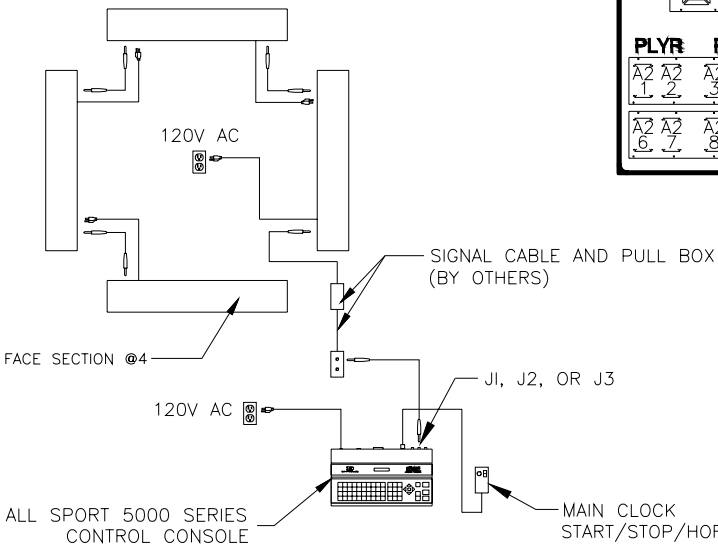
OPTIONAL ONES DIGIT FOR BASKETBALL IS ON A1-10A&B



OPTIONAL ONES DIGIT FOR BASKETBALL IS ON A1-10C&D

NOTE: THE NUMBER LISTED BY EACH DIGIT INDICATES WHICH DRIVER CONNECTOR IS WIRED TO THAT DIGIT.

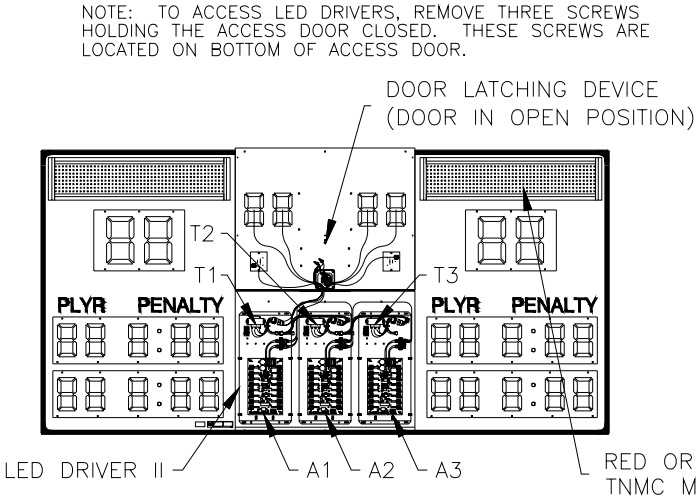
DIGIT, SIGNAL AND POWER SPEC

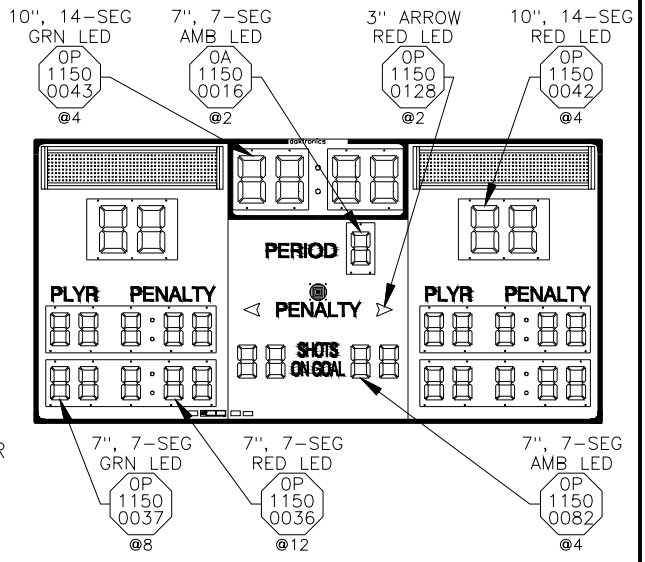


POWER SPEC:

- 120V AC, 15 AMP CIRCUIT REQUIRED.
- 100 WATTS MAXIMUM.
- PRODUCT SAFETY APPROVAL: ETL LISTED, TESTED TO CSA STANDARDS, AND CE LABELED FOR INDOOR USE.

NOTE: TO ACCESS LED DRIVERS, REMOVE THREE SCREWS HOLDING THE ACCESS DOOR CLOSED. THESE SCREWS ARE LOCATED ON BOTTOM OF ACCESS DOOR.





COMP. DES.	PART NO.	DESCRIPTION
A1 - A3	0P-1150-0127	LED DRIVER II w/ COATING
T1 - T3	T-1066	TRANSFORMER, 16V SECONDARY
T4 - T5	T-1039	TRANSFORMER, 10V SECONDARY
LS1	0A-1152-0332	HORN ASSEMBLY w/ CAP
MANUAL	ED-11992	HOCKEY 4-SIDE MANUAL, AS-5000
PERIOD	0A-1150-0016	7" AMB, 7-SEG LED DIGIT
SCORE	0P-1150-0042	10" RED, 14-SEG LED DIGIT
PENALTY	0P-1150-0036	7" RED, 7-SEG LED DIGIT
PLAYER	0P-1150-0037	7" GRN, 7-SEG LED DIGIT
CLOCK	0P-1150-0043	10" GRN, 14-SEG LED DIGIT
SHOTS	0P-1150-0082	7" AMB, 7-SEG LED DIGIT
ARROW	0P-1150-0128	3" ARROW, RED LED
A101-A105	0A-1186-0005	MODULE ASSY; 816-5-RED-SHIFT
A106	0A-1186-0014	MODULE ASSY; 816-5-RED-CLI
A101-A105	0A-1186-0006	MODULE ASSY; 816-5-AMB-SHIFT
A106	0A-1186-0015	MODULE ASSY; 816-5-AMB-CLI

CAUTION: DO NOT WORK ON ENERGIZED DISPLAY UNLESS YOU ARE A CERTIFIED ELECTRICIAN OR DIRECTED BY DAKTRONICS.

REV.	DATE	DESCRIPTION	BY	APPR.
02	18 SEP 01	CHANGED TITLE TO ELECTRICAL SPEC, H-2024 W/ TNMC	ALG	
01	16FEB01	ADDED DIGIT DESIGNATION FOR BASKETBALL OPTION ONES DIGITS	BDP	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: STANDARD INDOOR LED SCOREBOARDS

TITLE: ELECTRICAL & SIGNAL SPEC, H-2024 w/ TNMC

DES. BY: AVB DRAWN BY: MJORDAN DATE: 18 JAN 00

REVISION APPR. BY:

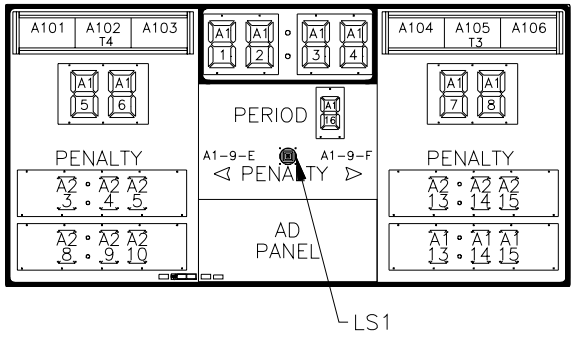
SCALE: 1=40

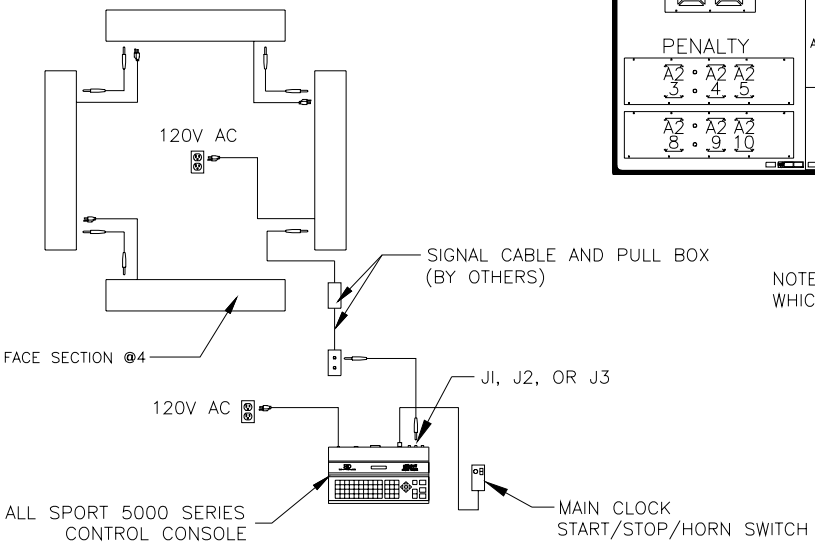
1152-E10A-126677

H-2026 FACE SECTION

ELECTRICAL/SIGNAL SPEC

DIGIT, SIGNAL AND POWER SPEC



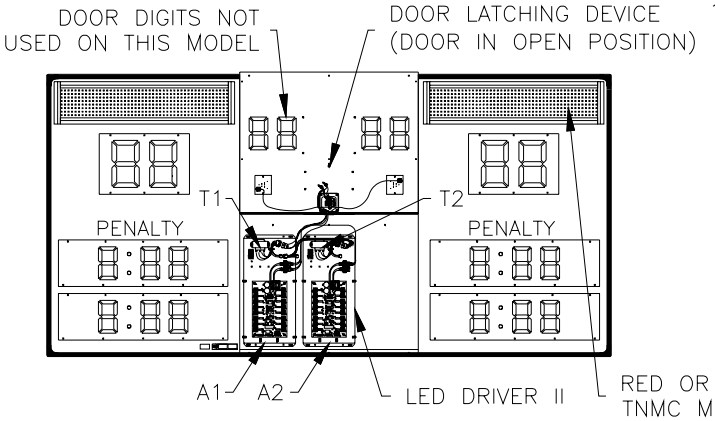


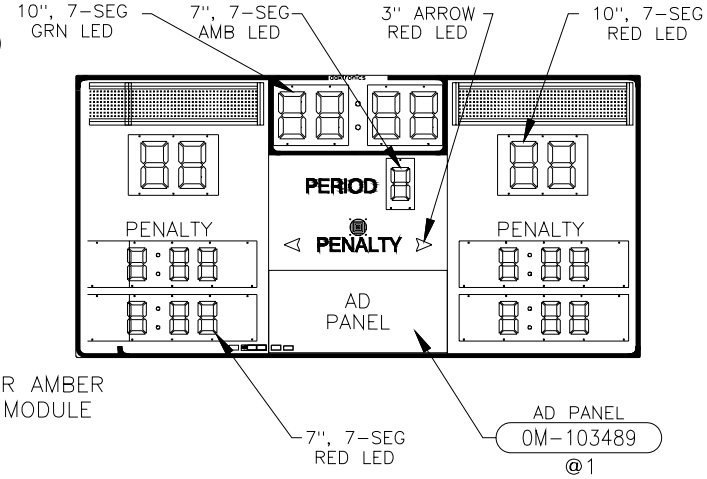
NOTE: THE NUMBER LISTED BY EACH DIGIT INDICATES WHICH DRIVER CONNECTOR IS WIRED TO THAT DIGIT.

