

Daktronics Outdoor LED Timing Displays

Installation, Maintenance, and Troubleshooting Manual

ED13313

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MODELS

RO-2010-11 RO-2011-11 TI-2010-11 TI-2010-11, DF TI-2012-11 TI-2015-11

ED13313
Project 1192
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***Note:** Please fill in the information below for your display, and use it as a reference when calling Daktronics for assistance.*

Scoreboard Serial No. _____

Scoreboard Model No. _____

Date Installed _____



DAKTRONICS

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Section 1: Introduction

1.1 How to Use this Manual

This manual explains the installation of *Daktronics Outdoor LED Timing Displays* and provides details for display maintenance. For other questions regarding the safety, installation, operation, or service of these systems, contact Daktronics. Customer Service Help Desk telephone numbers are listed on the cover page of this manual.

Important Safeguards:

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

Figure 1 illustrates the Daktronics drawing numbering system. Daktronics identifies individual engineering drawings by the drawing number (7087-P08A-69945 in the example), which is located in the lower right corner of the drawing. This manual refers to drawings by their last set of digits and the letter preceding them. The example would be **Drawing A-69945**.

| | | |
|--------------------------------------|-----------------|-------------------|
| DAKTRONICS, INC. BROOKINGS, SD 57006 | | |
| PROJ: BASKETBALL | | |
| TITLE: SEGMENTATION, 7 SEG BAR DIGIT | | |
| DES. BY: BPETERSON | | DRAWN BY: TNELSON |
| | | DATE: 8 JUL 02 |
| APPR. BY: AVB | 7087-P08A-69945 | |
| SCALE: 1 = 4 | | |

Figure 1: Daktronics Drawing Label

Reference drawings are grouped and inserted in alphanumeric order in the **Appendix**.

Listed below are a number of drawing types commonly used by Daktronics, along with the information that each is likely to provide.

- **System Riser Diagrams:** overall system layout from control room to display, power, and phase requirements.
- **Shop Drawings:** fan locations, transformer locations, mounting information, power and signal entrance points, and access method (front or rear).
- **Schematics:** power wiring, signal wiring, panelboard or power termination panel assignments, signal termination panel assignments, and transformer assignments.
- **Final Assembly:** component locations, part numbers, display dimensions, and assembly/disassembly instructions.

All references to drawing numbers, appendices, figures, or other manuals are presented in **bold** typeface, as in this example: “Refer to **Drawing A-114667** for the location of the driver enclosure.”

Additionally, any drawings referenced within a particular subsection are listed at the beginning of that subsection in the following manner:

Reference Drawing:

Shop Drawing; 16 High 2 ½" Small Matrix **Drawing A-114667**

Daktronics identifies each manual by assigning an engineering document, or ED, number, which is located on the cover page. This manual, for example, would be referred to as **ED13313**.

The serial and model numbers of a Daktronics scoreboard can be found on the ID label on the display.

The 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, note your scoreboard model number, serial number, and installation date on the front page of this manual.

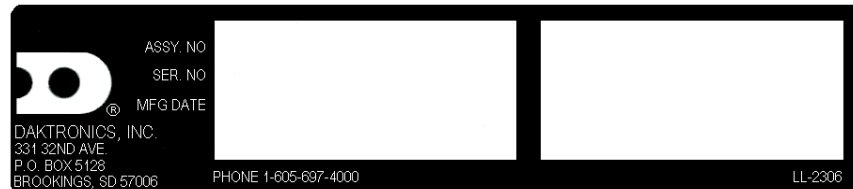


Figure 2: Scoreboard Label

Daktronics displays are built for long life and require little maintenance. However, from time to time, certain display components will have to be replaced. The Replacement Parts List in **Section 4** provides names and part numbers of components that may require replacement during the life of this display.

Following the Replacement Parts List is an explanation of Daktronics exchange and replacement programs. Refer to these instructions if you must replace or repair any display component.

1.2 Daktronics Nomenclature

To fully understand some Daktronics drawings, such as schematics, it is necessary to know how various components are labeled in those drawings. You will find this information useful when trying to communicate maintenance or troubleshooting efforts.

The label "A" on a drawing item typically denotes an assembly. An assembly can be a single circuit board or a collection of components that function together, usually mounted on a single plate or in a single enclosure.

In addition, the following labeling formats might be found on various Daktronics drawings:

- "TB_" denotes a termination block for power or signal cable.
- "F_" denotes a fuse.
- "E_" denotes a grounding point.
- "J_" denotes a power or signal jack.
- "P_" denotes a power or signal plug for the opposite jack.

Finally, Daktronics part numbers are commonly listed on drawings. Those part numbers can be used when requesting replacement parts from Daktronics Customer Service. Take note of the following part number formats. (Not all possible formats are listed here.)

- "0P-____-____" denotes an individual circuit board, such as a driver board.
- "0A-____-____" denotes an assembly, such as a circuit board and the plate or bracket to which it is mounted. A collection of circuit boards working as a single unit may also carry an assembly label.
- "W-____" denotes a wire or cable. Cables may also carry the assembly numbering format in certain circumstances. This is especially true of ribbon cables.
- "F-____" denotes a fuse.
- "T-____" denotes a transformer.
- "PR-____-____" denotes a specially ordered part.
- "M-____" denotes a metal part, and "0M-____" typically denotes a fabricated metal assembly.

1.3 Manual Overview

This manual details outdoor LED timing displays with numeric digits. It is divided into the following sections:

- Section 1:** Provides an overview of the product, product safety information, and labeling and numbering descriptions.
- Section 2:** Contains mechanical installation information for each model.
- Section 3:** Contains electrical installation information for each model.
- Section 4:** Contains scoreboard service information and explains the Daktronics Exchange and Repair and Return programs.
- Appendix A:** Contains all engineering drawings referenced in the manual.
- Appendix B:** Contains information about eyebolts and scoreboard lifting.

The various sections in this manual contain model-specific information, including dimensions, digit configuration, and power requirements. The scoreboard engineering drawings, located in **Appendix A**, also list dimensions, weight, and mounting instructions for each display. Additionally, the model number and electrical requirements can be found on a label on the display entrance panel.

1.4 Product Overview

Reference Drawings:

| | |
|---|-------------------------|
| Component Locations; TI-2012-11 | Drawing A-164163 |
| Component Locations; RO-2010-11 | Drawing A-164530 |
| Component Locations; TI-2015-11 | Drawing A-164746 |
| Component Locations; RO-2011-11 | Drawing A-165768 |
| Component Locations; TI-2010-11 | Drawing A-168183 |
| Component Locations; TI-2010-11, DF | Drawing A-171767 |

The Daktronics outdoor LED timers are part of a family of scoring and timing displays designed to offer easy installation, readability, and reliability. Microprocessor control assures consistent operation and accuracy.

This manual details these Daktronics displays:

- **RO-2010-11**: five-digit rodeo timer
- **RO-2011-11**: four-digit rodeo timer
- **TI-2010-11**: standard two-digit segment timer (H2'-0", W3'-0", D11")
- **TI-2010-11, DF**: double-faced, two digit segment timer (H2'-0", W3'-0", D11")
- **TI-2012-11**: segment timer with four-digit clock/timer and two-digit segment/period display
- **TI-2015-11**: standard two-digit segment timer (H2'-4", W3'-4", D6")

Refer to the component locations drawings listed above for illustrations of the display configurations.

Each of the numeric displays is fully programmable. Segment timers have 20 segments, and segment numbers flash when the remaining time reaches a preset limit. The rodeo timer is capable of recording and displaying times to one-thousandth of a second.

Featuring large, highly visible PanaView™ digits with nominal heights of 15"-24", the boards use light emitting diodes, or LEDs, for illumination. (LEDs are tiny, solid-state components that use a semiconductor chip to transform electrical current into light; they are high-intensity, low-energy lighting units.) Scoreboards in this series use red-orange LEDs for best outdoor display.

All timers covered in this manual feature PanaView digit technology. With all models, digits may be dimmed for night viewing.

Because of their LED technology, the timers consume little power – barely more than a single household lamp. Maximum power usage for all of the timing displays is 150 W.

Cabinets for the displays, available in more than 250 colors, are constructed of heavy-gauge aluminum. Digit and indicator faceplates are black, and they are mounted directly onto the scoreboard surface. Permanent captions and optional striping are white vinyl. Some smaller units are equipped with handles for easy transport.

The outdoor LED timing displays have been designed for use with an All Sport® control console. Consoles use All Sport keyboard overlays (sport inserts) for game or activity control, and the boards operate without modification on All Sport 5000 signal protocol. Refer to the following controller manuals for operating instructions:

- **ED12462**: All Sport 1600 Series Control Console Operation Manual
- **ED12621**: All Sport 5100 Rodeo Timer Electronic Timing and Scoring Console Operation Manual

A radio control option, available with all six timer models, provides scoreboard control via a 2.4 GHz, extra-high frequency FM signal.

1.5 Specifications

Dimensions and power requirements of the outdoor LED timers are listed in the table below:

| Model | Dimensions (Height, Width, Depth) | Weight Uncrated | Digit Size/Color | Maximum Wattage | Power | Amperage | Driver No. and Address |
|-------------------|--|--------------------|---|--------------------|----------|----------|---------------------------|
| RO-2010-11 | H2'-7", W9'-0", D6" (787 mm, 2743 mm, 152 mm) | 200 lb (91 kg) | 24", red-orange (610 mm) | 150 W | 120 V AC | 1.3 A | A1 12 |
| RO-2011-11 | H2'-0", W6'-0", D11" (610 mm, 1828 mm, 279 mm) | 40 lb (18 kg) | 18", red-orange (457 mm) | 150 W | 120 V AC | 1.3 A | A1 12 |
| TI-2010-11 | H2'-0", W3'-0", D11" (610 mm, 914 mm, 279 mm) | 30 lb (14 kg) | 18", red-orange (457 mm) | 150 W | 120 V AC | 1.3 A | A1 2 |
| TI-2010-11, DF | H2'-0", W3'-0", D11" (610 mm, 914 mm, 279 mm) | 40 lb (18 kg) | 18", red-orange (457 mm) | 150 W | 120V AC | 1.3 A | A1 2 |
| TI-2012-11 | H3'-6", W5'-0", D6" (1067 mm, 1524 mm, 152 mm) | 130 lb (59 kg) | <ul style="list-style-type: none"> ▪ Clock: 15" red-orange (381 mm) ▪ Score: 13" red (330 mm) | 150 W | 120 V AC | 1.3 A | A1 1 |
| TI-2015-11 | H2'-4", W3'-4", D6" (711 mm, 1016 mm, 152 mm) | 36 lb (16 kg) | 24", red-orange (610 mm) | 150 W | 120 V AC | 1.3 A | A1 2 |

1.6 Model Names

Daktronics scoreboards are differentiated by their model numbers: *RO-2010-11*, for example, designates a specific rodeo scoreboard. The two-letter prefixes for scoreboards in this manual include **RO-**, rodeo; and **TI-**, timer.

In the outdoor LED timer series, the three or four numbers following the prefix typically identify a specific model.

Most Daktronics scoreboards also carry a two-number suffix that refers to indoor-outdoor status and power supply: **-9** and **-10** are indoor displays, 120 V and 230 V respectively; and **-11** and **-12** are outdoor scoreboards, 120 V and 230 V. All of the LED displays in this manual carry the **-11** suffix, signifying that they have been designed and manufactured for outdoor use and have a 120 V AC power requirement.

1.7 Product Safety Approval

Daktronics outdoor scoreboards and timing displays are ETL listed, tested to CSA standards, and CE labeled for outdoor use. Contact Daktronics with any questions regarding testing procedures

Section 2: Mechanical Installation

Mechanical installation typically consists of installing concrete footings and steel beams, and mounting the scoreboard and accompanying ad panels to the beams. The timers described in this manual are portable but may also be permanently mounted.

2.1 Scoreboard Protective Devices

☛ *Note: Some owners install devices to protect the display from projectiles. Scoreboard protection devices not provided by Daktronics must be approved by Daktronics prior to installation. Failure to follow this approval procedure will void the scoreboard warranty.*

Daktronics makes available optional devices, including screens and netting, to help protect the scoreboard from damage due to normal ball impact.

2.2 Footings and Beams

To assist with estimating installation costs, Daktronics makes available drawings for various scoreboard models that specify the appropriate number of beams and recommended spacing. The drawings also indicate the size of beams required to support the scoreboard at different heights and under various wind speed conditions. All of the beam specifications illustrate "W"-shape steel beams (wide-flange I-beams). Contact your project manager, your scoreboard service provider, or Daktronics Customer Service for details.

Column and footing size drawings are estimates only and are not intended for construction purposes. Columns and footings and all connection details must be designed and certified by a professional engineer licensed to practice in the state in which the display will be installed. Be sure that your installation complies with local building codes and is suitable for your particular soil and wind conditions.

Daktronics assumes no liability for installations derived from the information provided in this manual or installations designed and installed by others.

2.3 Lifting the Scoreboard

Reference Drawings:

| | |
|--|------------------------|
| Lifting Scoreboard | Drawing A-44548 |
| Lifting Small Baseball Scoreboard..... | Drawing A-58668 |

Site installation for small Daktronics scoreboards such as the outdoor segment timers requires the use of lifting straps. Refer to **Drawing A-58668** for lifting details. Larger displays like the rodeo timer, RO-2010-11, are shipped equipped with eyebolts that are used for lifting. The eyebolts are located along the top of the cabinet of each scoreboard or scoreboard section.

☛ *Note: Some of the timers described in this manual are equipped with handles on the sides or top of the cabinet. (The rodeo timer does not have handles.) The handles are designed for carrying only and are not to be used as a temporary hanger or for permanent mounting.*

Daktronics strongly recommends using a spreader bar, or lifting bar, to lift the display. Using a spreader bar ensures that the force on the lifting straps or eyebolts is straight up, minimizing lifting stress. Lifting methods are shown in the illustration below and in **Drawing A-44548**.

Figure 3 illustrates both the preferred method (left example) and an alternative method (right example) for lifting a scoreboard. When lifting the display:

- Use a spreader bar.
- Use every lifting point provided.

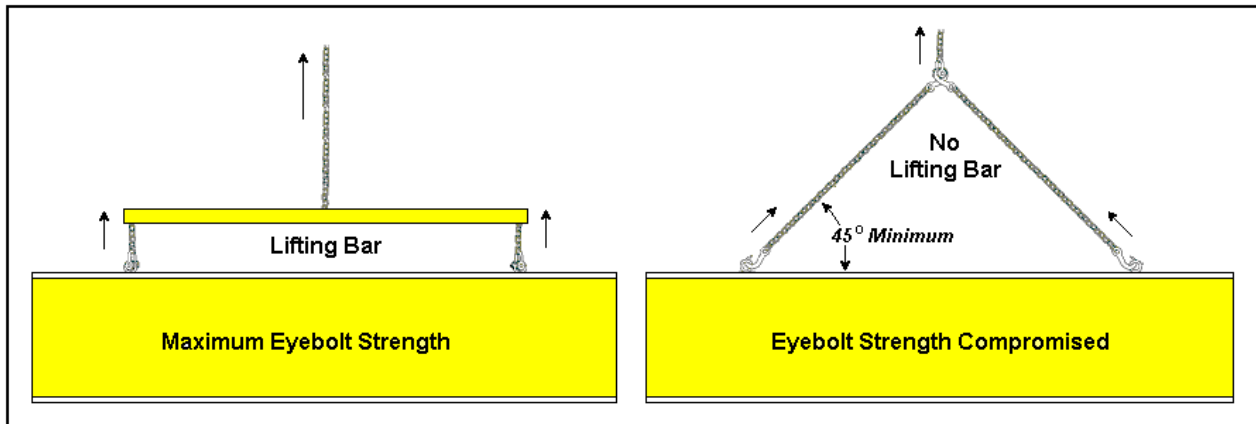


Figure 3: Lifting the Display

Take special note to exceed the rated load of the eyebolts. Refer to **ED7244: Eyebolts**, to determine allowable loads and load angles for the lifting hardware. **ED7244** is located in the **Appendix B** of this manual.

Avoid using other lifting methods. Cables and chains attached to the eyebolts and directly to a center lifting point, as shown in the right-hand example in **Figure 3**, can create a dangerous lateral force on the eyebolts and may cause the eyebolts to fail. Daktronics scoreboards use $\frac{1}{2}$ " and $\frac{5}{8}$ " shoulder-type eyebolts mounted to a $\frac{1}{8}$ " aluminum plate or steel nut plate, but exceeding load angles or weight limits could cause the bolts to pull out or the scoreboard cabinet to buckle. In either circumstance, the result would be serious damage to the scoreboard. If you must use this method, ensure a minimum angle between the chain and scoreboard of at least 45° .

Note: *Daktronics assumes no liability for scoreboard damage resulting from incorrect setup or incorrect lifting methods.*

Eyebolts are intended for lifting only. Do not attempt to permanently support the display by the eyebolts.

In installations in which an ad panel or some other scoreboard section may be added to the base display, the lower scoreboard section is installed first and secured to the support beams, and the upper section is then placed atop or above the lower section and attached to the beams. There may be cables extending from the top of the lower section. Guide these cables into the hole in the bottom of the upper section for later connection.

If installers remove the lift eyebolts when the display is permanently mounted, plug the holes with bolts and the rubber sealing washers that were removed with the eyebolts. Apply silicone or another waterproof sealant to the eyebolt openings. Inspect the top and sides of the display for any other holes or openings that may allow moisture to enter the display, and plug and seal those openings as well.

2.4 Scoreboard Mounting

Reference Drawing:

Scoreboard Mounting **Drawing A-55101**

All of the timer models included in this manual use an inverted channel mounting, illustrated in **Figure 4**. For complete instructions, refer to **Drawing A-55101**. To determine the center -to-center distance of the poles, refer to the installation specifications drawing for your model.

Installation uses C-channel; mounting angles, $\frac{1}{2}$ -13" threaded rod, and $\frac{1}{2}$ " square nuts, hex nuts, and lockwashers. Mount the scoreboard as follows:

1. Place the C-channel against the upper and lower rear flanges of the scoreboard cabinet, as shown in **Drawing A-55101**.
2. Use the mounting channel to determine the appropriate hole combination to use. Be sure to keep the bolts as close to the beam as possible.
3. Using the mounting channel as a template, drill $\frac{9}{16}$ " holes in the upper and lower rear flanges of the scoreboard where the supports will be placed.
4. Place the $\frac{1}{2}$ " square nuts inside the C-channel and thread the $\frac{1}{2}$ -13" bolts through the channel and the back flange of the display cabinet.
5. Lift the scoreboard into position with the bolts still in place. Position the scoreboard at the front of the beams with the threaded rods extending from the rear flanges of the display.
6. With the threaded rod straddling the beams, place mounting angles over each pair of bolts and secure with $\frac{1}{2}$ " lockwashers and hex nuts.
7. Make final adjustments in the position of the scoreboard, and after verifying that the threaded rods are perpendicular to the display, firmly tighten all of the $\frac{1}{2}$ " hex nuts.

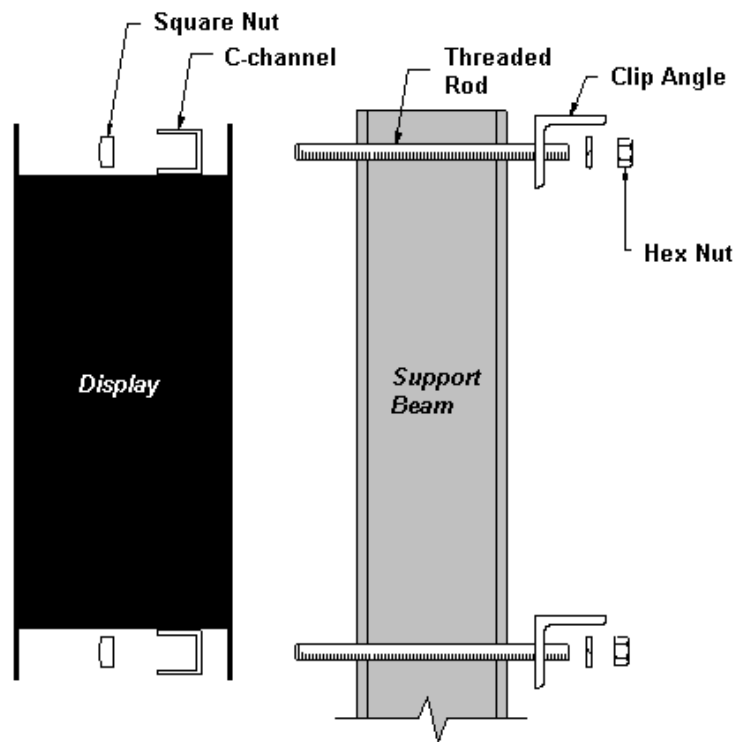


Figure 4: Scoreboard Mounting

Section 3: Electrical Installation

3.1 Power

Electrical installation consists of the following processes:

- Providing power and ground to a disconnect near the scoreboard;
- Routing power and ground from the main disconnect to the scoreboard driver/power enclosure;
- Connecting the scoreboard ground to a grounding electrode at the display location;
- Routing the control signal cable from the control location to the display location.

☛ *Note: Only qualified individuals should perform power routing and termination to the display. It is the responsibility of the electrical contractor to ensure that all electrical work meets or exceeds local and national codes.*

3.2 Power

Reference Drawing:

Schematic; Gen II Outdoor LED, 8 Column Drvr **Drawing A-156750**

Daktronics outdoor LED scoreboards have been designed for easy access to components, and the power and control signal hookup has been simplified. Front panels are removable to allow access to the digits, cabling, and other electronic components.

Correct power installation is imperative for proper display operation. The subsections that follow give details of power installation. Only qualified individuals should attempt to complete the electrical installation; untrained personnel should not attempt to install these displays or any of the electrical components. Improper installation could result in serious damage to the equipment and could be hazardous to personnel.

Daktronics outdoor scoreboards and timing displays require a dedicated, 120 V circuit for incoming power. The display itself has no breakers or fuses.

☛ **WARNING:** *It is critical that the scoreboard circuit be fused at 15 A, and that all conductors used must be designed to pass a 15 A current in normal operation. Failure to meet wiring and overcurrent protection device requirements is a violation of the National Electrical Code® and will void the scoreboard warranty.*


All power conductors are 14 AWG, except where 18 AWG wiring is called out on the schematic. All signal conductors are 22 AWG.

Refer to the outdoor scoreboard schematic listed above and to the chart in **Section 1** to determine circuit specifications and maximum power requirements for the models described in this manual.

Grounding

Reference Drawing:

Schematic; Gen II Outdoor LED, 8 Column Drvr..... **Drawing A-156750**

 *Displays **MUST** be grounded according to the provisions outlined in Article 250 of the National Electrical Code and according to the specifications in this manual. Daktronics recommends a resistance-to-ground of 10 ohms or less.*

The electrical contractor who is performing the electrical installation can verify ground resistance. Scoreboard Sales and Service personnel can also perform this service.

The display system *must* be connected to an earth electrode installed at the display. Proper grounding is necessary for reliable equipment operation. It also protects the equipment from damaging electrical disturbances and lightning. **The display must be properly grounded or the warranty will be void.** Refer to the schematic, **Drawing A-156750**, for information on where to connect the grounding wire. Connection at the duplex receptacle is illustrated in the lower section of the drawing.

The material for an earth-ground electrode differs from region to region and may vary according to conditions present at the scoreboard installation site. Consult the National Electrical Code and any local electrical codes that may apply. The support structure of the display cannot be used as an earth-ground electrode. The support is generally embedded in concrete, and if it is in earth, the steel is usually primed or it corrodes, making it a poor ground in either case.

Power Installation

There are two considerations for power installation: installation with ground and neutral conductors provided, and installation with only a neutral conductor provided. These two power installations differ slightly, as described in the following paragraphs:

Installation with Ground and Neutral Conductors Provided

For this type of installation, the power circuit *must* contain an isolated earth-ground conductor. Under this circumstance, *do not* connect neutral to ground at the disconnect or at the display. **This would violate electrical codes and void the warranty.** Use a disconnect so that all hot lines and neutral can be disconnected. The National Electrical Code requires the use of a lockable power disconnect within sight of or at the display.

Installation with Only a Neutral Conductor Provided

Installations where no grounding conductor is provided must comply with Article 250-32 of the National Electrical Code. If the installation in question meets all of the requirements of Article 250-32, the following guidelines must be observed:

- Connect the grounding electrode cable at the local disconnect, never at the display driver/power enclosure.
- Use a disconnect that opens all of the ungrounded phase conductors.

3.3 Power and Signal Connection

Reference Drawings:

| | |
|---|-------------------------|
| Driver; 8 Col Outdoor LED, Gen II | Drawing A-155742 |
| Schematic; Gen II Outdoor LED, 8 Column Dvr | Drawing A-156750 |

Route power and signal cables into the scoreboard from the rear. There are two knockouts for conduit connection in the back. All power and signal wiring terminates at the driver enclosure. **Drawing A-155742** illustrates the 8-column driver used in Daktronics outdoor LED timing displays.

To gain access to the driver enclosure, open the access door or digit panel and remove the cover from the enclosure. Refer to the component locations drawings for the access location for your scoreboard.

Connect the power and signal cables at the appropriate locations on the driver enclosure panel, shown in **Drawing A-155742**.