POWER SPEC:

- 120V AC, 15 AMP CIRCUIT REQUIRED.
- 100 WATTS MAXIMUM.
- PRODUCT SAFETY APPROVAL: ETL LISTED, TESTED TO CSA STANDARDS, AND CE LABELED FOR INDOOR USE.

NOTE: TO ACCESS LED DRIVERS, REMOVE THREE SCREWS HOLDING THE ACCESS DOOR CLOSED. THESE SCREWS ARE LOCATED ON BOTTOM OF ACCESS DOOR.





COMP. DES.	PART NO.	DESCRIPTION
A1 - A2	0P-1150-0127	LED DRIVER II w/ COATING
T1 - T2	T-1066	TRANSFORMER, 16V SECONDARY
T3 - T4	T-1039	TRANSFORMER, 10V SECONDARY
LS1	0A-1152-0332	HORN ASSEMBLY w/ CAP
MANUAL	ED-11984	HOCKEY MANUAL, AS-5000
PERIOD	0P-1150-0082	7" AMB, 7-SEG LED DIGIT
SCORE	0P-1150-0189	10" RED, 7-SEG LED DIGIT
PENALTY	0P-1150-0187	7" RED, 7-SEG LED DIGIT
CLOCK	0P-1150-0043	10" GRN, 7-SEG LED DIGIT
ARROW	0P-1150-0185	3" ARROW, RED LED
	0M-103489	AD PANEL
A101-A105	0A-1186-0005	MODULE ASSY; 816-5-RED-SHIFT
A106	0A-1186-0014	MODULE ASSY; 816-5-RED-CLI
A101-A105	0A-1186-0006	MODULE ASSY; 816-5-AMB-SHIFT
A106	0A-1186-0015	MODULE ASSY; 816-5-AMB-CLI

CAUTION: DO NOT WORK ON ENERGIZED DISPLAY UNLESS YOU ARE A CERTIFIED ELECTRICIAN OR DIRECTED BY DAKTRONICS.

REV.	DATE	DESCRIPTION	BY	APPR.
02	18 SEP 01	CHANGED TITLE TO ELECTRICAL SPEC, H-2026 W/ TNMC	ALG	
01	25OCT00	CHANGED PART NUMBERS 0P-1150-0036, 0128, 0042 TO 0P-1150-0187, 0185, 0189 AND CHANGED 14-SEG DIGITS TO 7-SEG DIGITS	CPS	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: STANDARD INDOOR LED SCOREBOARDS

TITLE: ELECTRICAL & SIGNAL SPEC, H-2026 w/ TNMC

DES. BY: AVB DRAWN BY: MJORDAN DATE: 19 JAN 00

REVISION APPR. BY:

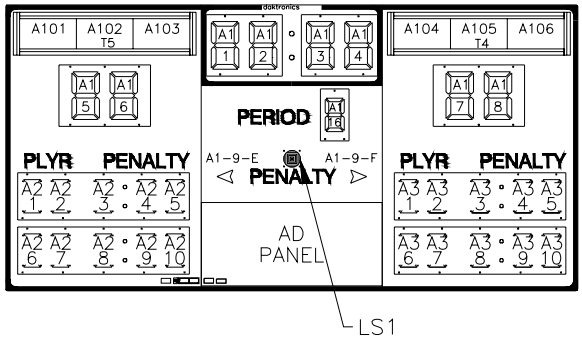
SCALE: 1=40

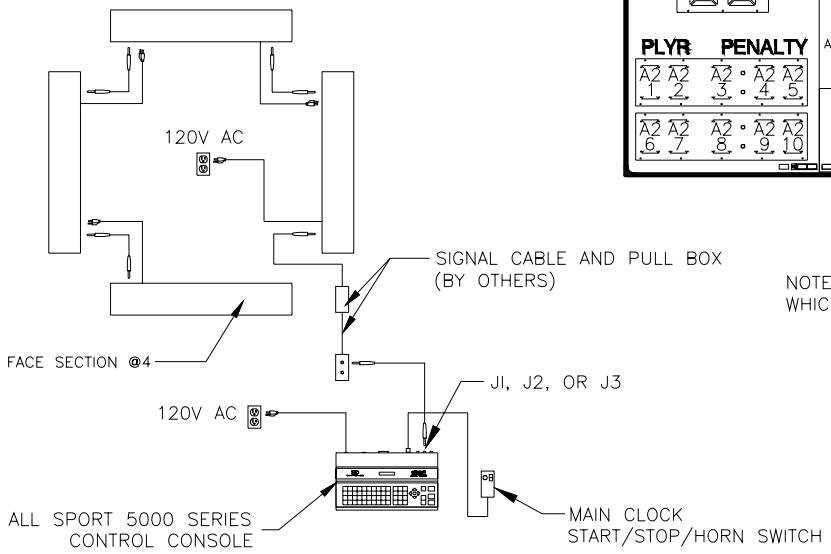
1152-E10A-126681

H-2031 FACE SECTION

ELECTRICAL/SIGNAL SPEC

DIGIT, SIGNAL AND POWER SPEC



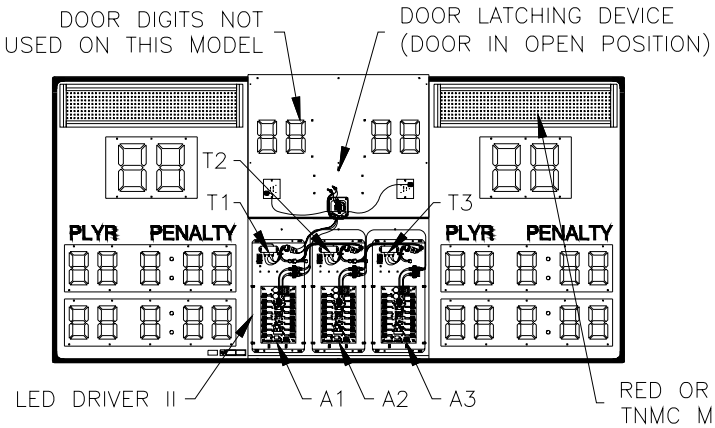


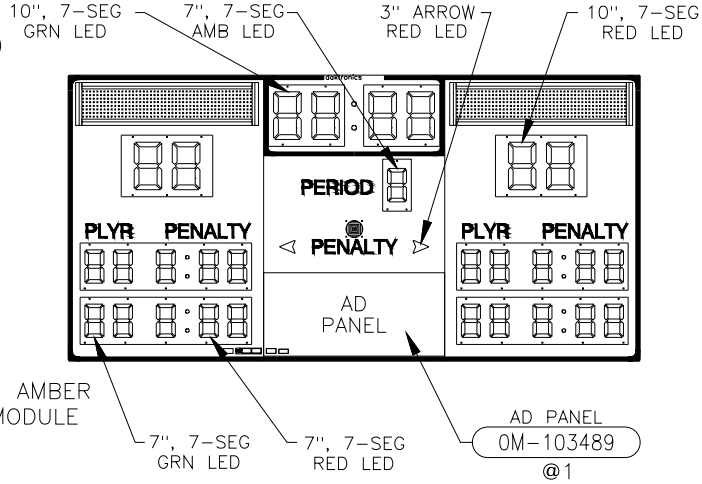
NOTE: THE NUMBER LISTED BY EACH DIGIT INDICATES WHICH DRIVER CONNECTOR IS WIRED TO THAT DIGIT.

POWER SPEC:

- 120V AC, 15 AMP CIRCUIT REQUIRED.
- 100 WATTS MAXIMUM.
- PRODUCT SAFETY APPROVAL: ETL LISTED, TESTED TO CSA STANDARDS, AND CE LABELED FOR INDOOR USE.

NOTE: TO ACCESS LED DRIVERS, REMOVE THREE SCREWS HOLDING THE ACCESS DOOR CLOSED. THESE SCREWS ARE LOCATED ON BOTTOM OF ACCESS DOOR.





COMP. DES.	PART NO.	DESCRIPTION
A1 - A3	0P-1150-0127	LED DRIVER II w/ COATING
T1 - T3	T-1066	TRANSFORMER, 16V SECONDARY
T4 - T5	T-1039	TRANSFORMER, 10V SECONDARY
LS1	0A-1152-0332	HORN ASSEMBLY w/ CAP
MANUAL	ED-11984	HOCKEY MANUAL, AS-5000
PERIOD	0P-1150-0082	7" AMB, 7-SEG LED DIGIT
SCORE	0P-1150-0189	10" RED, 7-SEG LED DIGIT
PENALTY	0P-1150-0187	7" RED, 7-SEG LED DIGIT
PLAYER	0P-1150-0037	7" GRN, 7-SEG LED DIGIT
CLOCK	0P-1150-0043	10" GRN, 7-SEG LED DIGIT
ARROW	0P-1150-0185	3" ARROW, RED LED
	0M-103489	AD PANEL
A101-A105	0A-1186-0005	MODULE ASSY; 816-5-RED-SHIFT
A106	0A-1186-0014	MODULE ASSY; 816-5-RED-CLI
A101-A105	0A-1186-0006	MODULE ASSY; 816-5-AMB-SHIFT
A106	0A-1186-0015	MODULE ASSY; 816-5-AMB-CLI

CAUTION: DO NOT WORK ON ENERGIZED DISPLAY UNLESS YOU ARE A CERTIFIED ELECTRICIAN OR DIRECTED BY DAKTRONICS.

REV.	DATE	DESCRIPTION	BY	APPR.
02	18 SEP 01	CHANGED TITLE TO ELECTRICAL SPEC, H-2031 W/ TNMC	ALG	
01	25OCT00	CHANGED PART NUMBERS 0P-1150-0036, 0128, 0042 TO 0P-1150-0187, 0185, 0189 AND CHANGED 14-SEG DIGITS TO 7-SEG DIGITS	CPS	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: STANDARD INDOOR LED SCOREBOARDS

TITLE: ELECTRICAL & SIGNAL SPEC, H-2031 w/ TNMC

DES. BY: AVB DRAWN BY: MJORDAN DATE: 19 JAN 00

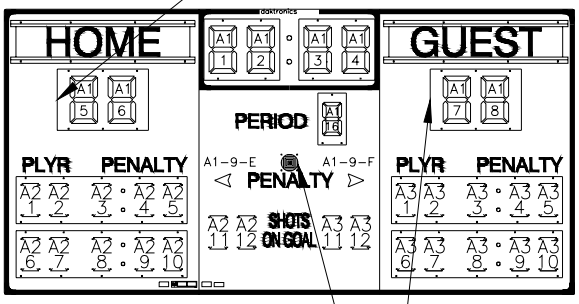
REVISION APPR. BY:

SCALE: 1=40

1152-E10A-126682

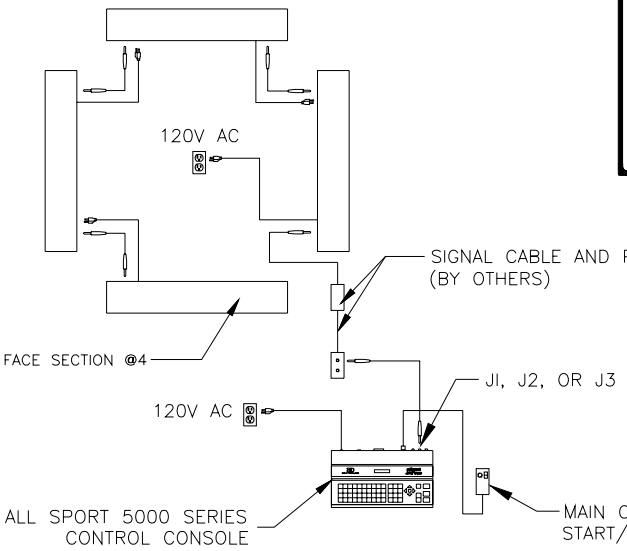
H-2024 FACE SECTION

ELECTRICAL/SIGNAL SPEC



NOTE: THE NUMBER LISTED BY EACH DIGIT INDICATES WHICH DRIVER CONNECTOR IS WIRED TO THAT DIGIT.