The conventional power termination panel has been eliminated from the Daktronics outdoor scoreboards; the power feeder circuit now connects directly to a receptacle in the driver enclosure, as shown in

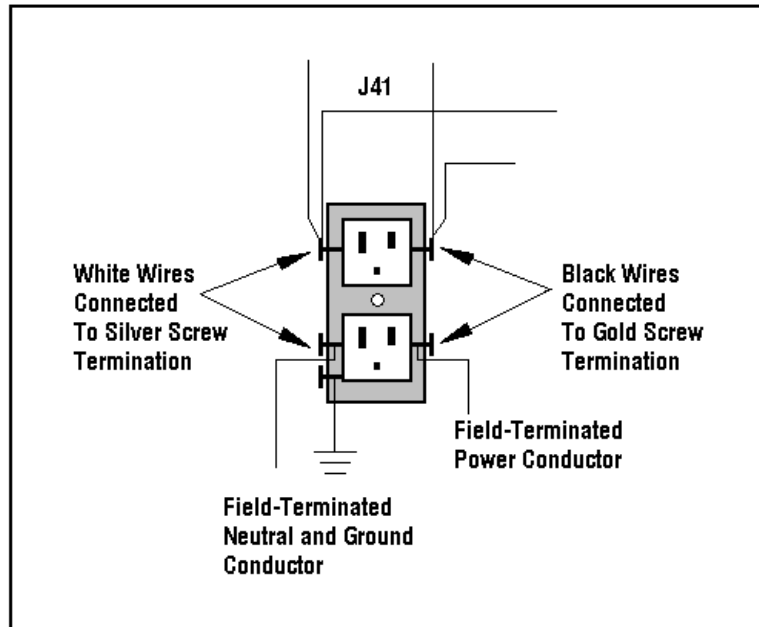


Figure 5: 120 V Power Receptacle in Driver Enclosure

Figure 5. The receptacle is located in the lower right corner of the enclosure. Refer to the driver illustration and the schematic, **Drawing A-156750**, for wiring details. The schematic includes a detailed illustration of the power termination.

Route signal cabling to the terminal block in the upper left corner of the enclosure. The connections are labeled to permit easy installation. At the Signal In terminal block, connect the red signal wire to the positive terminal, the black to the negative terminal, and the shield (silver) wire to the shield terminal. *It is important that the shield wire is properly connected to the shield terminal on the signal surge arrestor card.* **Figure 6** illustrates the printed circuit board and the terminal blocks.

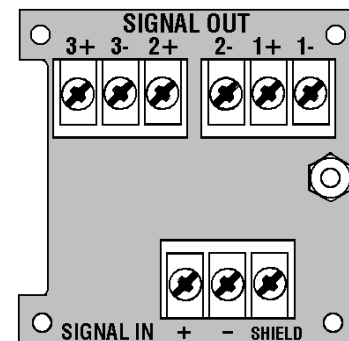


Figure 6: Signal Surge Arrestor Card

For signal cable, Daktronics recommends, as a minimum, single-pair, shielded cable, 22 AWG (Daktronics part number W-1077). Two-pair shielded cable (Daktronics part W-1234) is preferred.

For additional information on signal connection, refer to the appropriate operation manual:

- **ED12462:** All Sport 1600 Series Control Console Operation Manual
- **ED12621:** All Sport 5100 Rodeo Timer Electronic Timing and Scoring Console Operation Manual

3.4 Adjusting Horn Volume

Reference Drawings:

| | |
|---------------------------------------|-------------------------|
| Component Locations; TI-2010-11 | Drawing A-168183 |
| F. Assy; TI-2012-11..... | Drawing B-164156 |
| F. Assy; TI-2015-11..... | Drawing A-164682 |
| F. Assy,; TI-2010-11, DF | Drawing B-171747 |

Models TI-2010-11; TI-2010-11, DF; TI-2012-11; and TI-2015-11 contain an internal, buzzer-type horn. In the TI-2012-11, the horn is located in the top right corner of the hinged Segment panel; in the TI-2010-11; TI-2010-11, DF; and the TI-2015-11, the horn mounts at the top of the face panel, directly between the digits. For horn location, refer to the final assembly drawings, listed above, or to the component locations drawings.

Horn volume is set at maximum level at the factory. If the horn is too loud, reduce the volume by adjusting the setscrew on 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 you obtain the desired volume level.

☛ **Caution!** *The horn is connected to a 120 V AC line. To avoid electric shock or injury, turn off the power to the display before adjusting the horn.*

☛ **Note:** *Rodeo timers may be used with an optional trumpet horn. Refer to **Drawing B-162689** for details and part numbers.*

Section 4: Maintenance and Troubleshooting



IMPORTANT NOTES:

1. Disconnect power before doing any repair or maintenance work on the scoreboard!
2. Permit only qualified service personnel to access internal display electronics.
3. Disconnect power when not using the scoreboard.

4.1 Cabinet Specifications

Reference Drawings:

| | |
|-------------------------------|-------------------------|
| F. Assy; RO-2010-11 | Drawing B-164487 |
| F. Assy; RO-2011-11 | Drawing B-165689 |
| F. Assy; TI-2010-11 | Drawing B-168161 |
| F. Assy, TI-2010-11, DF | Drawing B-171747 |
| F. Assy; TI-2012-11 | Drawing B-164156 |
| F. Assy; TI-2015-11 | Drawing B-164682 |

Cabinets for the Daktronics outdoor LED scoreboards are constructed of heavy-gauge aluminum. Exact dimensions and weights for each model are listed in the chart in **Section 1**. Hinged or removable panels for digits and for component access are detailed in each model's final assembly drawing, listed above, and in the component locations drawing.

4.2 Component Location and Access

Reference Drawings:

| | |
|---|-------------------------|
| Component Locations, RO-2010-11 | Drawing A-164530 |
| Component Locations, RO-2011-11 | Drawing A-165768 |
| Component Locations, TI-2010-11 | Drawing A-168183 |
| Component Locations, TI-2010-11, DF | Drawing A-171767 |
| Component Locations, TI-2012-11 | Drawing A-164163 |
| Component Locations, TI-2015-11 | Drawing A-164746 |

For the front-access scoreboards in this series, all internal electronic components and digits can be reached by opening a face panel or removing a digit panel on the front of the display. Models RO-2011-11; TI-2010-11; TI-2010-11, DF; TI-2012-11; and TI-2015-11 have hinged doors.

Drawings A-164530, A-165768, A-168183, A-164163 and A-164746 show front views of the numeric timers included in this manual, as well as the locations of the various components.

For most Daktronics outdoor scoreboards and timing displays, digit panels have been simplified. They are held in place on the display face by an offset flange across the top and by a single screw at the bottom. Refer to **Figure 7** at right. Open the scoreboard with care. Hold the digit panel in place by putting hand pressure on it while removing the screw, and carefully lift it from the board, sliding it down and out. If the panel is not held in place, it will drop immediately when the screw is removed, possibly damaging LEDs or the digit harness.

Component location varies with each scoreboard model, but drivers and power and signal components are typically mounted inside the scoreboard behind a digit.

With a non-digit access panel, simply remove the top, side or bottom screws holding it in place. Hinged panels swing open when the screws are loosened or removed.

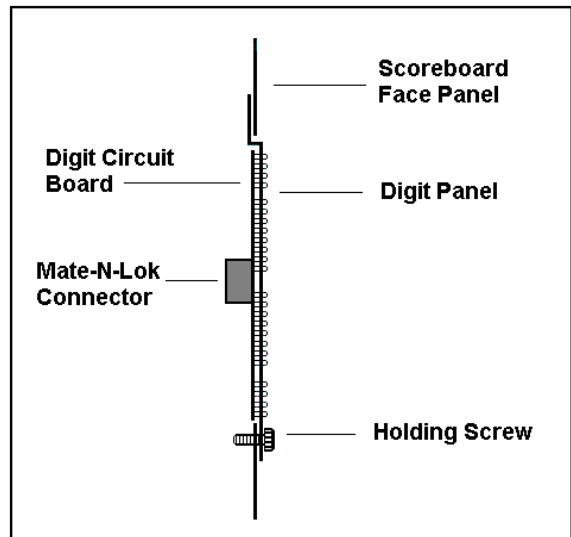


Figure 7: LED Digit Panel (Not to Scale)

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

Replacing a Digit

Reference Drawing:

Digit Assembly 18"-24" **Drawing A-135662**

The digit circuit board, the platform for the LEDs, is mounted to the back of the digit panel.

Drawing A-135662 details the construction of a standard digit. Do not attempt to remove individual LEDs. In the case of a malfunctioning board, replace the entire digit panel.

To remove a scoreboard digit, follow these steps:

1. Open the digit panel as described in the preceding section.
2. Disconnect the power/signal connector from the back of the digit. Release the connector by squeezing together the locking tabs as you pull the connector free.
3. The digits are secured to the inside of the panel with screws, standoffs (spacers), and nuts. Remove the #8 nuts and lift the digit off the screws.
4. Position a new digit over the screws and tighten the nuts.
5. Reconnect the power/signal connector. ☛ Note: This is a keyed connector; it will attach in one way only. Do not attempt to force the connection!
6. Close and secure the digit panel and test the scoreboard.

Replacing a Digit Segment

Reference Drawing:

Digit; 24" 7-Seg LED..... **Drawing A-155644**

Some larger Daktronics digits are comprised of individual segments (see **Figure 8**). The digit segment circuit board, the platform for the LEDs, is mounted to the back of the digit panel. *Do not attempt to remove individual LEDs.* In the case of a malfunctioning LED or segment, replace the entire digit segment panel. Refer to **Drawing A-155644**.

To remove a digit segment, follow these steps:

1. Open the digit panel as described above.
2. Disconnect the two-pin power/signal connector from the back of the segment. Release the connector by squeezing together the locking tabs as you pull the connector free.
3. The digits are secured to the inside of the panel with standoff bolts, spacers, and nuts. Remove the #8 nuts and lift the segment off the standoff bolts.
4. Position a new segment over the bolts and tighten the nuts.
5. Reconnect the power/signal connector. **Note:** *This is a keyed connector – it will attach in one way only. Do not attempt to force the connection!*
6. Close and secure the digit panel and test the scoreboard.

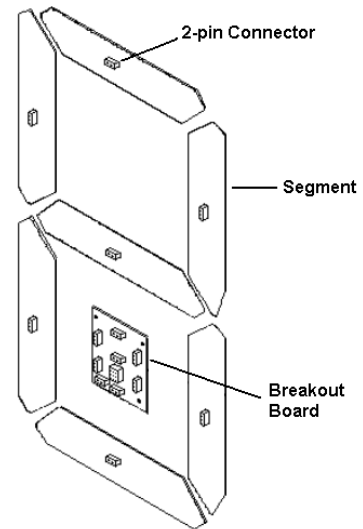


Figure 8: Segmented Digit Panel (rear view)

Replacing a Breakout Board

The digit breakout board, the central signal/power termination for the segments, is mounted to the back of the digit panel. If the entire digit is malfunctioning, replace the breakout board. Refer to **Drawing A-155644**.

To remove a digit breakout board, follow these steps:

1. Open the digit panel as described in the previous section.
2. Disconnect all of the 2-pin and 9-pin power/signal connectors from the back of the breakout board. Release the connectors by squeezing together the locking tabs as you pull the connector free. Refer to **Figure 8**.
3. The breakout boards are secured to the inside of the panel with standoff bolts, spacers, and nuts. Remove the #8 nuts and lift the breakout board off the standoff bolts.
4. Position a new breakout board over the bolts and tighten the nuts.
5. Reconnect the power/signal connectors. **Note:** *These are keyed connectors; they will attach in one way only. Do not attempt to force the connection!*
6. Close and secure the digit panel and test the scoreboard.

Replacing a Driver

Drivers are typically mounted inside the scoreboard and immediately behind a digit, but location and mounting varies. Refer to the component locations drawings for the location of your scoreboard driver.

Each driver is enclosed with a power supply and signal terminal block. Before a failed driver can be reached, the enclosure must be accessed. Follow these steps:

1. Open the digit panel or scoreboard face panel as described in **Section 4.2**.
2. Remove the cover from the driver enclosure.
3. Disconnect all connectors from the driver. Release each connector by squeezing together the locking tabs as you pull the connector free. **Note:** When reconnecting, remember that these are keyed connectors and will attach in one way only. Do not attempt to force the connections.
4. Remove the screws, nuts, or wing nuts securing the driver to the inside of the enclosure.
5. Carefully lift the driver from the display and place it on a clean, flat surface.
6. Follow steps 1 through 5 in reverse order to attach a new driver.

4.3 Schematic

Reference Drawing:

Schematic; Gen II Outdoor Driver, 8 Column Driver..... **Drawing A-156750**

Drawing A-156750 is the schematic diagram for the 8-column driver used in the outdoor single-section scoreboards. The schematics include power and signal inputs and all wiring for the models described in this manual.

4.4 LED Drivers

Reference Drawings:

Driver; 8 Col Outdoor LED, Gen II..... **Drawing A-155742**

8 Column LED Driver II Specifications..... **Drawing A-134372**

Address Table, 1 Through 128..... **Drawing A-115078**

In the scoreboard, the LED drivers perform the task of switching digits on and off. Refer to **Drawing A-155742**. Each driver has up to 19 connectors providing power and signal inputs to the circuit and outputs to the digits and indicators. The connectors function as follows:

| 8-Column LED Driver | |
|---------------------|---------------------------------|
| Connector No. | Function |
| 1 – 8 | Output to digits and indicators |
| 17 | Controls power/signal |

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

For the scoreboard to receive signal and function properly, the driver must be set to the correct address. This address is set with jumper wires in a 12-pin plug which mates with a jack on the driver. **Drawing A-134372** details the specifications for 8-column drivers. Refer to **Drawing A-115078** for a listing of the wire/pin connections for driver addresses 1 - 128.