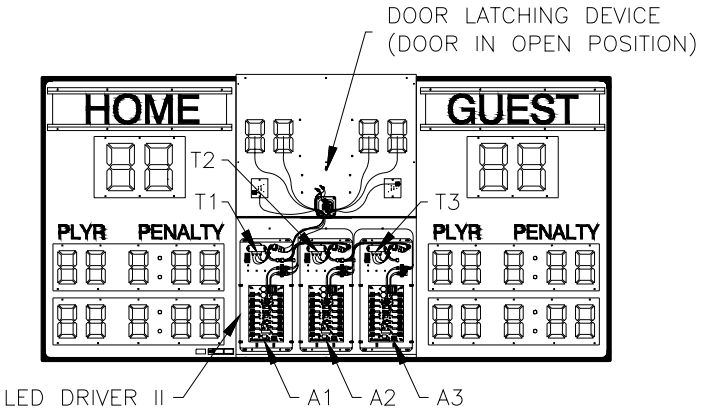
DIGIT, SIGNAL AND POWER SPEC

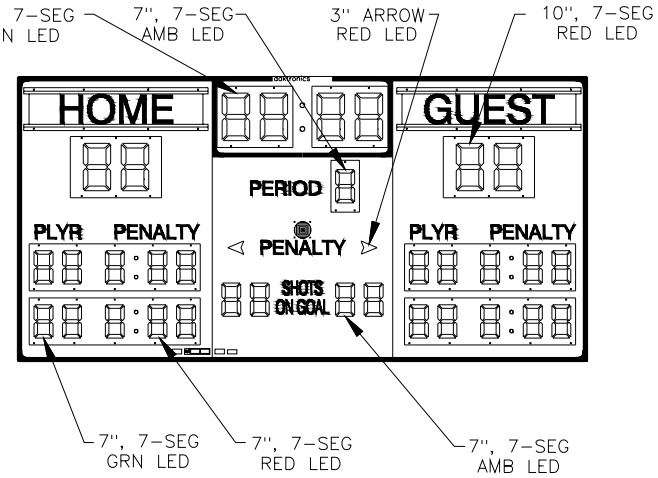


POWER SPEC:

- 120V AC, 15 AMP CIRCUIT REQUIRED.
- 100 WATTS MAXIMUM.
- PRODUCT SAFETY APPROVAL: ETL LISTED, TESTED TO CSA STANDARDS, AND CE LABELED FOR INDOOR USE.

NOTE: TO ACCESS LED DRIVERS, REMOVE THREE SCREWS HOLDING THE ACCESS DOOR CLOSED. THESE SCREWS ARE LOCATED ON BOTTOM OF ACCESS DOOR.





COMP. DES.	PART NO.	DESCRIPTION
A1 - A3	0P-1150-0127	LED DRIVER II w/ COATING
T1 - T3	T-1066	TRANSFORMER, 16V SECONDARY
LS1	0A-1152-0332	HORN ASSEMBLY w/ CAP
MANUAL	ED-11992	HOCKEY 4-SIDE MANUAL, AS-5000
PERIOD	0P-1150-0082	7" AMB, 7-SEG LED DIGIT
SCORE	0P-1150-0189	10" RED, 7-SEG LED DIGIT
PENALTY	0P-1150-0187	7" RED, 7-SEG LED DIGIT
PLAYER	0P-1150-0037	7" GRN, 7-SEG LED DIGIT
CLOCK	0P-1150-0043	10" GRN, 7-SEG LED DIGIT
SHOTS	0P-1150-0082	7" AMB, 7-SEG LED DIGIT
ARROW	0P-1150-0185	3" ARROW, RED LED

CAUTION: DO NOT WORK ON ENERGIZED DISPLAY UNLESS YOU ARE A CERTIFIED ELECTRICIAN OR DIRECTED BY DAKTRONICS.

REV.	DATE	DESCRIPTION	BY	APPR.
03	18 SEP 01	CHANGED TITLE TO ELECTRICAL SPEC, H-2024	ALG	
02	16FEB01	ADDED DIGIT DESIGNATION FOR BASKETBALL OPTION ONES DIGITS	BDP	
01	25OCT00	CHANGED PART NUMBERS 0P-1150-0042, 0036, 0128 TO 0P-1150-0189, 0187, 0185 AND CHANGED 14-SEG DIGITS TO 7-SEG DIGITS	CPS	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: STANDARD INDOOR LED SCOREBOARDS

TITLE: ELECTRICAL & SIGNAL SPEC, H-2024

DES. BY: AVB DRAWN BY: MJORDAN DATE: 19 JAN 00

REVISION APPR. BY:

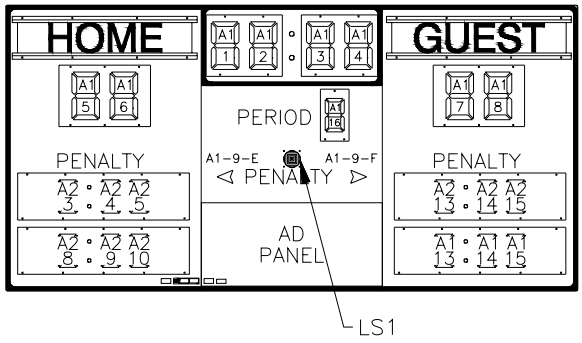
SCALE: 1=40

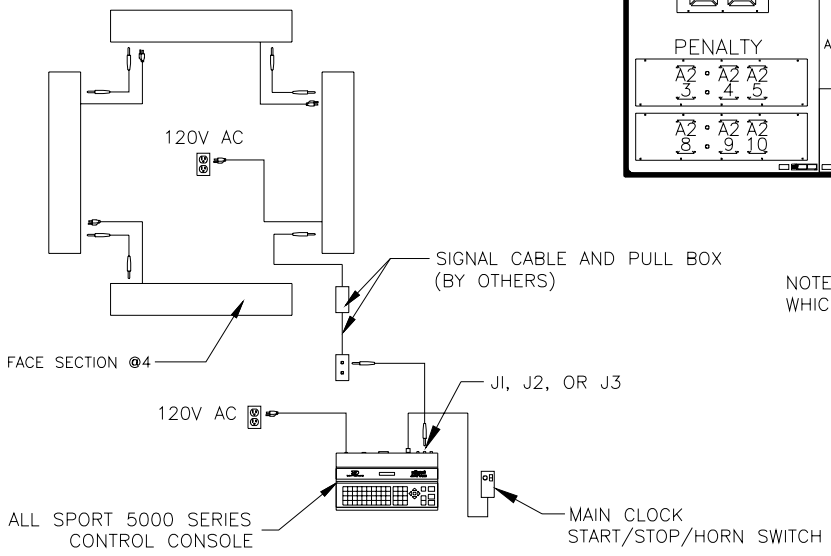
1152-E10A-126742

H-2026 FACE SECTION

ELECTRICAL/SIGNAL SPEC

DIGIT, SIGNAL AND POWER SPEC



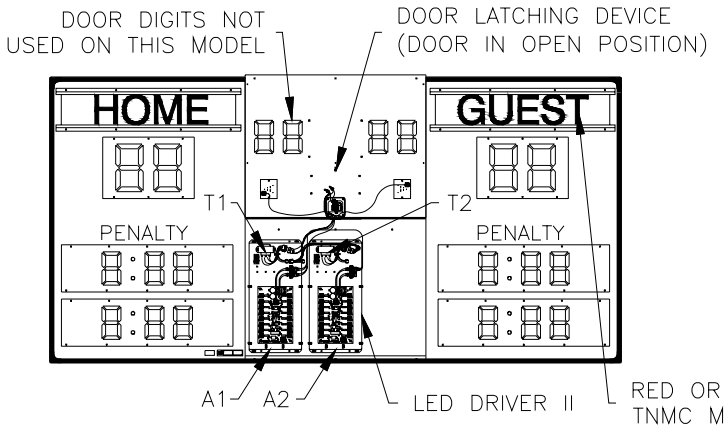


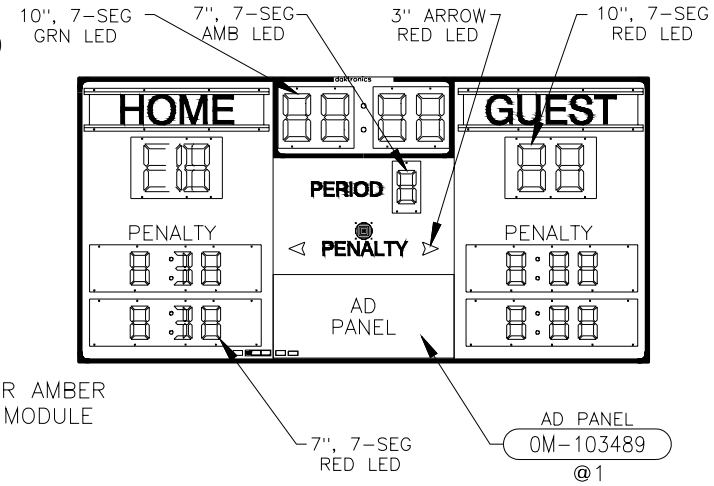
NOTE: THE NUMBER LISTED BY EACH DIGIT INDICATES WHICH DRIVER CONNECTOR IS WIRED TO THAT DIGIT.

POWER SPEC:

- 120V AC, 15 AMP CIRCUIT REQUIRED.
- 100 WATTS MAXIMUM.
- PRODUCT SAFETY APPROVAL: ETL LISTED, TESTED TO CSA STANDARDS, AND CE LABELED FOR INDOOR USE.

NOTE: TO ACCESS LED DRIVERS, REMOVE THREE SCREWS HOLDING THE ACCESS DOOR CLOSED. THESE SCREWS ARE LOCATED ON BOTTOM OF ACCESS DOOR.