4.5 Segmentation and Digit Designation

Reference Drawing:

Segmentation, 7 Segment Bar Digit **Drawing A-38532**

In each digit, certain LEDs always go on and off together. These groupings of LEDs are referred to as *segments*. **Drawing A-38532** illustrates digit segmentation. It also details which connector pin is wired to each digit segment and the wiring color code used throughout the display.

The component locations drawings listed in **Section 4.2** specify the driver connectors controlling the digits. Numbers shown in hexagons in the upper half of each digit indicate which connector is wired to that digit.

4.6 Lightning Protection

The use of a disconnect near the scoreboard to completely cut all current-carrying lines significantly protects the circuits against lightning damage. The National Electrical Code also requires it. In order for this system to provide protection, the power *must* be disconnected when the scoreboard is not in use. The control console should also be disconnected from power and from the signal junction box when the system is not in use. The same surges that may damage the scoreboard's driver can also damage the console's circuit.

4.7 Troubleshooting

Daktronics scoreboards require little maintenance. However, from time to time, a display may malfunction, and certain display components will have to be repaired or replaced. The following table provides a list of problems common to most LED displays and specifies corrective actions:

| Symptom/Condition | Possible Cause |
|--|---|
| <i>Scoreboard will not light</i> | <ul style="list-style-type: none">▪ Console not connected or poor connection▪ No power to control console▪ No power to the scoreboard |
| <i>Garbled display</i> | <ul style="list-style-type: none">▪ Internal driver logic malfunction▪ Control console malfunction |
| <i>Digit will not light</i> | <ul style="list-style-type: none">▪ Black wire to digit broken▪ Poor contact at driver connection.▪ Driver malfunction |
| <i>Segment will not light</i> | <ul style="list-style-type: none">▪ Broken LED or connection▪ Driver shift register failure▪ Broken wire between driver and digit▪ Poor contact at driver connector. |
| <i>Segment stays lit</i> | <ul style="list-style-type: none">▪ Driver shift register failure▪ Short circuit on digit |
| <i>Date appears in the wrong place on the scoreboard</i> | <ul style="list-style-type: none">▪ Incorrect address settings on drivers (consult tables and set correct addresses) |

The Replacement Parts List in **Section 4.8** includes part numbers of components it may be necessary to reorder during the life of your display. Most scoreboard components have a white label that lists the part number. Refer to the Replacement Part List and the drawings in this manual to obtain the correct replacement part number for any damaged component.

For troubleshooting assistance and to order replacement components, *contact your service provider first*. Your service provider may have the appropriate part or assembly on hand and, in an emergency, may be able to provide same-day service.

Your scoreboard service may advise you to call Daktronics directly, or your facility may not have an area or regional service provider. In those instances, feel free to call the Daktronics Help Desk at 877-605-1115. For faster service, note the model of the scoreboard and any problem-area assembly numbers, as shown on the scoreboard spec sheet. If you need to order replacement components, it would be helpful to have a purchase order number or other purchase information available at the time you call.

4.8 Replacement Parts

The following Daktronics parts list includes components used by all of the LED outdoor timers. Some part numbers are listed on the final assembly engineering drawings in the **Appendix**.

| Description | Part No. |
|--|--------------|
| Driver; 8 col, LED, outdoor | 0P-1192-0012 |
| Power supply; 24 V, 150 W, 86-132 V input | A-1720 |
| Signal surge board; outdoor, w/radio jack | 0P-1110-0011 |
| Fan; 32 cfm, DC, 3.15 in sq | B-1030 |
| Horn; 12 V DC, 2 A, w/mtg bracket and grille | DS-1389 |
| Digit; 15", 7-seg LED, outdoor, red-orange | 0P-1192-0009 |
| Digit; 18", 7-seg LED, outdoor, red-orange | 0P-1192-0008 |
| Digit segment; 24", LED, red-orange | 0P-1192-0040 |
| Segment breakout board | 0P-1192-0019 |

4.9 Daktronics Exchange and Repair and Return Programs

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.

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

To meet customer repair and maintenance needs, Daktronics offers two options: 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 also decreases scoreboard downtime. Under normal circumstances, Daktronics sends a reconditioned replacement part within 24 hours. In urgent situations, Daktronics ships using the fastest method available.

Daktronics provides these plans to ensure users get the most from their scoreboards and components. The company offers the service to qualified customers who follow the program guidelines explained below. 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 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 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, which represents the exchange price, 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 you do not ship the defective equipment Daktronics within 30 working days from the invoice date, Daktronics assumes you are purchasing the replacement part outright (with no exchange), 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, you must 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. Please enclose your name, address, phone number and a clear description of symptoms.

This is how to reach us:

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

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

Fax: 605-697-4444

E-mail: helpdesk@daktronics.com

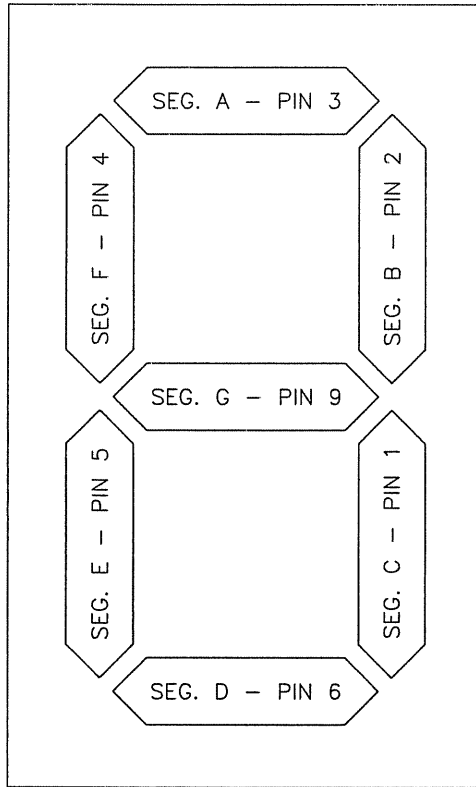
Appendix A: Reference Drawings

A Drawings

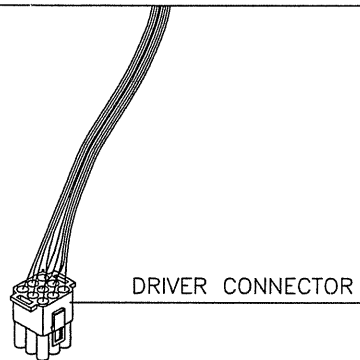
| | |
|--|------------------|
| Segmentation, 7 Segment Bar Digit | Drawing A-38532 |
| Scoreboard Mounting | Drawing A-55101 |
| Lifting Small Scoreboard | Drawing A-58668 |
| Address Table, 1 Through 128..... | Drawing A-115078 |
| 8 Column LED Driver II Specifications | Drawing A-134372 |
| Digit Assembly 18"-24" | Drawing A-135662 |
| Digit; 24" 7-Seg LED | Drawing A-155644 |
| Driver; 8 Col Outdoor LED, Gen II..... | Drawing A-155742 |
| Schematic, Gen II Outdoor Driver, 8 Column Driver..... | Drawing A-156750 |
| Component Locations; TI-2012-11 | Drawing A-164163 |
| Component Locations; RO-2010-11 | Drawing A-164530 |
| Component Locations; TI-2015-11 | Drawing A-164746 |
| Component Locations; RO-2011-11 | Drawing A-165768 |
| Component Locations; TI-2010-11 | Drawing A-168183 |
| Component Locations, TI-2010-11, DF | Drawing A-171767 |

B Drawings

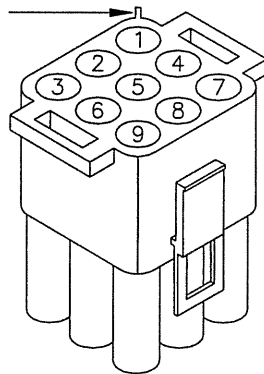
| | |
|--------------------------------|------------------|
| Horn, 12 V DC w/Filter | Drawing B-111265 |
| F. Assy; TI-2012-11 | Drawing B-164156 |
| F. Assy; RO-2010-11 | Drawing B-164487 |
| F. Assy; TI-2015-11 | Drawing B-164682 |
| F. Assy; RO-2011-11 | Drawing B-165689 |
| F. Assy; TI-2010-11 | Drawing B-168161 |
| F. Assy,; TI-2010-11, DF | Drawing B-171747 |



7 SEGMENT BAR DIGIT
FRONT VIEW



CONNECTOR PIN NUMBERING
NOTE SPLINE NEAR NO. 1



| 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 |

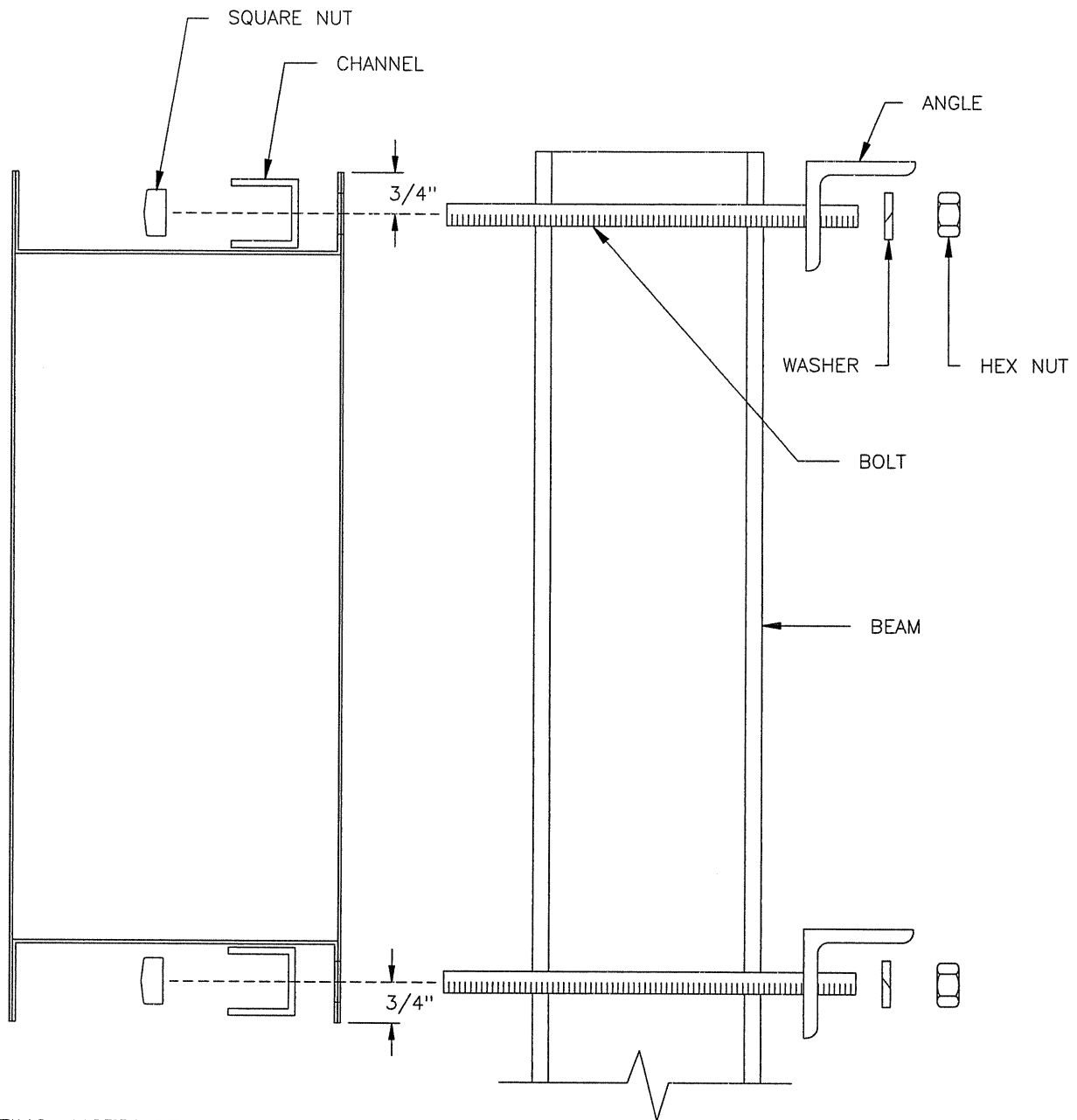
NOTE: "H" SEGMENT, GRAY WIRE IS NOT USED ON 7 SEGMENT BAR DIGIT.