COMP. DES.	PART NO.	DESCRIPTION
A1 - A2	0P-1150-0127	LED DRIVER II w/ COATING
T1 - T2	T-1066	TRANSFORMER, 16V SECONDARY
LS1	0A-1152-0332	HORN ASSEMBLY w/ CAP
MANUAL	ED-11984	HOCKEY MANUAL, AS-5000
PERIOD	0P-1150-0082	7" AMB, 7-SEG LED DIGIT
SCORE	0P-1150-0189	10" RED, 7-SEG LED DIGIT
PENALTY	0P-1150-0187	7" RED, 7-SEG LED DIGIT
CLOCK	0P-1150-0043	10" GRN, 7-SEG LED DIGIT
ARROW	0P-1150-0185	3" ARROW, RED LED
	0M-103489	AD PANEL

CAUTION: DO NOT WORK ON ENERGIZED DISPLAY UNLESS YOU ARE A CERTIFIED ELECTRICIAN OR DIRECTED BY DAKTRONICS.

REV.	DATE	DESCRIPTION	BY	APPR.
02	18 SEP 01	CHANGED TITLE TO ELECTRICAL SPEC, H-2026	ALG	
01	25OCT00	CHANGED PART NUMBERS 0P-1150-0042, 0036, 0128 TO 0P-1150-0189, 0187, 0185 AND CHANGED 14-SEG DIGITS TO 7-SEG DIGITS	CPS	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: STANDARD INDOOR LED SCOREBOARDS

TITLE: ELECTRICAL & SIGNAL SPEC, H-2026

DES. BY: AVB DRAWN BY: MJORDAN DATE: 19 JAN 00

REVISION APPR. BY:

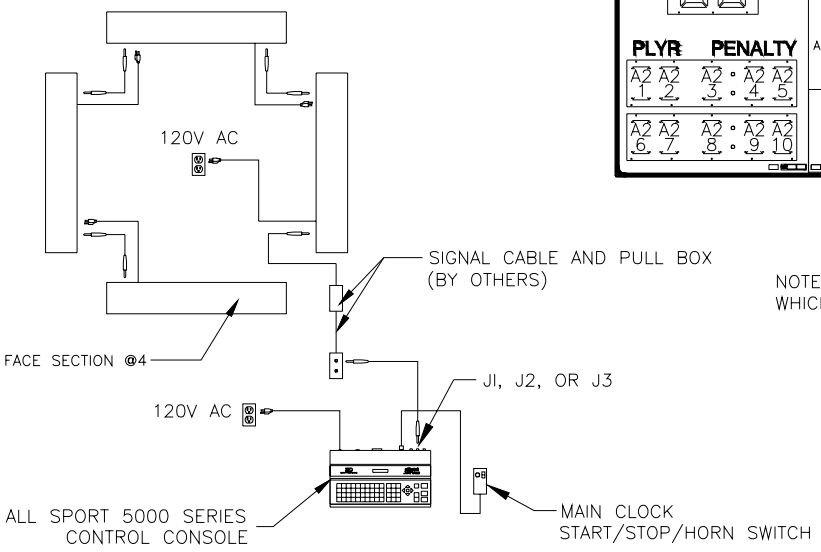
SCALE: 1=40

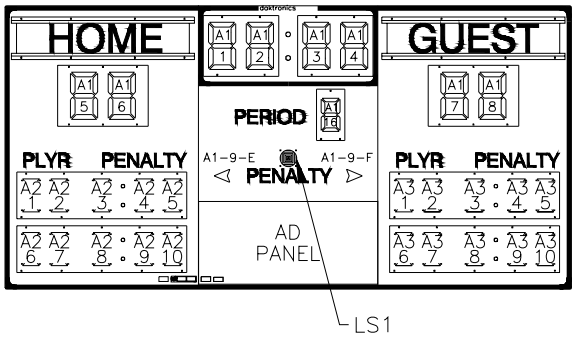
1152-E10A-126743

H-2031 FACE SECTION

ELECTRICAL/SIGNAL SPEC

DIGIT, SIGNAL AND POWER SPEC



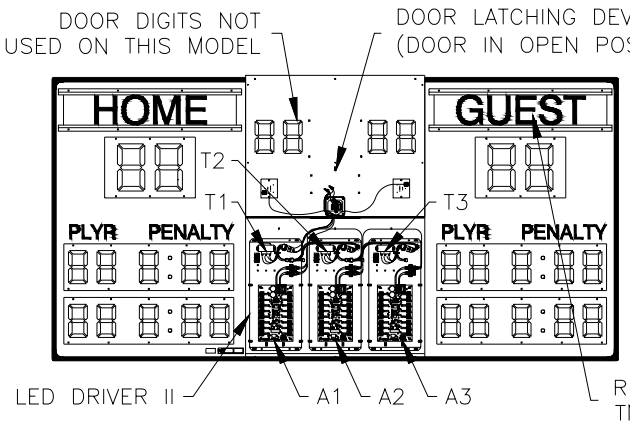


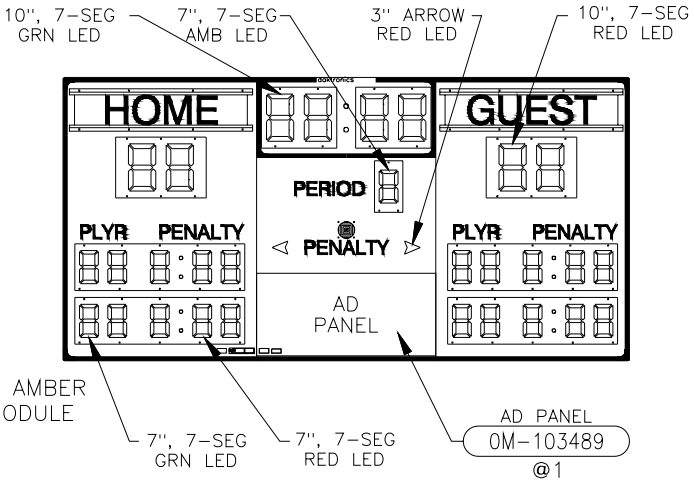
NOTE: THE NUMBER LISTED BY EACH DIGIT INDICATES WHICH DRIVER CONNECTOR IS WIRED TO THAT DIGIT.

POWER SPEC:

- 120V AC, 15 AMP CIRCUIT REQUIRED.
- 100 WATTS MAXIMUM.
- PRODUCT SAFETY APPROVAL:
  ETL LISTED, TESTED TO CSA STANDARDS, AND CE LABELED FOR INDOOR USE.

NOTE: TO ACCESS LED DRIVERS, REMOVE THREE SCREWS HOLDING THE ACCESS DOOR CLOSED. THESE SCREWS ARE LOCATED ON BOTTOM OF ACCESS DOOR.





COMP. DES.	PART NO.	DESCRIPTION
A1 - A3	0P-1150-0127	LED DRIVER II w/ COATING
T1 - T3	T-1066	TRANSFORMER, 16V SECONDARY
LS1	0A-1152-0332	HORN ASSEMBLY w/ CAP
MANUAL	ED-11984	HOCKEY MANUAL, AS-5000
PERIOD	0P-1150-0082	7" AMB, 7-SEG LED DIGIT
SCORE	0P-1150-0189	10" RED, 7-SEG LED DIGIT
PENALTY	0P-1150-0187	7" RED, 7-SEG LED DIGIT
PLAYER	0P-1150-0037	7" GRN, 7-SEG LED DIGIT
CLOCK	0P-1150-0043	10" GRN, 7-SEG LED DIGIT
ARROW	0P-1150-0185	3" ARROW, RED LED
	0M-103489	AD PANEL

CAUTION: DO NOT WORK ON ENERGIZED DISPLAY UNLESS YOU ARE A CERTIFIED ELECTRICIAN OR DIRECTED BY DAKTRONICS.

REV.	DATE	DESCRIPTION	BY	APPR.
02	18 SEP 01	CHANGED TITLE TO ELECTRICAL SPEC, H-2031	ALG	
01	25OCT00	CHANGED PART NUMBERS 0P-1150-0036, 0128, 0042 TO 0P-1150-0187, 0185, 0187 AND CHANGED 14-SEG DIGITS TO 7-SEG DIGITS	CPS	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: STANDARD INDOOR LED SCOREBOARDS

TITLE: ELECTRICAL & SIGNAL SPEC, H-2031

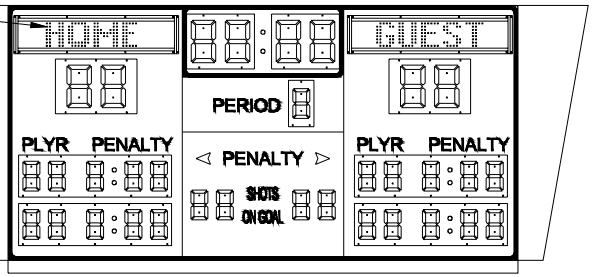
DES. BY: AVB DRAWN BY: MJORDAN DATE: 19 JAN 00

REVISION APPR. BY:

SCALE: 1=40

1152-E10A-126744

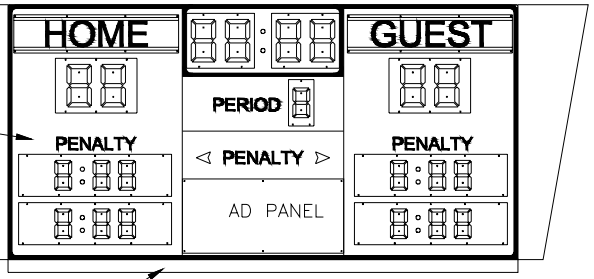
OPTIONAL
TEAM NAME
MESSAGE CENTER
(TNMC)



FRONT VIEW
MODEL H-2024-9
SHOWN WITH OPTIONAL
TEAM NAME MESSAGE CENTERS

CORNER SHROUD
TYP. @4

SCOREBOARD
FACE SECTION



FRONT VIEW
MODEL H-2026-9

FLOOR FRAME

NOTES:

TWO MODELS ARE SHOWN HERE: H-2024-9 AND H-2026-9. MODEL H-2031-9 IS NOT SHOWN. ALL MODELS ARE AVAILABLE WITH OPTIONAL TEAM NAME MESSAGE CENTERS (TNMC).

POWER CONSUMPTION:	
H-2024-9	800W
H-2024-9 W/TNMC	1200W
H-2026-9	600W
H-2026 W/TNMC	1000W
H-2030-9	800W
H-2031-9 W/TNMC	1200W

PROVIDE A 120V AC 15A OUTLET FOR POWER. OPTIONAL FLUORESCENT AD PANELS OR ELECTRONIC MESSAGE DISPLAYS REQUIRE ADDITIONAL POWER AND CIRCUITS.