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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: HEIDERSCHIEDT DATE: 5 JUN 89 |
| REVISION | APPR. BY: AVB |
| 02 | SCALE: 1=4 |
| 1009-R04A-38532 | |

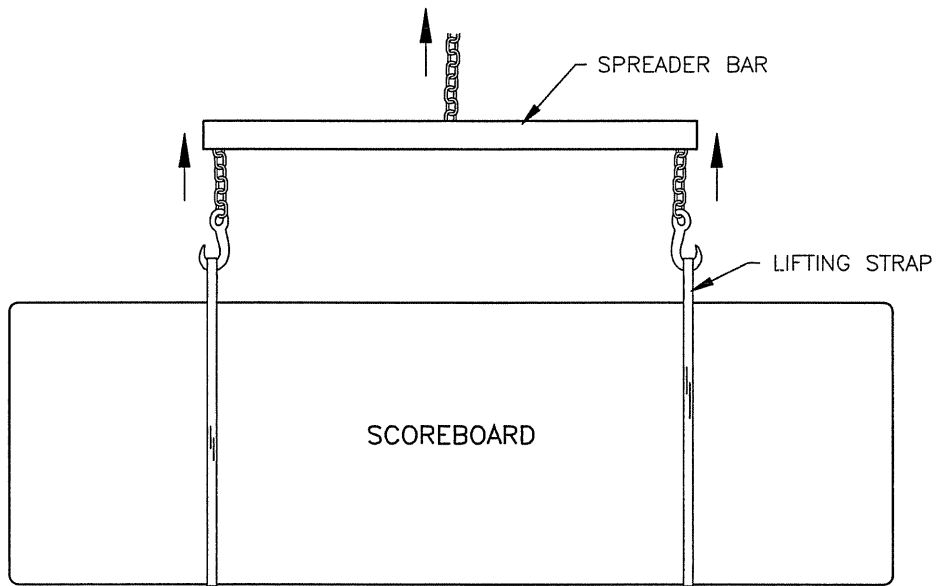


MOUNTING INSTRUCTIONS:

1. USE THE MOUNTING CHANNEL TO DETERMINE WHICH HOLE COMBINATION SHOULD BE USED. BE SURE TO KEEP THE BOLTS AS CLOSE TO THE BEAM AS POSSIBLE.
2. USING THE MOUNTING CHANNEL AS A TEMPLATE, DRILL 9/16" HOLES IN THE UPPER AND LOWER REAR FLANGE OF SCOREBOARD WHERE THE SUPPORTS WILL GO.
3. PLACE SQUARE NUTS INSIDE CHANNEL AND THREAD BOLTS THROUGH.
4. LIFT SCOREBOARD INTO POSITION WITH BOLTS STILL IN PLACE.
5. PLACE MOUNTING ANGLES OVER EACH PAIR OF BOLTS AND SECURE WITH LOCK WASHERS AND HEX NUTS.
6. WHEN SCOREBOARD IS ADJUSTED TO FINAL DESIRED POSITION, TIGHTEN HEX NUTS FIRMLY.

| | |
|--------------------------------------|-------------------------------------|
| DAKTRONICS, INC. BROOKINGS, SD 57006 | |
| PROJ: OUTDOOR SCOREBOARDS | |
| TITLE: SCOREBOARD MOUNTING | |
| DES. BY: | DRAWN BY: A VANBEMMEL DATE: 10FEB93 |
| REVISION | APPR. BY: |
| | SCALE: NONE |
| 1091-R10A-55101 | |

| REV. | DATE | DESCRIPTION | BY | APPR. |
|------|------|-------------|----|-------|
| | | | | |



USE A SPREADER BAR SO THAT
THE FORCE ON THE LIFTING
STRAPS IS STRAIGHT UP.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR SCOREBOARDS

TITLE: LIFTING SMALL BASEBALL SCOREBOARD

DES. BY:

DRAWN BY: C FICKBOHM

DATE: 29 SEP 93

| REV. | DATE | DESCRIPTION | BY | APPR. |
|------|------|-------------|----|-------|
| | | | | |

REVISION

APPR. BY:

SCALE: NONE

1091-R10A-58668

KEY: 0 = WIRE NOT CONNECTED 1 = WIRE IS CONNECTED

| DECIMAL ADDRESS | PIN 12 | PIN 11 | PIN 9 | PIN 8 | PIN 6 | PIN 5 | PIN 3 | PIN 2 |
|-----------------|--------|--------|-------|-------|-------|-------|-------|-------|
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 9 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 12 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 13 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| 14 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 |
| 15 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 16 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |

| DECIMAL ADDRESS | PIN 12 | PIN 11 | PIN 9 | PIN 8 | PIN 6 | PIN 5 | PIN 3 | PIN 2 |
|-----------------|--------|--------|-------|-------|-------|-------|-------|-------|
| 33 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 34 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 35 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |
| 36 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| 37 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 38 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |
| 39 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 |
| 40 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| 41 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 42 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 43 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 44 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| 45 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| 46 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |
| 47 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |
| 48 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |

| DECIMAL ADDRESS | PIN 12 | PIN 11 | PIN 9 | PIN 8 | PIN 6 | PIN 5 | PIN 3 | PIN 2 |
|-----------------|--------|--------|-------|-------|-------|-------|-------|-------|
| 65 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 66 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 67 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| 68 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| 69 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 70 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| 71 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 |
| 72 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 73 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 74 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| 75 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 |
| 76 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 |
| 77 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 |
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| 80 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |

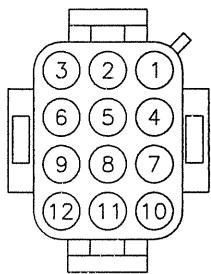
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|-----------------|--------|--------|-------|-------|-------|-------|-------|-------|
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| 98 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| 99 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| 100 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| 101 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |
| 102 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 |
| 103 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 |
| 104 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |
| 105 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 |
| 106 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 |
| 107 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 |
| 108 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 |
| 109 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
| 110 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 |
| 111 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |
| 112 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |

| DECIMAL ADDRESS | PIN 12 | PIN 11 | PIN 9 | PIN 8 | PIN 6 | PIN 5 | PIN 3 | PIN 2 |
|-----------------|--------|--------|-------|-------|-------|-------|-------|-------|
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| 18 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 19 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| 20 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| 21 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |
| 22 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 |
| 23 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 |
| 24 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| 25 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 26 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 |
| 27 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
| 28 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 |
| 29 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 |
| 30 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |
| 31 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| 32 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |

| DECIMAL ADDRESS | PIN 12 | PIN 11 | PIN 9 | PIN 8 | PIN 6 | PIN 5 | PIN 3 | PIN 2 |
|-----------------|--------|--------|-------|-------|-------|-------|-------|-------|
| 49 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 50 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |
| 51 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| 52 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 |
| 53 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 |
| 54 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| 55 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| 56 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
| 57 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 |
| 58 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 |
| 59 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |
| 60 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 |
| 61 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |
| 62 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |
| 63 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| 64 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |

| DECIMAL ADDRESS | PIN 12 | PIN 11 | PIN 9 | PIN 8 | PIN 6 | PIN 5 | PIN 3 | PIN 2 |
|-----------------|--------|--------|-------|-------|-------|-------|-------|-------|
| 81 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| 82 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| 83 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |
| 84 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| 85 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| 86 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 |
| 87 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
| 88 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |
| 89 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| 90 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| 91 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| 92 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 |
| 93 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 |
| 94 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 |
| 95 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| 96 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |

| DECIMAL ADDRESS | PIN 12 | PIN 11 | PIN 9 | PIN 8 | PIN 6 | PIN 5 | PIN 3 | PIN 2 |
|-----------------|--------|--------|-------|-------|-------|-------|-------|-------|
| 113 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 |
| 114 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| 115 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| 116 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |
| 117 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |
| 118 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| 119 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
| 120 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| 121 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
| 122 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| 123 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| 124 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |
| 125 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| 126 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| 127 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 128 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



ADDRESS PLUG
WIRE SIDE

WIRING DIAGRAM
ADDRESS PLUG
WITH ALL WIRES
CONNECTED



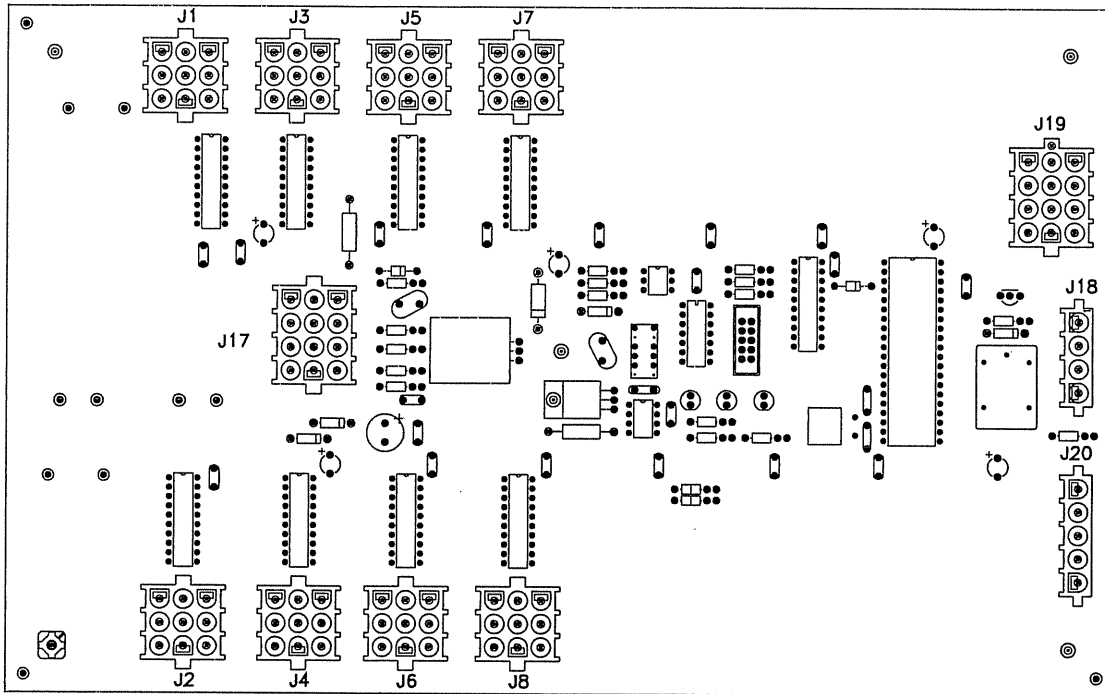
DAKTRONICS, INC. BROOKINGS, SD 57006

| | |
|-------------------------------------|-----------------------|
| PROJ: | |
| TITLE: ADDRESS TABLE, 1 THROUGH 128 | |
| DES. BY: AVB | DRAWN BY: A VANBEMMEL |
| DATE: 28 APR 99 | |
| REVISION | APPR. BY: |
| SCALE: NONE | |

1150-R04A-115078

| REV. | DATE | DESCRIPTION | BY | APPR. |
|------|------|-------------|----|-------|
|------|------|-------------|----|-------|

OP-1192-0012 8 COLUMN LED DRIVER II



| J17 MAIN | |
|----------|----------|
| PIN | FUNCTION |
| 1 | SIG-P |
| 2 | SIG-N |
| 3 | SIG2-P |
| 4 | CLOUT-P |
| 5 | CLOUT-N |
| 6 | N/C |
| 7 | GND-N |
| 8 | EARTH-N |
| 9 | N/C |
| 10 | GND-N |
| 11 | +24A-P |
| 12 | +24B-P |

| J1-16 DIGIT | |
|-------------|----------|
| PIN | FUNCTION |
| 1 | SEGC-N |
| 2 | SEGB-N |
| 3 | SEGA-N |
| 4 | SEGF-N |
| 5 | SEGE-N |
| 6 | SEGD-N |
| 7 | +VCC-P |
| 8 | SEGH-N |
| 9 | SEGG-N |

| J19 ADDRESS | |
|-------------|----------|
| PIN | FUNCTION |
| 1 | GND-N |
| 2 | ADD0-N |
| 3 | ADD1-N |
| 4 | GND-N |
| 5 | ADD2-N |
| 6 | ADD3-N |
| 7 | GND-N |
| 8 | ADD4-N |
| 9 | ADD5-N |
| 10 | GND-N |
| 11 | ADD6-N |
| 12 | ADD7-N |

| J18 RELAY | |
|-----------|-----------|
| PIN | FUNCTION |
| 1 | HORNOUT-N |
| 2 | AUXOUT-N |
| 3 | 120SW-P |
| 4 | 120SW-N |

| J20 PROTOCOL | |
|--------------|----------|
| PIN | FUNCTION |
| 1 | GND-N |
| 2 | PRO-N |
| 3 | PR1-N |
| 4 | PR2-N |
| 5 | TOD-N |

NOTE

-WITH NO ADDRESS PINS SELECTED THE DRIVER WILL DEFAULT TO A/S 4000 PROTOCOL

-GREEN LED INDICATES THE DRIVER HAS POWER

-RED LED WILL BE ON OR BLINKING WHEN THE DRIVER IS RECEIVING SIGNAL

-AMBER LED INDICATES LED DRIVER STATUS, LED WILL BE BLINKING TO INDICATE THAT THE DRIVER IS RUNNING, IF THE LED IS OFF OR ON SOLID ALL OF THE TIME, THEN THE DRIVERS CPU IS NOT FUNCTIONING AND MAY NEED TO BE RESET OR REPLACED.

-REFER TO DRAWINGS A-115078 & A-115079 FOR J19 ADDRESS SETTINGS FOR THIS DRIVER.

-REFER TO DRAWING A-115081 FOR J20 PROTOCOL SETTINGS FOR THIS DRIVER.

-REDRIVE CIRCUIT IS PROCESSOR REFRESHED (REFER TO DWG A-128429 FOR FURTHER INFORMATION ON THE CURRENT LOOP REDRIVE CIRCUIT SPECIFICATIONS)

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ:

TITLE: 8 COLUMN LED DRIVER II SPECIFICATIONS

DES. BY: EB

DRAWN BY: NWRIEDT

DATE: 11 JAN 01

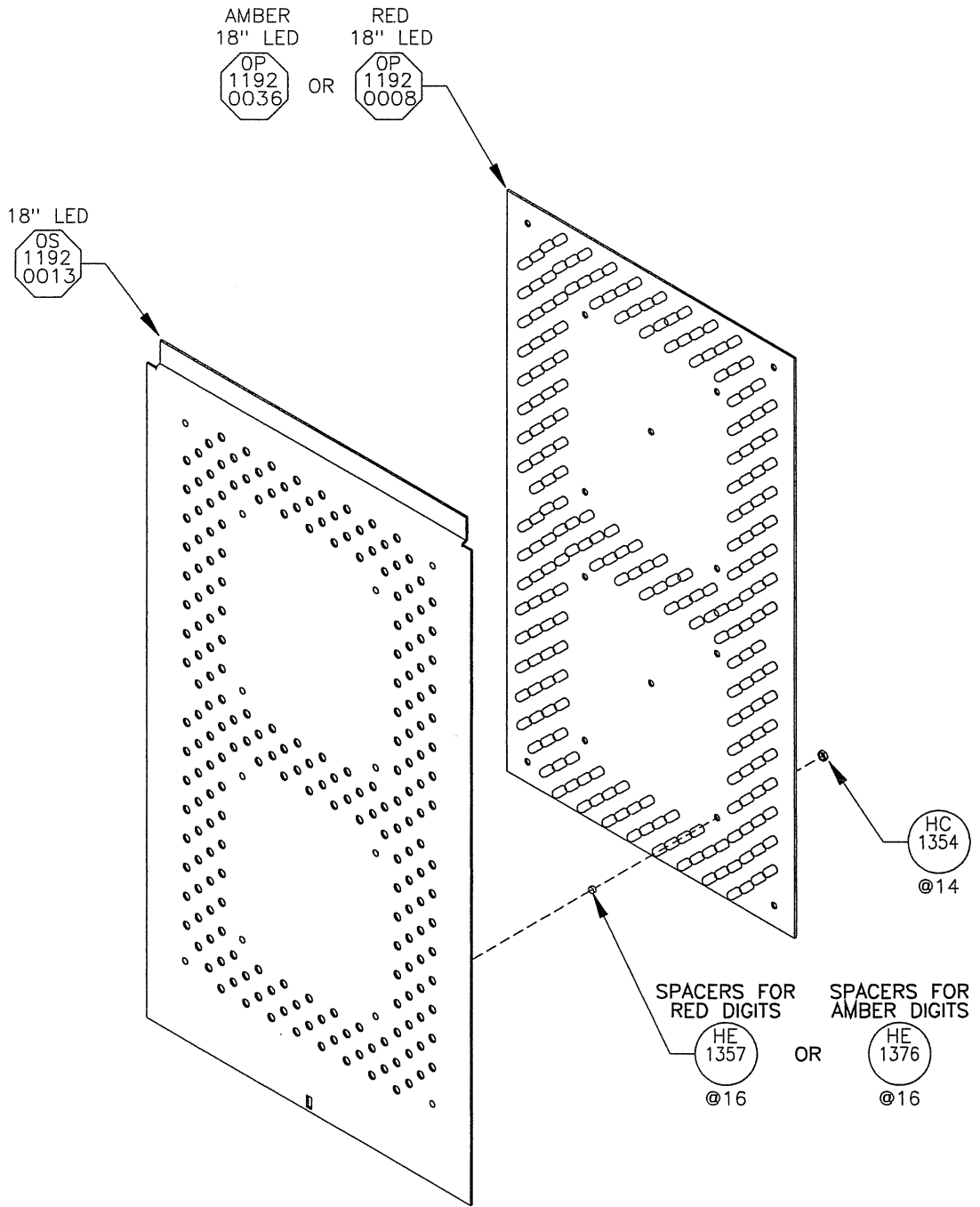
REVISION

APPR. BY:

SCALE: NONE

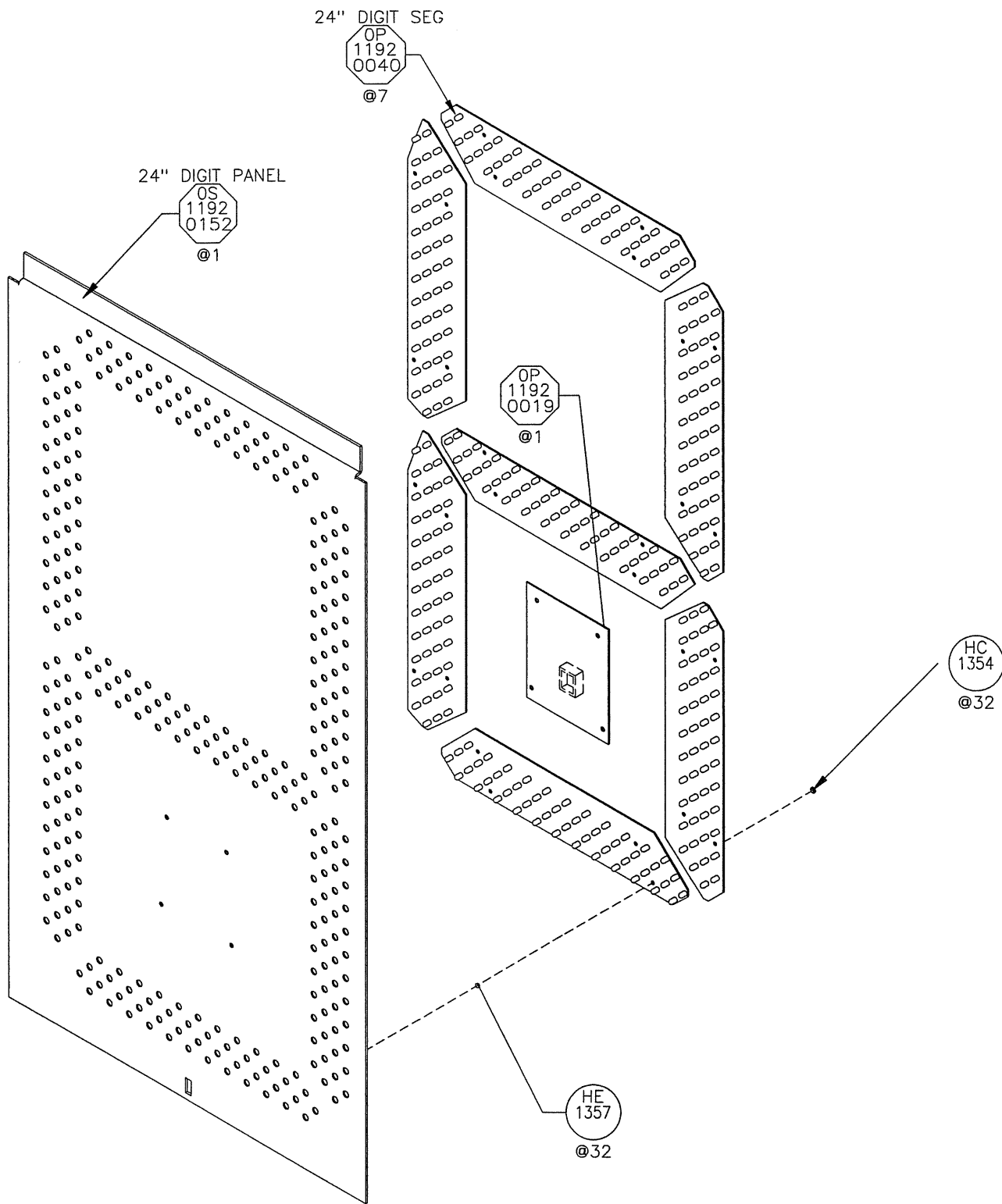
1192-R07A-134372

| REV. | DATE | DESCRIPTION | BY | APPR. |
|------|------|-------------|----|-------|
| | | | | |



| REV. | DATE | DESCRIPTION | BY | APPR. |
|------|---------|---|-------|-------|
| 03 | 28AUG02 | ADDED HE-1376 REMOVED 24" LED DIGIT ASSY NUMBERS | MCOPL | |
| 2 | 29JUN01 | ADDED 18" AND 24" AMBER DIGIT PART NUMBERS | MCOPL | |
| 1 | 8DEC00 | UPDATED ATTACHING TO SHOW PEM STUD AND SPACER | GDB | |

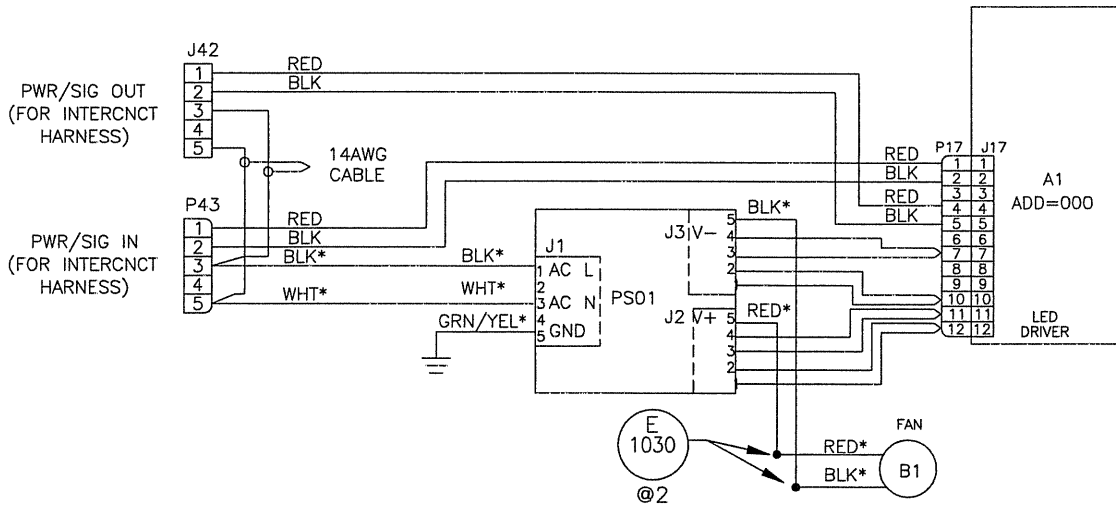
| | |
|---|-------------------------------------|
| DAKTRONICS, INC. BROOKINGS, SD 57006 | |
| PROJ: OUTDOOR LED DIGIT SCOREBOARDS | |
| TITLE: DIGIT ASSEMBLY 18" RES/ORG-AMBER | |
| DES. BY: GBREEN | DRAWN BY: GBREEN DATE: 24JUL00 |
| REVISION | APPR. BY: |
| | SCALE: 1=5 |
| 1192-E08A-135662 | |



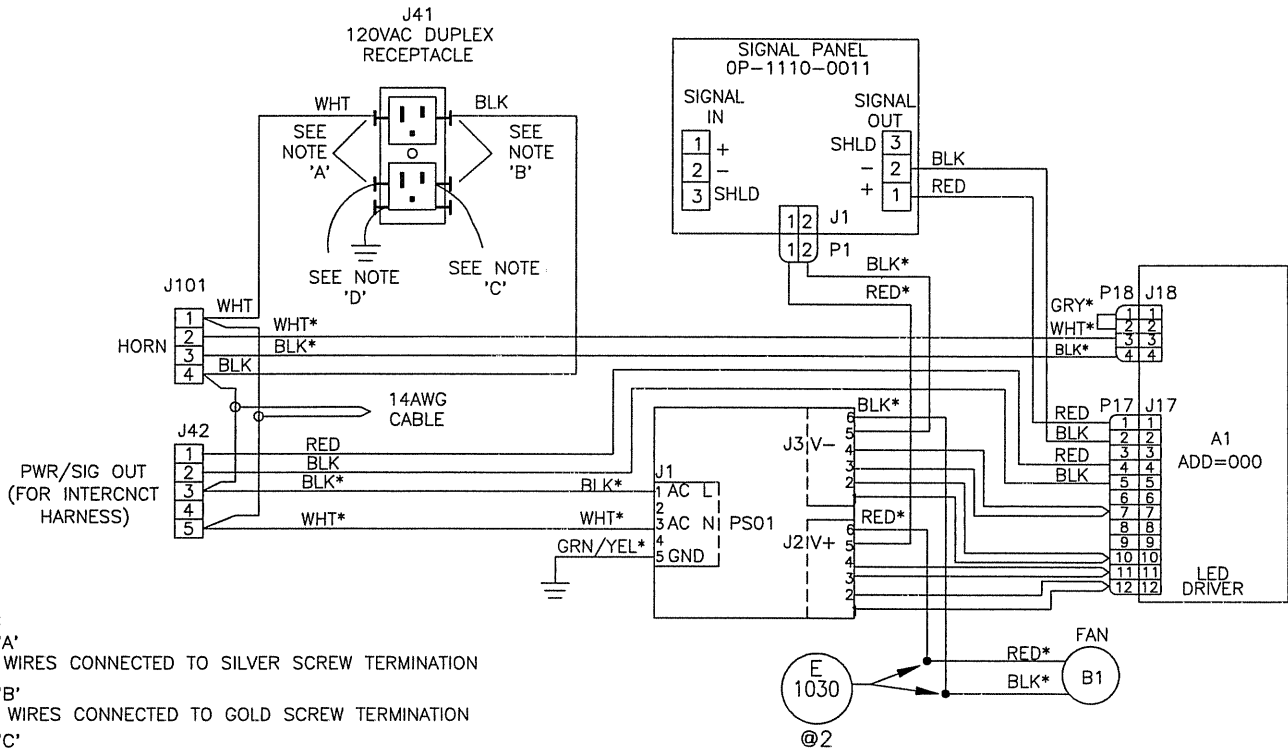
| | | | |
|--------------------------------------|------------|-------------------|--|
| DAKTRONICS, INC. BROOKINGS, SD 57006 | | | |
| PROJ: OUTDOOR LED SCOREBOARDS | | | |
| TITLE: DIGIT; 24" 7-SEG LED | | | |
| DES. BY: MCOPLAN | | DRAWN BY: MCOPLAN | |
| | | DATE: 06SEP01 | |
| REVISION | APPR. BY: | 1192-E10A-155644 | |
| | SCALE: 1=6 | | |