SIGNAL WIRING REQUIREMENTS:
H-2024-9: 3 PAIRS (4 PAIRS WITH TNMC)
H-2026-9: 2 PAIRS (3 PAIRS WITH TNMC)
H-2031-9: 3 PAIRS (4 PAIRS WITH TNMC)

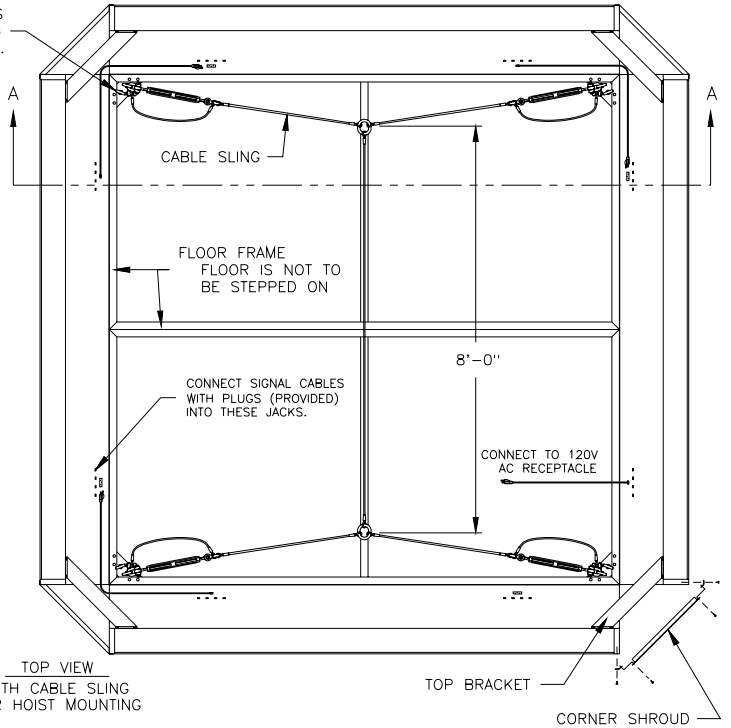
CONNECT THE FIRST SECTION TO POWER AND SIGNAL. EACH SECTION CONNECTS TO THE NEXT, PROVIDING POWER AND SIGNAL FOR ALL FOUR SECTIONS.

SCOREBOARD IS SHIPPED IN SEVERAL PARTS: EACH FACE SECTION IS ONE PIECE, THE FLOOR FRAME IS IN TWO PARTS, AND NEEDS SOME ASSEMBLY. TOP BRACKETS ARE ATTACHED DURING ASSEMBLY. CORNER SHROUDS ARE ATTACHED LAST, AND PROVIDE COSMETIC COVERING ONLY.

A SHEET METAL FLOOR IS OPTIONAL, AND IS NOT TO BE WALKED ON.
IT WILL NOT SUPPORT A PERSON'S WEIGHT.

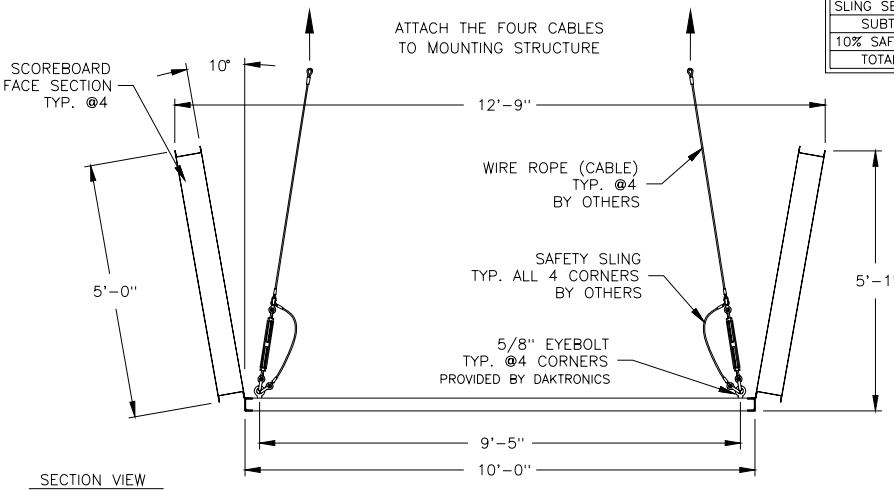
WEIGHT ESTIMATE:		
SCOREBOARD SECTIONS	660 LB	299 KG
FRAME, BRACKETS, HDWE, FLOOR	200 LB	91 KG
SLING SET (BY CUSTOMER)	30 LB	14 KG
SUBTOTAL	890 LB	404 KG
10% SAFETY FACTOR	90 LB	41 KG
TOTAL	980 LB	445 KG

SECOND SET OF LIFT EYES
ARE FOR TEMPORARY LIFTING
DURING INSTALLATION.



TOP VIEW
WITH CABLE SLING
FOR HOIST MOUNTING

ATTACH THE FOUR CABLES
TO MOUNTING STRUCTURE



SECTION VIEW
WITH CABLES
FOR STATIC MOUNTING
TO STRUCTURE

THESE DIMENSIONS ARE TYPICAL FOR ALL VIEWS

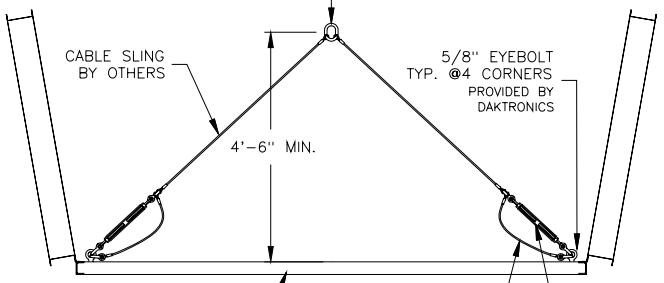
SCOREBOARD MAY BE SUSPENDED IN ONE OF TWO WAYS:
1. STATIC-HUNG FROM ROOF TRUSSES OR A MOUNTING STRUCTURE AS SHOWN AT LEFT
2. SUSPENDED FROM A HOIST AS SHOWN AT RIGHT.

CABLE SLINGS (WIRE ROPE AND FITTINGS), TURNBUCKLES, ETC, ARE NOT PROVIDED BY DAKTRONICS, UNLESS CONTRACTED OTHERWISE.

ALL SUPPORT STRUCTURES AND HOISTS MUST BE APPROVED BY A LICENSED ENGINEER.

DAKTRONICS IS NOT RESPONSIBLE FOR HOISTS OR STRUCTURES SPECIFIED OR INSTALLED BY OTHERS.

ATTACH HOIST CABLES
TO THE TWO RINGS



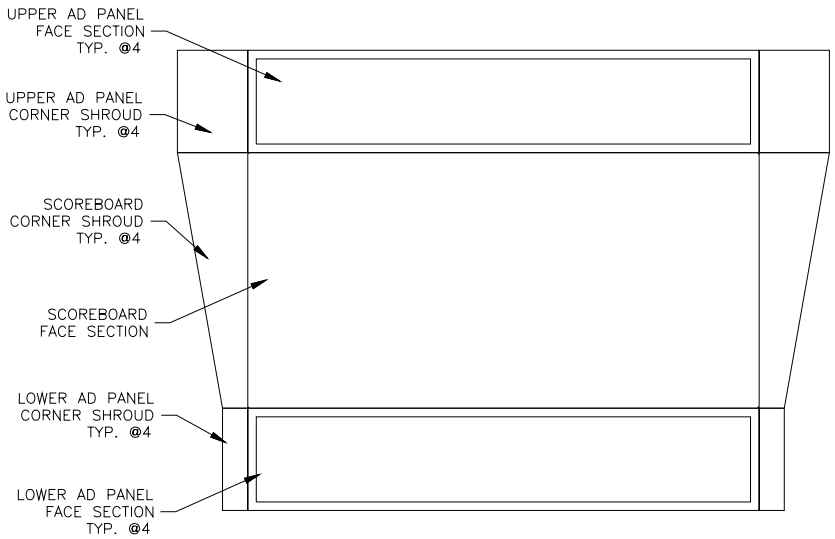
SECTION VIEW A-A
WITH CABLE SLING
FOR HOIST MOUNTING

REV.	DATE	DESCRIPTION	BY	APPR.
5	29 OCT 01	UPDATED CORNER ANGLES.	JJS	
4	04OCT01	UPDATED WEIGHT	BDP	
3	13 NOV 00	FIXED CORNER SHROUDING ATTACHMENT.	EPR	
2	14 OCT 98	CHANGED POWER SPECS AND WEIGHT EST. ADDED DATA FOR MODEL H-2031-9.	AVB	AVB
1	02 SEP 98	CHANGED ESTIMATED WEIGHT FROM 800 LB TO 1100 LB. INCREASED POWER FOR MODELS W/TNMC.	AVB	AVB

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: STANDARD INDOOR LED SCOREBOARDS
TITLE: SHOP DRAWING, H-2024 & H-2026
DES. BY: AVB DRAWN BY: A VANBEMMEL DATE: 20 AUG 98
REVISION APPR. BY:
SCALE: 1=30

1152-R08B-106746



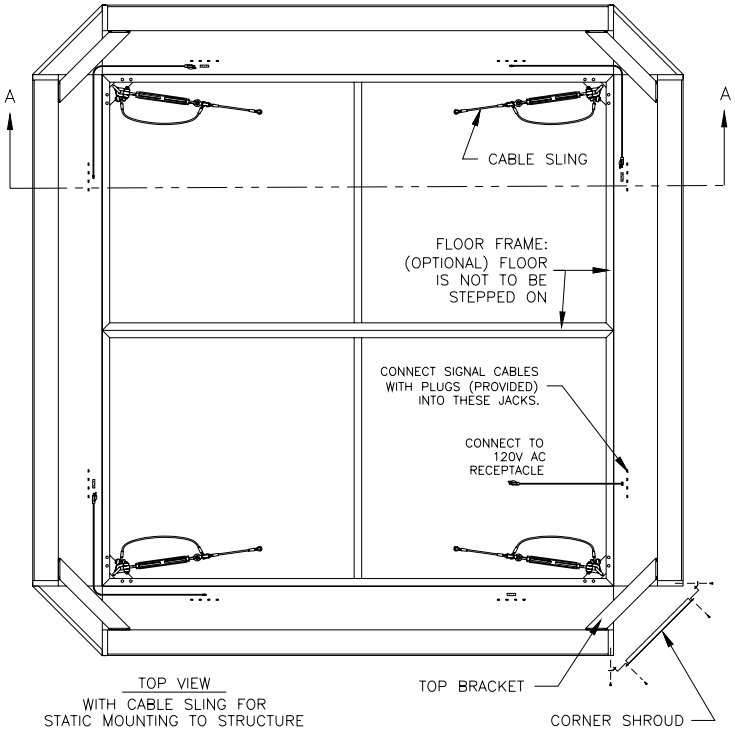
FRONT VIEW
FACE DETAILS NOT SHOWN

WEIGHT ESTIMATE:		
SCOREBOARD SECTIONS	660 LB	299 KG
UPPER AD PANEL:	340 LB	154 KG
LOWER AD PANEL:	340 LB	154 KG
FRAME, BRACKETS, HDWE, FLOOR	200 LB	91 KG
SLING SET (BY CUSTOMER)	30 LB	14 KG
SUBTOTAL	1570 LB	712 KG
10% SAFETY FACTOR	160 LB	73 KG
TOTAL	1730 LB	785 KG

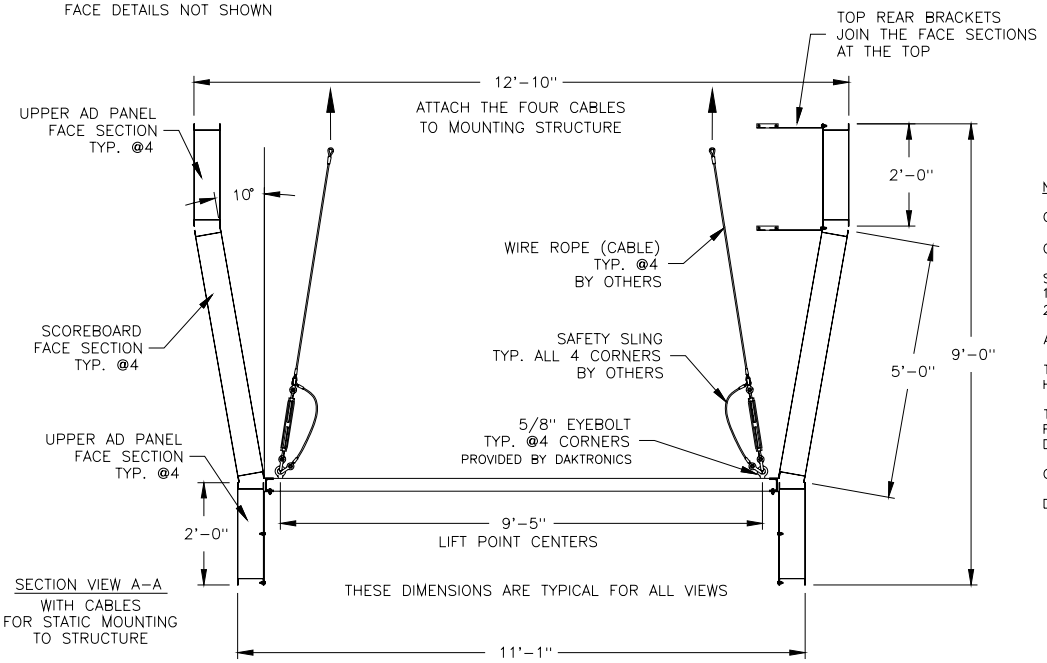
POWER REQUIREMENTS

DISPLAY SECTION	MAX. POWER PER FACE	MAX. POWER TOTAL
SCOREBOARD WITHOUT TNMC	300W	800W
SCOREBOARD WITH TNMC	500W	1200W
UPPER AD PANEL	300W	1200W
LOWER AD PANEL	300W	1200W
TOTAL WITHOUT TNMC		3200W
TOTAL WITH TNMC		3600W

PROVIDE THREE 120V AC, 20 AMP CIRCUITS WITH A 15 AMP RECEPTACLE FOR EACH CIRCUIT. CONNECT THE UPPER AD PANELS TO ONE CIRCUIT, THE SCOREBOARD TO ANOTHER CIRCUIT, AND THE LOWER AD PANELS TO THE THIRD CIRCUIT.



TOP VIEW
WITH CABLE SLING FOR STATIC MOUNTING TO STRUCTURE



SECTION VIEW A-A
WITH CABLES FOR STATIC MOUNTING TO STRUCTURE

NOTES:

CONSTRUCTION IS ALL ALUMINUM. ALL HARDWARE NECESSARY TO ASSEMBLE THE DISPLAY IS PROVIDED BY DAKTRONICS.

CABLE SLINGS (WIRE ROPE AND FITTINGS), TURNBUCKLES, ETC, ARE NOT PROVIDED BY DAKTRONICS, UNLESS CONTRACTED OTHERWISE.

SCOREBOARD MAY BE SUSPENDED IN ONE OF TWO WAYS:
1. STATIC-HUNG FROM ROOF TRUSSES OR A MOUNTING STRUCTURE AS SHOWN AT LEFT
2. SUSPENDED FROM A HOIST (NOT SHOWN IN THIS DRAWING).

ALL SUPPORT STRUCTURES AND HOISTS MUST BE APPROVED BY A LICENSED ENGINEER.

THE FACILITY IS RESPONSIBLE FOR PROVIDING CERTIFIED ENGINEER'S WRITTEN VERIFICATION THAT THE BUILDING ROOF STRUCTURE AND HOIST SYSTEM CAN SAFELY SUPPORT THIS LOAD WITH NORMAL IMPACT.

THIS 4-SIDED DISPLAY IS SHIPPED IN SEVERAL PARTS: EACH SCOREBOARD AND AD PANEL FACE SECTION IS ONE PIECE, THE FLOOR FRAME IS IN TWO PARTS, AND NEEDS SOME ASSEMBLY. TOP BRACKETS AND AD PANEL MOUNTING BRACKETS ARE ATTACHED DURING ASSEMBLY. CORNER SHROUDS ARE ATTACHED LAST, AND PROVIDE COSMETIC COVERING ONLY.

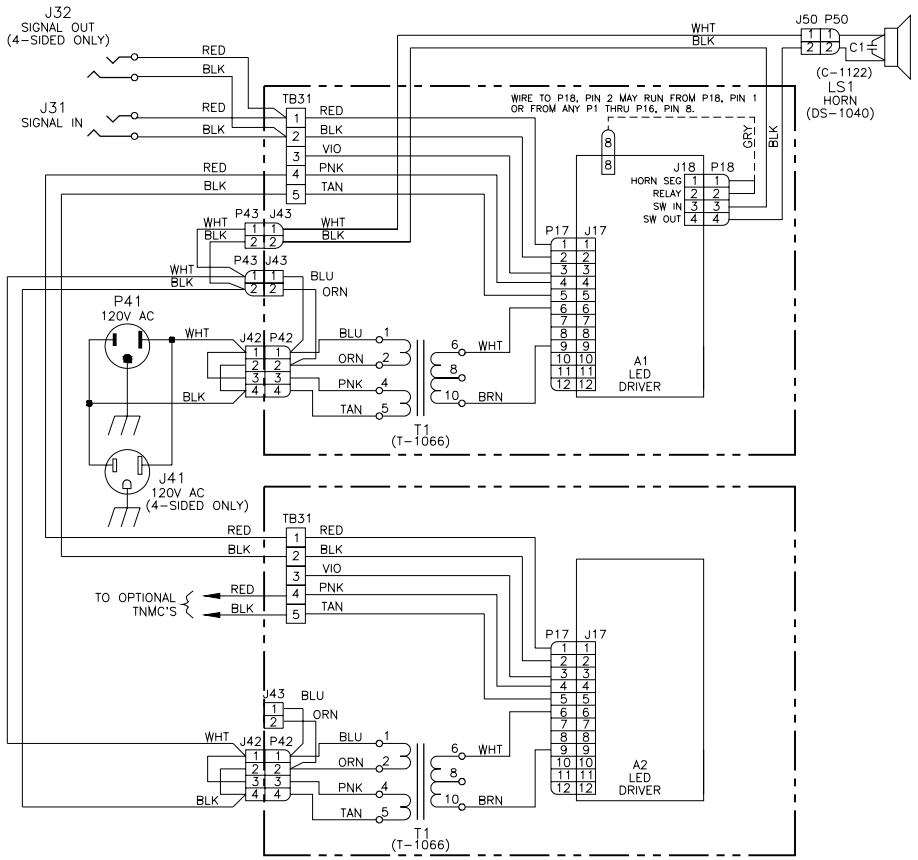
OPTIONAL FLOOR IS MADE OF ALUMINUM SHEET AND IS NOT TO BE STEPPED ON. IT WILL NOT SAFELY SUPPORT A PERSON'S WEIGHT.

DAKTRONICS IS NOT RESPONSIBLE FOR HOISTS OR STRUCTURES SPECIFIED OR INSTALLED BY OTHERS.

REV.	DATE	DESCRIPTION	BY	APPR.
02	04OCT01	UPDATED WEIGHT	BDP	
01	13 NOV 00	FIXED CORNER SHROUDING ATTACHMENT	EPR	

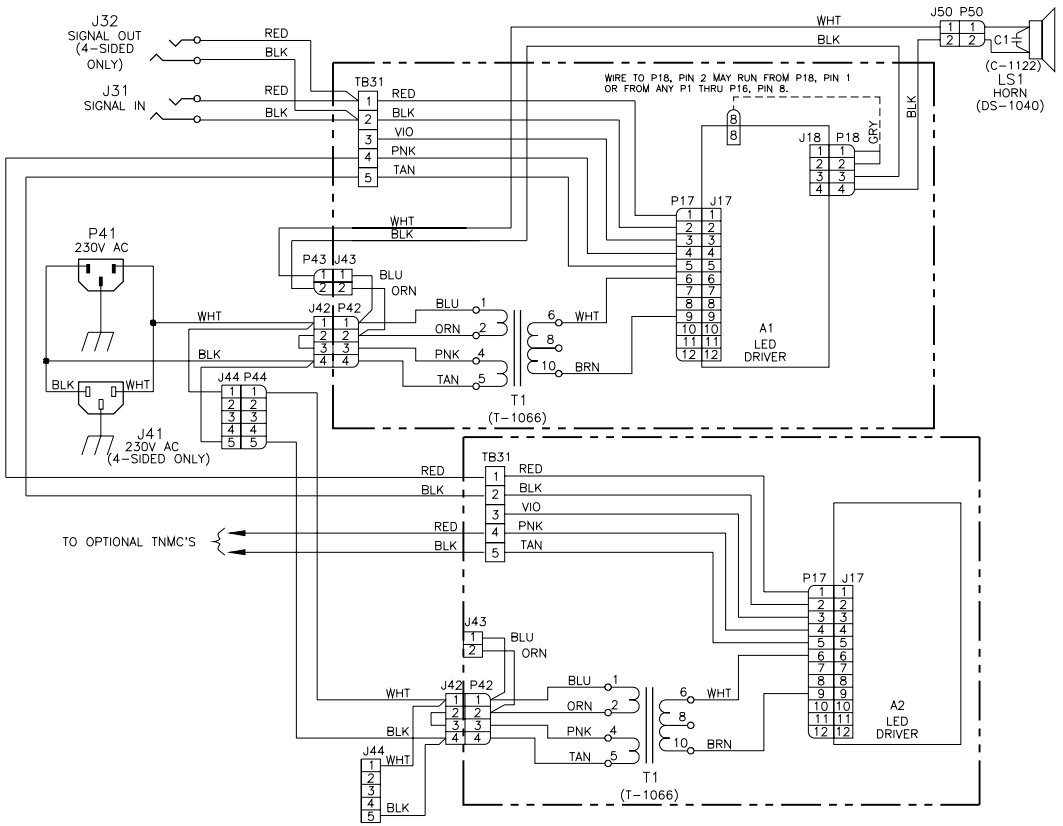
DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: STANDARD INDOOR LED SCOREBOARDS
TITLE: SHOP DRAWING, HOCKEY WITH 24" BACKLIT ADS
DES. BY: AVB DRAWN BY: A VANBEMMEL DATE: 02 OCT 98
REVISION APPR. BY:
SCALE: 1=30
1152-R08B-108189