| REV. | DATE | DESCRIPTION | BY | APPR. |
|------|------|-------------|----|-------|
| | | | | |

SLAVE CONFIGURATION
OA-1192-1036



MASTER CONFIGURATION
OA-1192-1010



- NOTES:
NOTE 'A'
WHITE WIRES CONNECTED TO SILVER SCREW TERMINATION
NOTE 'B'
BLACK WIRES CONNECTED TO GOLD SCREW TERMINATION
NOTE 'C'
FIELD TERMINATED POWER CONDUCTOR
NOTE 'D'
FIELD TERMINATED NEUTRAL AND GROUND CONDUCTOR

ALL POWER CONDUCTORS ARE 14AWG EXCEPT * INDICATES 18AWG CONDUCTORS.

ALL SIGNAL CONDUCTORS ARE 22AWG CONDUCTORS.

REFERENCE DWG 1192-R06B-152269 FOR DETAILED CABLE ASSEMBLY DIAGRAM.

| REV. | DATE | DESCRIPTION | BY | APPR. |
|------|-----------|---|-----|-------|
| 5 | 26 JUN 02 | CHANGED THE WIRE CONNECTION ON THE CABLE FROM J101-1 AND -2 | NMB | |
| 04 | 14 MAY 02 | REMOVED P43 PWR/SIG INPUT FROM MASTER ASSY. REMOVED HORN FROM SLAVE ASSY. REDID ALL THE WIRING. | MWM | |
| 03 | 14 FEB 02 | UPDATED FIELD TERMINATED CONDUCTOR NOTES | CMC | |
| 02 | 15JAN02 | ADDED WIRES FROM PS01 P2-5 AND P3-5 TO SIGNAL PANEL | NMB | |
| 01 | 23 OCT 01 | UPDATED DWG WITH FAN CONNECTION, J1, J2, AND J3 PWS PIN OUT | MWM | |

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS

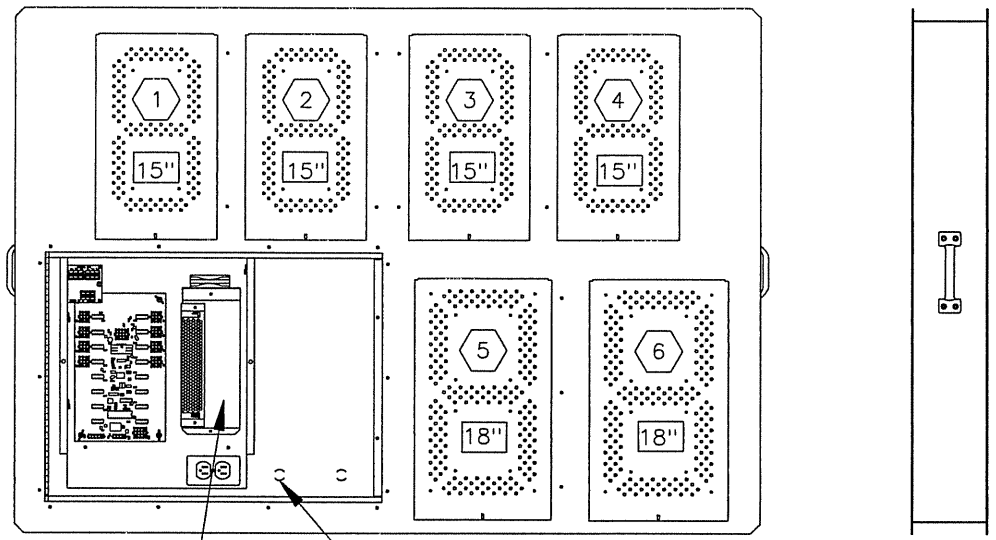
TITLE: SCHEMATIC, GEN II OUTDOOR DRIVER, 8 COLUMN DRIVER

DES. BY: DRAWN BY: CMCADAM DATE: 02OCT01

REVISION APPR. BY: SCALE: 1=1

1192-R01A-156750

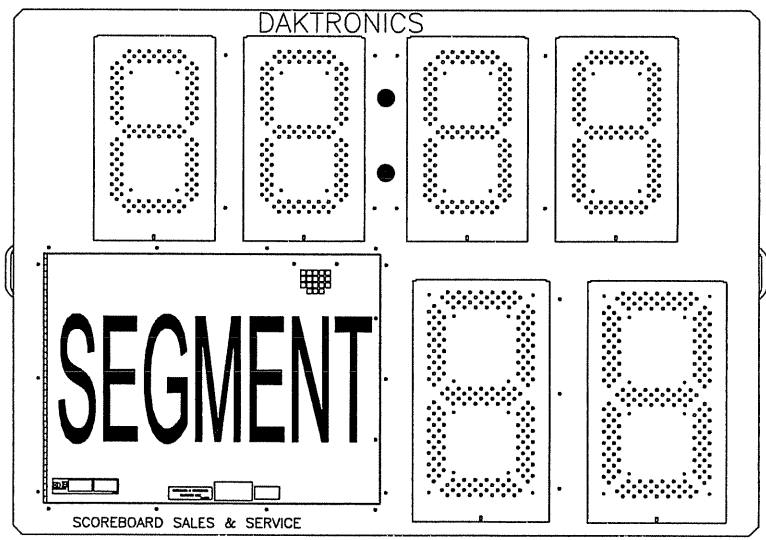
TI-2012-11



ENCLOSED 8 COLUMN LED DRIVER AND POWER/SIGNAL ENCLOSURE. (THE DOOR IS OPENED TO SHOW THE LED DRIVER.)

KNOCKOUTS FOR CONDUIT

FRONT VIEW



FRONT VIEW

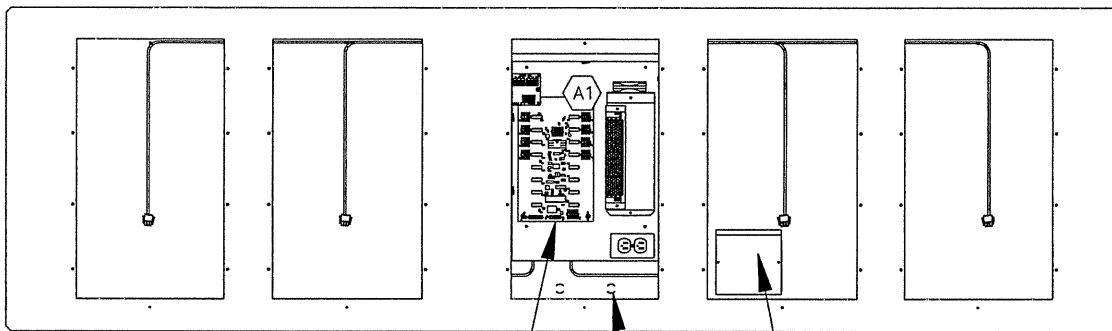
① = LED DRIVER CONNECTOR WIRED TO THAT DIGIT.

18" = DIGIT SIZE

| | | | |
|--|-------------|-------------------|--|
| DAKTRONICS, INC. BROOKINGS, SD 57006 | | | |
| PROJ: OUTDOOR LED SCOREBOARDS | | | |
| TITLE: COMPONENT LOCATIONS; TI-2012-11 | | | |
| DES. BY: MCOPLAN | | DRAWN BY: MCOPLAN | |
| | | DATE: 14MAR02 | |
| REVISION | APPR. BY: | 1192-E07A-164163 | |
| | SCALE: 1=15 | | |

| | | | | |
|------|---------|---|-------|-------|
| 01 | 27MAR02 | REMOVED POWER AND SIGNAL CORDS FROM THE SIDE OF THE DISPLAY | MCOPL | |
| REV. | DATE | DESCRIPTION | BY | APPR. |

RO-2010-11



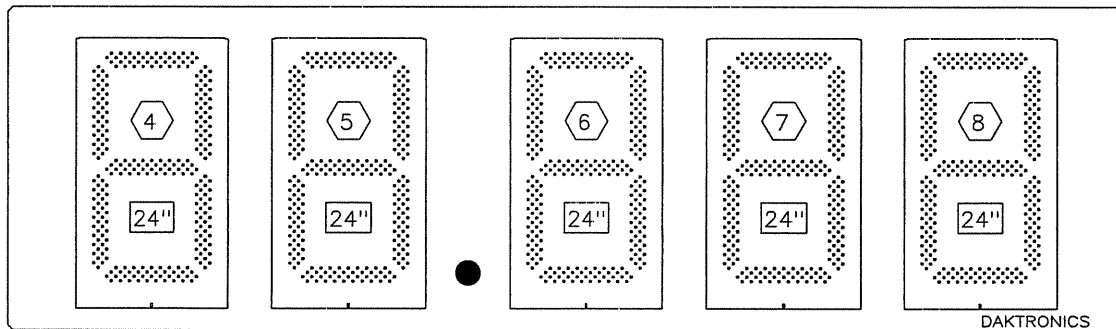
ENCLOSED 8 COLUMN DRIVER AND POWER/SIGNAL ENCLOSURE. (THE COVER HAS BEEN REMOVED TO SHOW COMPONENT DETAIL).

HORN (OPTIONAL)

KNOCKOUT FOR 1/2" CONDUIT

FRONT VIEW

(SHOWN WITH DIGITS REMOVED)



FRONT VIEW

(SHOWN WITH DIGITS INSTALLED)

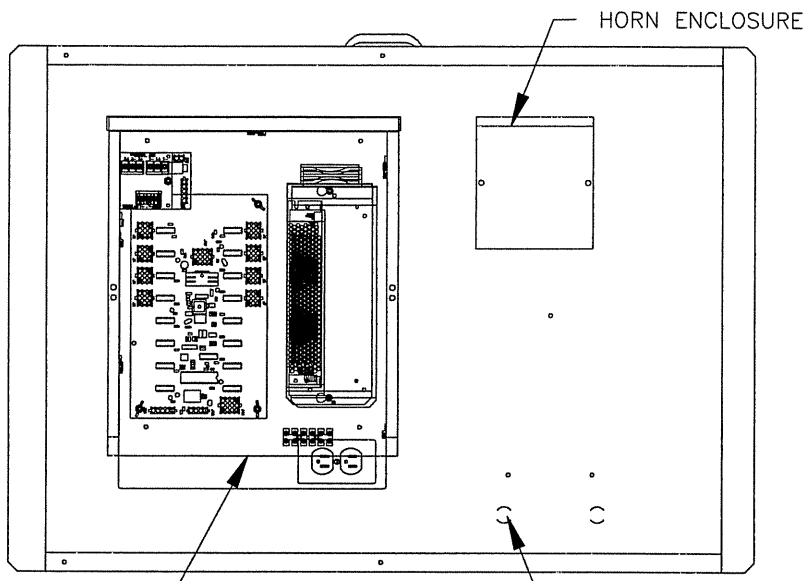
- A1 = LED DRIVER NUMBER
- 1 = LED DRIVER CONNECTOR WIRED TO THAT DIGIT.
- 24" = DIGIT SIZE

HINGED ACCESS DOORS REMOVED TO SHOW THE LED DRIVER AND THE POWER/SIGNAL ENCLOSURE.

| | | | |
|--|-------------|-------------------|--|
| DAKTRONICS, INC. BROOKINGS, SD 57006 | | | |
| PROJ: RODEO SCOREBOARDS | | | |
| TITLE: COMPONENT LOCATIONS; RO-2010-11 | | | |
| DES. BY: MCOPLAN | | DRAWN BY: MCOPLAN | |
| | | DATE: 22MAR02 | |
| REVISION | APPR. BY: | 1162-E07A-164530 | |
| | SCALE: 1=18 | | |