NOTE: POWER FOR OPTIONAL TNMC CONNECTS TO J43 ON 2ND DRIVER

120V AC MODELS



NOTE: POWER FOR OPTIONAL TNMC CONNECTS TO J44 ON 2ND DRIVER

230V AC MODELS

REV.	DATE	DESCRIPTION	BY	APPR.
04	20 NOV 01	CORRECTED P43 AND J43 INTERCONNECT TO SHOW CORRECT PINOUTS.	MWM	
3	5JUN01	ADDED PLUG & JACK HORN	RASMUS	CMC
2	27 NOV 00	UPDATED WIRE COLORS ON TRANSFORMER.	CJB	
1	13 MAR 00	UPDATED SCHEMATIC TO SHOW DIFFERENT WIRE COLORS FOR SIGNAL.	CJB	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ:

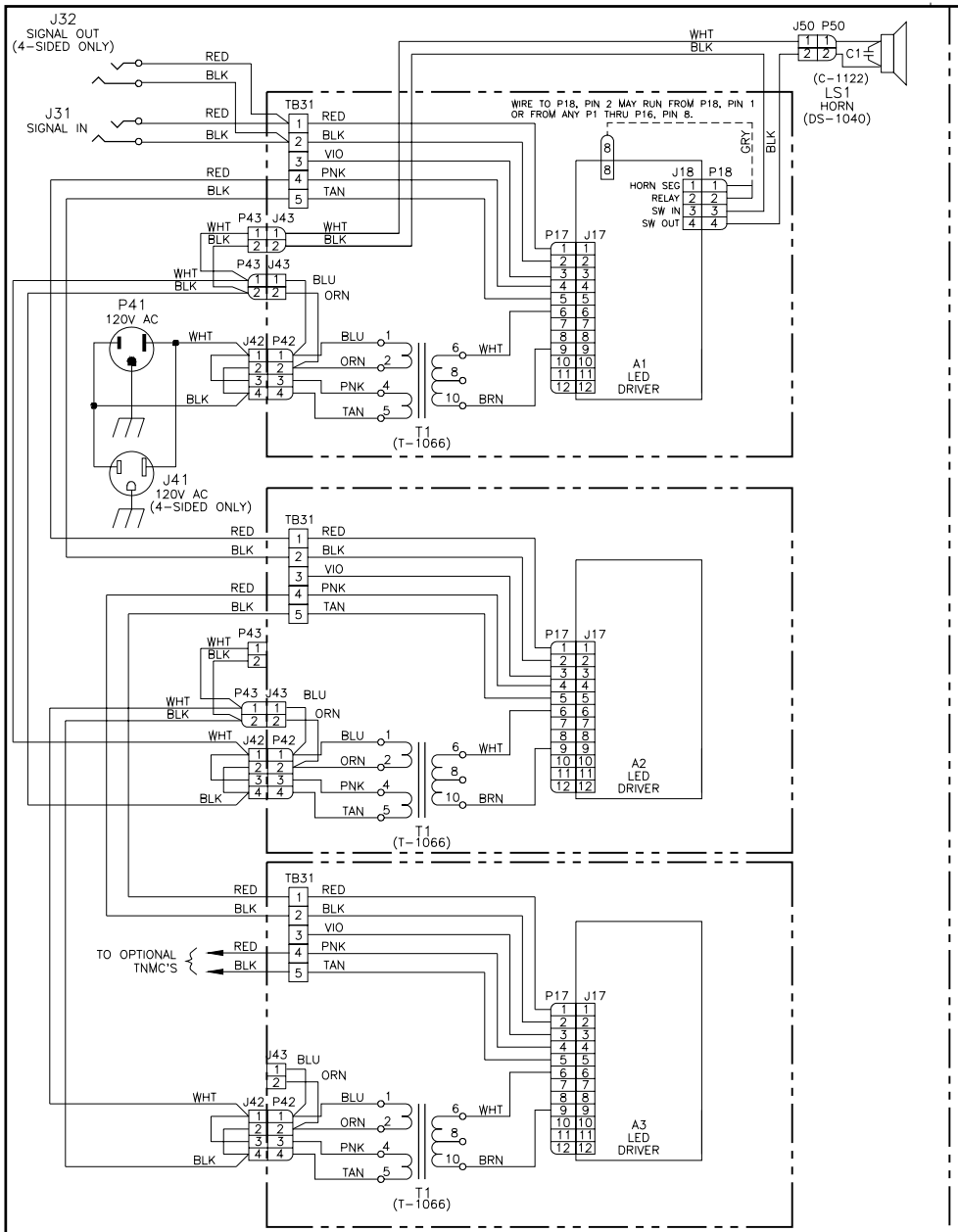
TITLE: SCHEMATIC; 2-DRIVER FOR A/S 5000

DES. BY: CBRECZI DRAWN BY: CBRECZI DATE: 09 DEC 99

REVISION APPR. BY:

SCALE: 1=1

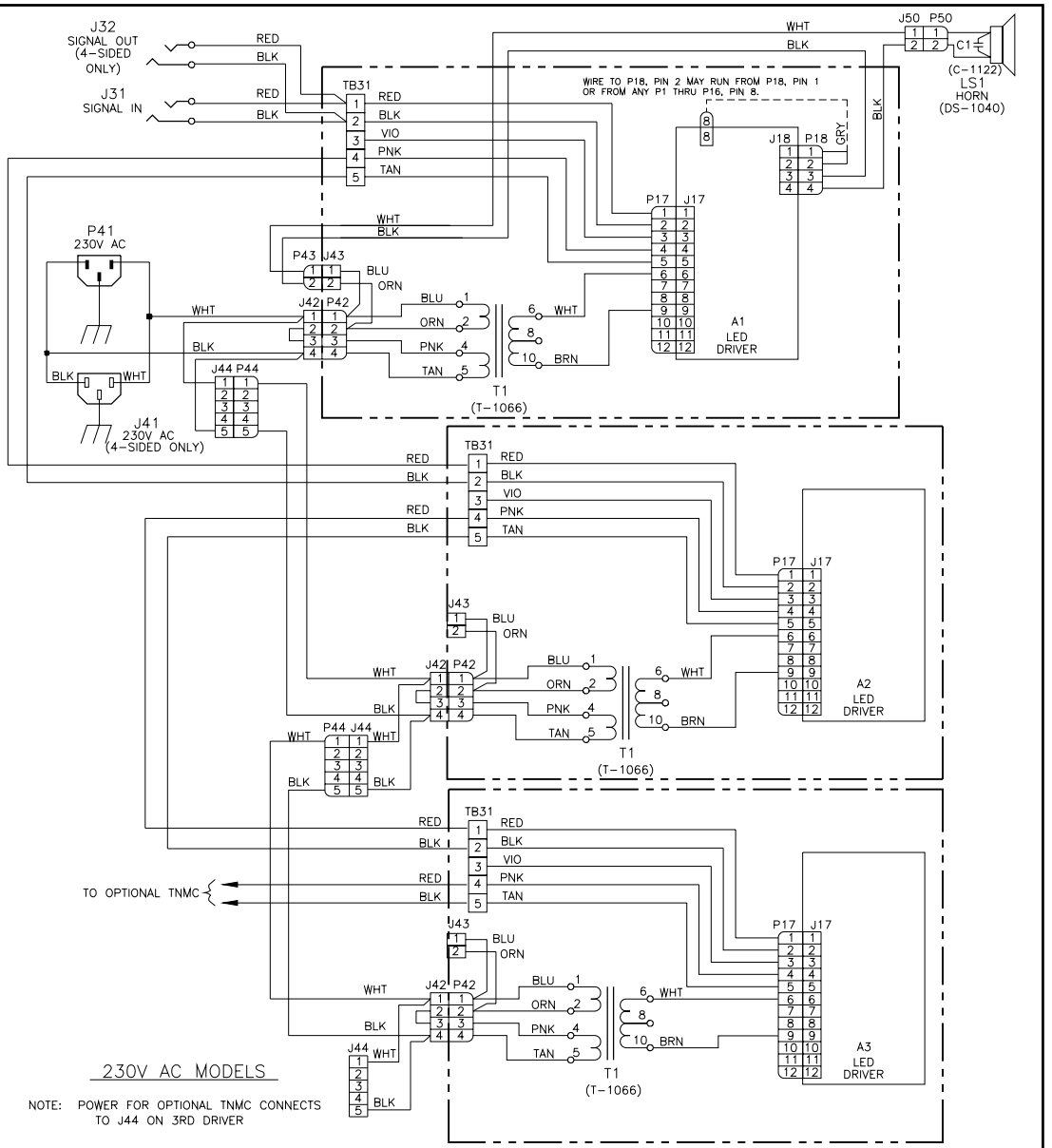
1152-R03B-125172



NOTE: POWER FOR OPTIONAL TNMC CONNECTS TO J43 ON 3RD DRIVER

120V AC MODELS

REV.	DATE	DESCRIPTION	BY	APPR.
2	27 NOV 00	UPDATED WIRE COLORS ON TRANSFORMER.	CJB	
1	13 MAR 00	UPDATED SIGNAL WIRES.	CJB	



230V AC MODELS

NOTE: POWER FOR OPTIONAL TNMC CONNECTS TO J44 ON 3RD DRIVER

REV.	DATE	DESCRIPTION	BY	APPR.
04	20 NOV 01	CORRECTED P43 AND J43 INTERCONNECT TO SHOW CORRECT PINOUTS.	MWM	
3	5JUN01	ADDED PLUG & JACK FOR HORN	RASMUS	CMC

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ:

TITLE: SCHEMATIC; 3 DRIVERS

DES. BY: CBRECZI DRAWN BY: CBRECZI DATE: 20 DEC 99

REVISION

APPR. BY:

SCALE: 1=1

1152-R03B-125173

Appendix B: Hoist/Suspension Systems

SCOREBOARD HOIST/SUSPENSION SYSTEM SPECIFICATIONS

Vern Voelzke Sr. Mechanical Engineer Daktronics, Inc.

The objective of these specifications is to design to single component failure prevention principles. This means that the system has been analyzed for reasonable failure possibilities and a means of backing up the possible failing component is designed into the system. It is the responsibility of the owner to assure that the system and its integration into the building structure composes a thoroughly designed and adequately engineered system to support all anticipated static and dynamic loads.

GENERAL SPECIFICATIONS:

- Shall be designed to carry the scoreboard load 100 % of the time.
- Shall have automatic failure-protection overspeed brake on each of the drums to slow and stop the load with a maximum impact of 150% of rated load.
- Shall automatically disable hoist motor functions when an overspeed condition is detected.
- Shall have Key ways designed to eliminate possibility of keys walking or escaping.
- Shall have reeving of lifting cables with maximum of two degree fleet angle.
- Shall have 8:1 f.o.s. (factor of safety) on any single leg of a reeved cable.
- Shall have hoist, sheave, cable, and drum suspension connections with 8:1 f.o.s. to to average pick point load.
- Shall have gear shaft couplings with 8:1 f.o.s. at full load.
- Shall have worm reducer with little to no backwinding, manufactured to AGMA specification, rated to support the scoreboard at a service factor of 1.
- Shall have lifting speed range of 5-9 fpm.
- Shall have two separate cables per pick point on two pick point systems.
- Shall have integral motor disc brake rated in excess of 150% of full load motor torque.
- Shall have hoist, sheave, cable and drum suspension connections with 8:1 f.o.s. to design weight.
- Shall have usage timer.

CONTROL SPECIFICATIONS:

- Shall have single starter operation with EMERGENCY stop circuit.
- Shall have anti motor bumping protection to eliminate bouncing.
- Shall have scoreboard elevation indicator.
- Shall have operational audible warning signal that activates when power is on at control station.
- Shall have key lock remote pendent with “UP”-”DOWN” momentary push buttons and “E”-stop button. Hoist mounted control cabinet to have duplicate buttons.
- Shall have protection to assure continued control in the event that a contactor would fuse together.
- Shall have adjustable motor over current protection.
- Shall have “drop-out” line contactor activated by e-stop circuit and all ultimate (secondary) limit switches.
- Shall have secure, independent EMERGENCY stop circuit to drop out line contactor.
- Shall have independent (redundant) “Ultimate **UP**” or extreme cable wrap condition limit switches.
- Shall have six possible settings: up, down and four intermediate.
- Shall have failsafe and self-diagnostic control system.
- Shall have security system that can permit only authorized and trained personnel to change the operating parameters of the system.

DAKTRONICS, INC.
P.O. Box 5128 331 32nd Avenue Brookings, SD 57006
Phone (605) 697-4300 or (888) 325-8766 Fax 697-4700
www.daktronics.com e-mail sales@daktronics.com

SCOREBOARD HOIST/SUSPENSION SYSTEM SPECIFICATIONS

JOB SPECIFIC SPECIFICATIONS:

- Weight of scoreboard system load
- Vertical lift required
- Hook blocks as required for reeving
- Vertical reach if required
- Quantity and type of elevation detection
- Number of remote pendents
- Pickup points to scoreboard
- Type of mounting
- Hook centers
- Voltage
- Tentative installation start and completion date
- Mounting drawings required from hoist supplier for customer engineers approval
- Hoist weight certification required
- Hoist to include interface steel/fasteners required for mounting to structure

CERTIFICATION/DOCUMENTATION REQUIRED FROM HOIST MANUFACTURER:

- Signed certification by PE/Company CEO that the design meets the specifications for this application.
- Auxiliary fail-protection overspeed braking system to have been installed and functionaly on at least two installations for a period of one year, or be field testable for functionality.
- Installation to include operator training and signed receipt of those trained.
- Recommended inspection schedule.
- Calculations for hoist design must be available on demand with PE signature.
- Certificate of Conformance to metallurgical, drawing and general manufacturing processes of the gear drive manufacturer. Document must originate from the gear drive manufacturer.
- Calculations on maximum transitional load to structure if overspeed brakes where activated.

NOTE: These specifications are subject to change without notice. Please contact Daktronics for the most current revision of this document.

DAKTRONICS, INC.®
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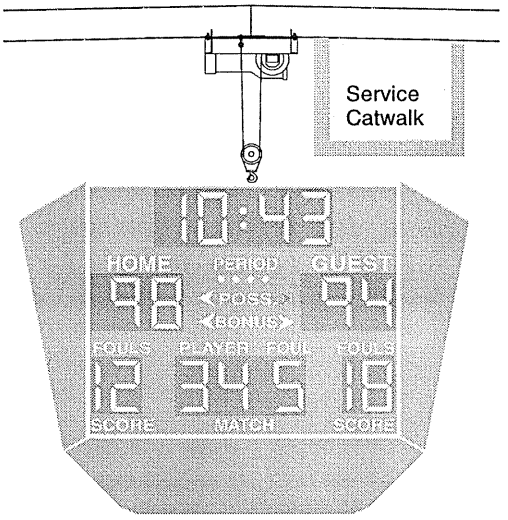
Which Suspension System is Best for your Center-Hung Scoreboard?

There are two different ways to suspend your center-hung scoreboard.

A **static suspension system** holds the scoreboard securely in place using cables attached to the building's structural framework. It works well with smaller scoreboards and in applications where the scoreboard doesn't need to be lowered and raised. A portable elevating work platform is required to service the scoreboard.

A **electronic hoist system** is more complicated. It uses multiple drums attached to the arena's structure which wind (or unwind) cables attached to the scoreboard that enable it to be raised and lowered. A hoist system works best in larger facilities and in applications where the scoreboard needs to be lowered for service or moved to allow additional clearance for non-sporting events.

Electronic Hoist System



Scoreboard is lowered to floor for service.

Advantages

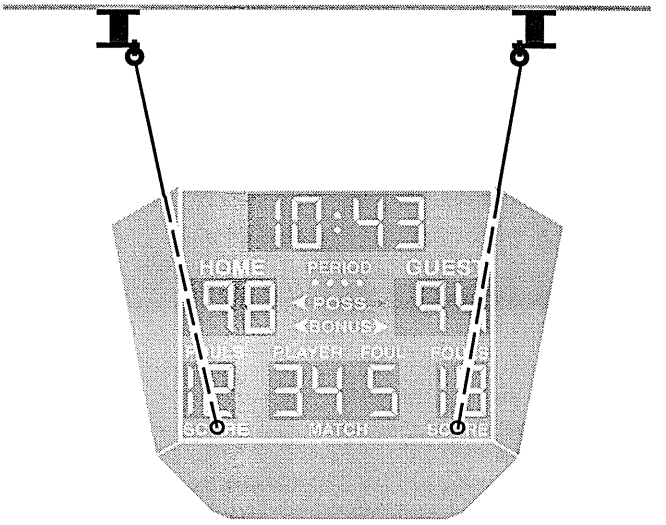
- Allows scoreboard to be lowered and serviced from the floor
- Can move scoreboard to various heights for different events and when not in use or allow scoreboard to be lowered and removed from arena entirely

Disadvantages

- Higher cost to purchase (approximately $10,000 - $30,000) for smaller systems
- Higher installation costs*
- Maintenance requirements (semi-annual inspection required by local or state inspectors)
- Additional liability issues
- Limited use (for scoreboard only)
- Additional stress on roof structure

*Installation of an electrical hoist system often requires a great deal of structural work for mounting. Engineering approval is more difficult and requires additional time and expenses. Installation of electrical service for the hoist is also required.

Static Suspension System



Service personnel must use elevating lift to access scoreboard.

Advantages

- Lower cost to purchase
- No hoist maintenance necessary
- Easier to get engineering approval
- Service lift can be used for other building service needs (lighting, painting, ventilation, etc.)

Disadvantages

- Cannot lower and raise scoreboard to different levels
- Must have or purchase lift to service boards
- Scoreboard may be in the way for concerts and circus events

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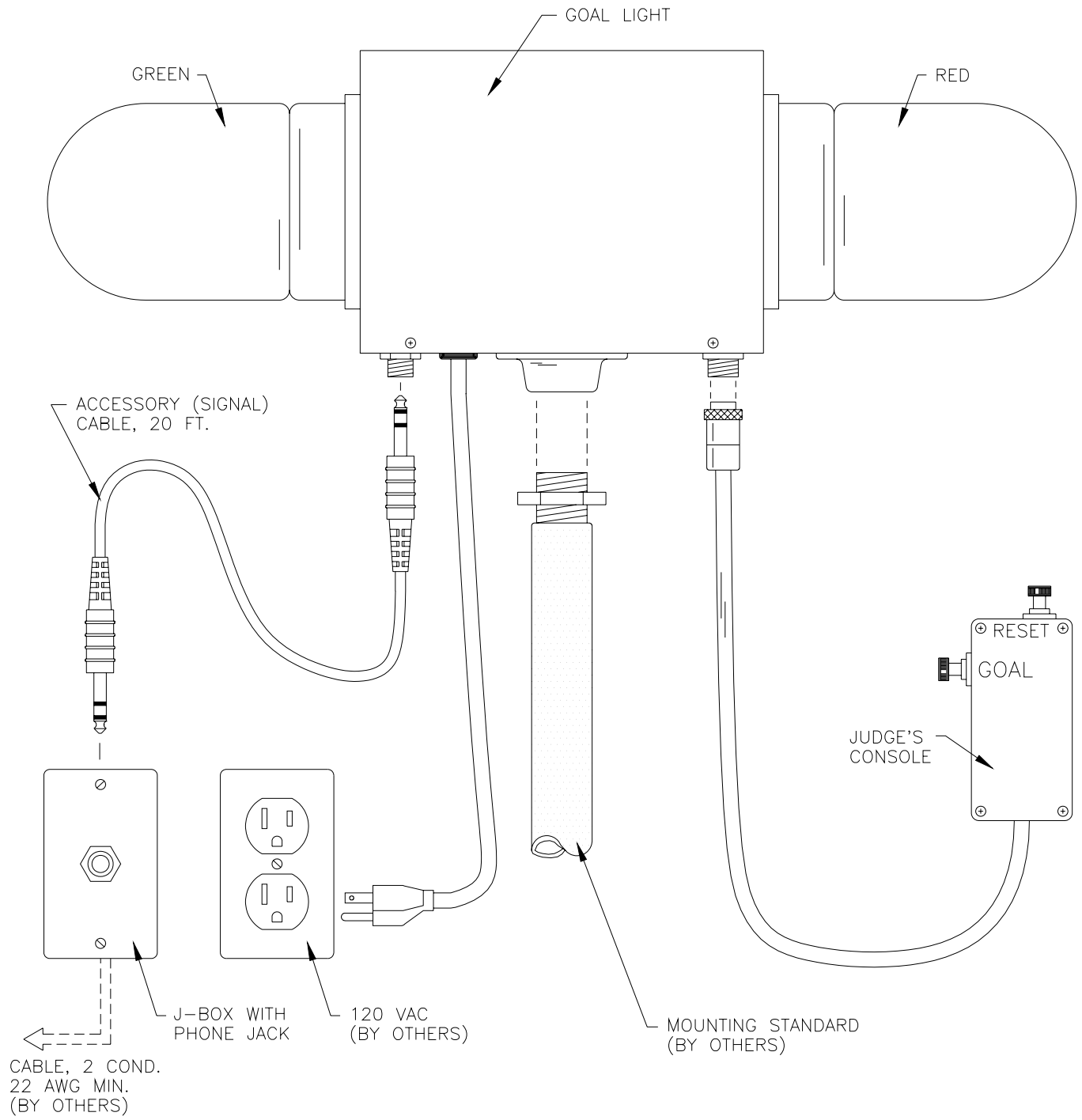
Appendix C: Hockey Goal Lights

GOAL LIGHT MOUNTING:

THE FITTING ON THE BASE OF THE GOAL LIGHT ACCEPTS ONE INCH STANDARD PIPE THREAD.



REV.	DATE	DESCRIPTION	BY	APPR.
1	5 NOV 91	CHANGED FROM "B" TO "A" SIZE DWG, REDRAWN ON AUTO CAD, CHANGED "CONTROLLER" DESCRIP. IN DWG TO "GOAL LIGHT".	CFICK	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: HOCKEY

TITLE: GOAL LIGHT COMPONENTS

DES. BY: AVB DRAWN BY: AVB DATE: 14 DEC 84

REVISION

APPR. BY: AVB

SCALE: 1=3

1010-R08A-22927