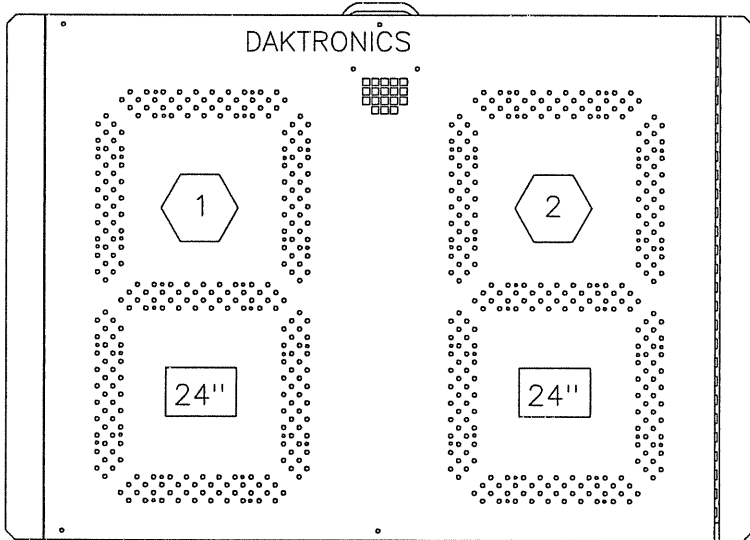
| | | | | |
|------|---------|---------------------|-------|-------|
| 01 | 11APR02 | ADDED HORN AND TEXT | MCOPL | |
| REV. | DATE | DESCRIPTION | BY | APPR. |

TI-2015-11





ENCLOSED 8 COLUMN LED DRIVER AND POWER/SIGNAL ENCLOSURE. (THE COVER HAS BEEN REMOVED TO SHOW COMPONENT DETAIL)

FRONT VIEW
DOOR SHOWN OPEN



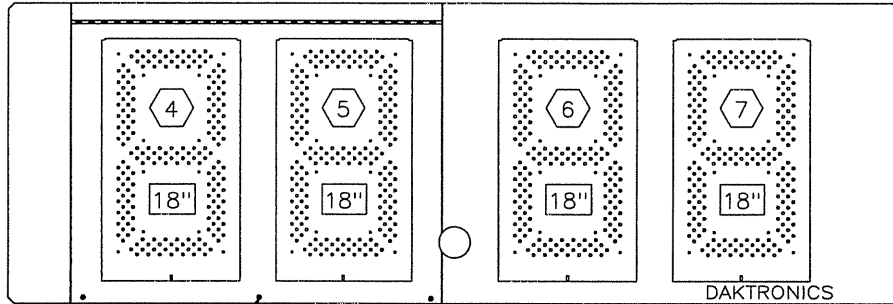
FRONT VIEW
DOOR SHOWN CLOSED

-  = DRIVER CONNECTOR WIRED TO THAT DIGIT
-  = DIGIT SIZE

| | |
|--|---------------|
| DAKTRONICS, INC. BROOKINGS, SD 57006 | |
| PROJ: OUTDOOR LED SCOREBOARDS | |
| TITLE: COMPONENT LOCATIONS; TI-2015-11 | |
| DES. BY: MCOPLAN | DATE: 28MAR02 |
| REVISION | APPR. BY: |
| | SCALE: 1 = 10 |
| 1192-E07A-164746 | |

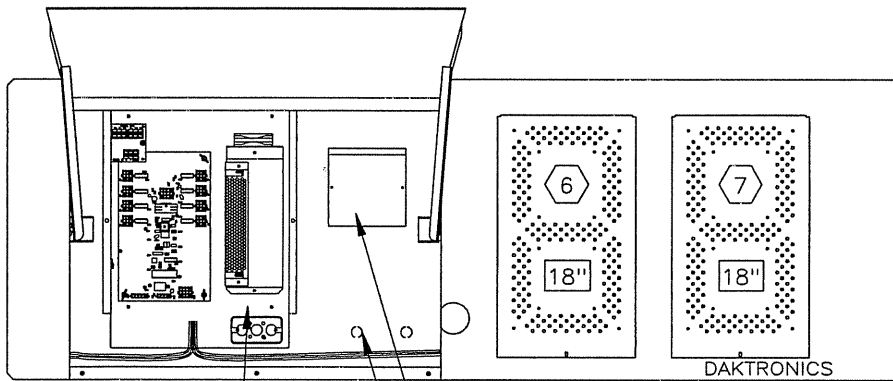
| REV. | DATE | DESCRIPTION | BY | APPR. |
|------|------|-------------|----|-------|
| | | | | |

RO-2011-11



REMOVE THE SCREWS TO ACCESS LED DRIVER & PWR/SIG ENCLOSURE.

FRONT VIEW



ENCLOSED 8 COLUMN LED DRIVER AND POWER/SIGNAL ENCLOSURE. (THE COVER HAS BEEN REMOVED TO SHOW COMPONENT DETAIL).

HORN (OPTIONAL)

KNOCKOUTS FOR 1/2" CONDUIT

FRONT VIEW
ACCESS DOOR OPEN

① = LED DRIVER CONNECTOR WIRED TO THAT DIGIT.

18" = DIGIT SIZE

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR RODEO SCOREBOARDS

TITLE: COMPONENT LOCATIONS; RO-2011-11

DES. BY: MCOPLAN

DRAWN BY: TWEBER

DATE: 19APR02

REVISION

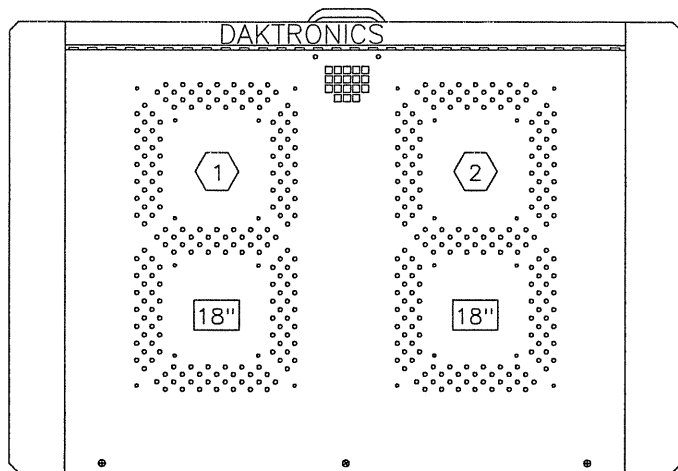
APPR. BY:

SCALE: 1=15

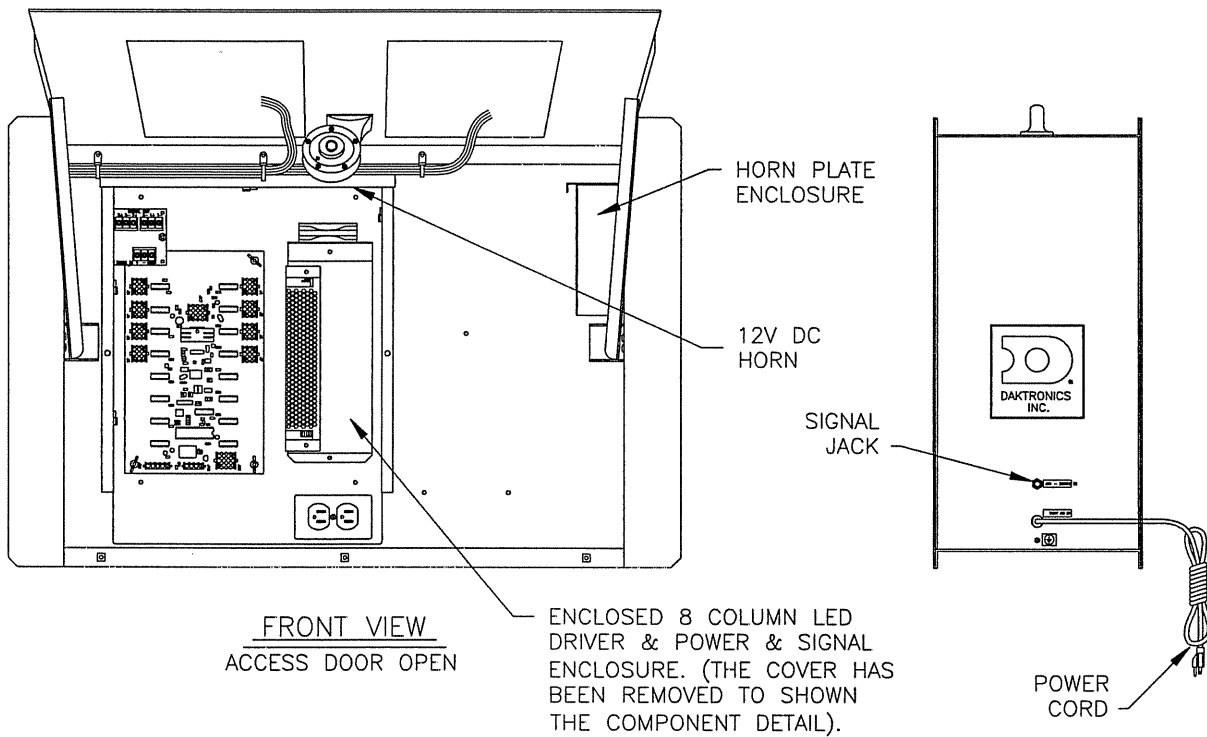
1162-E07A-165768

| REV. | DATE | DESCRIPTION | BY | APPR. |
|------|------|-------------|----|-------|
| | | | | |

TI-2010-11



FRONT VIEW



1 = LED DRIVER CONNECTOR WIRED TO THAT DIGIT.

18" = DIGIT SIZE

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS

TITLE: COMPONENT LOCATIONS; TI-2010-11

DES. BY: MCOPLAN

DRAWN BY: MCOPLAN

DATE: 04JUN02

REVISION

APPR. BY:

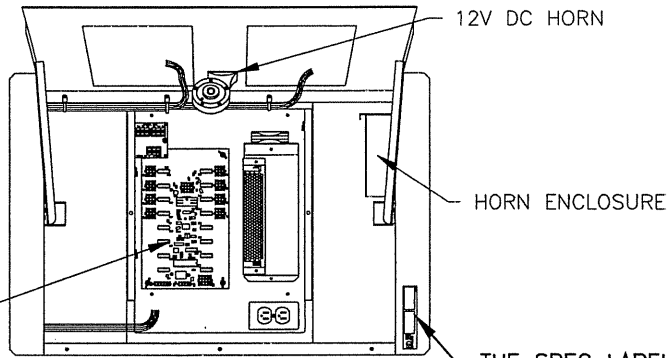
SCALE: 1 = 10

1193-E07A-168183

| REV. | DATE | DESCRIPTION | BY | APPR. |
|------|------|-------------|----|-------|
| | | | | |

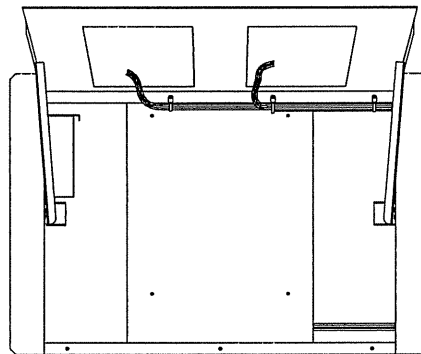
TI-2010-11, DF

ENCLOSED 8 COLUMN LED DRIVER AND POWER & SIGNAL ENCLOSURE. THE COVER HAS BEEN REMOVED TO SHOW THE DRIVER COMPONENT DETAIL



THE SPEC LABELS WILL BE FOUND ON THE MASTER SIDE OF THE DISPLAY.

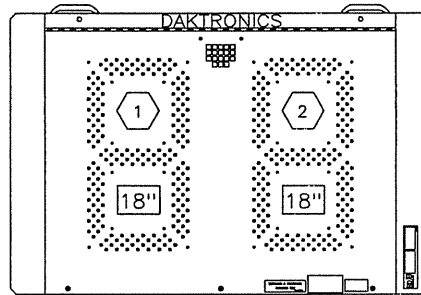
FRONT VIEW
DOOR SHOWN OPEN



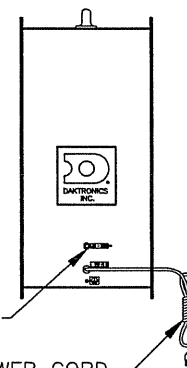
REAR VIEW
DOOR SHOWN OPEN



LEFT SIDE



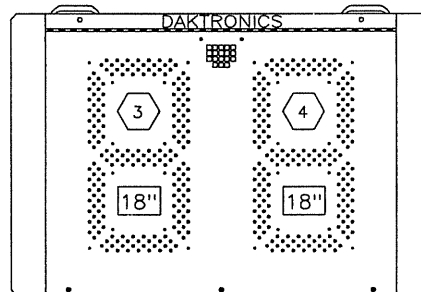
FRONT VIEW



RIGHT SIDE

1 = LED DRIVER CONNECTOR WIRED TO THAT DIGIT.

18" = DIGIT SIZE



REAR VIEW

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS

TITLE: COMPONENT LOCATIONS; TI-2010-11, DF

DES. BY: MCOPLAN

DRAWN BY: MCOPLAN

DATE: 19JUL02

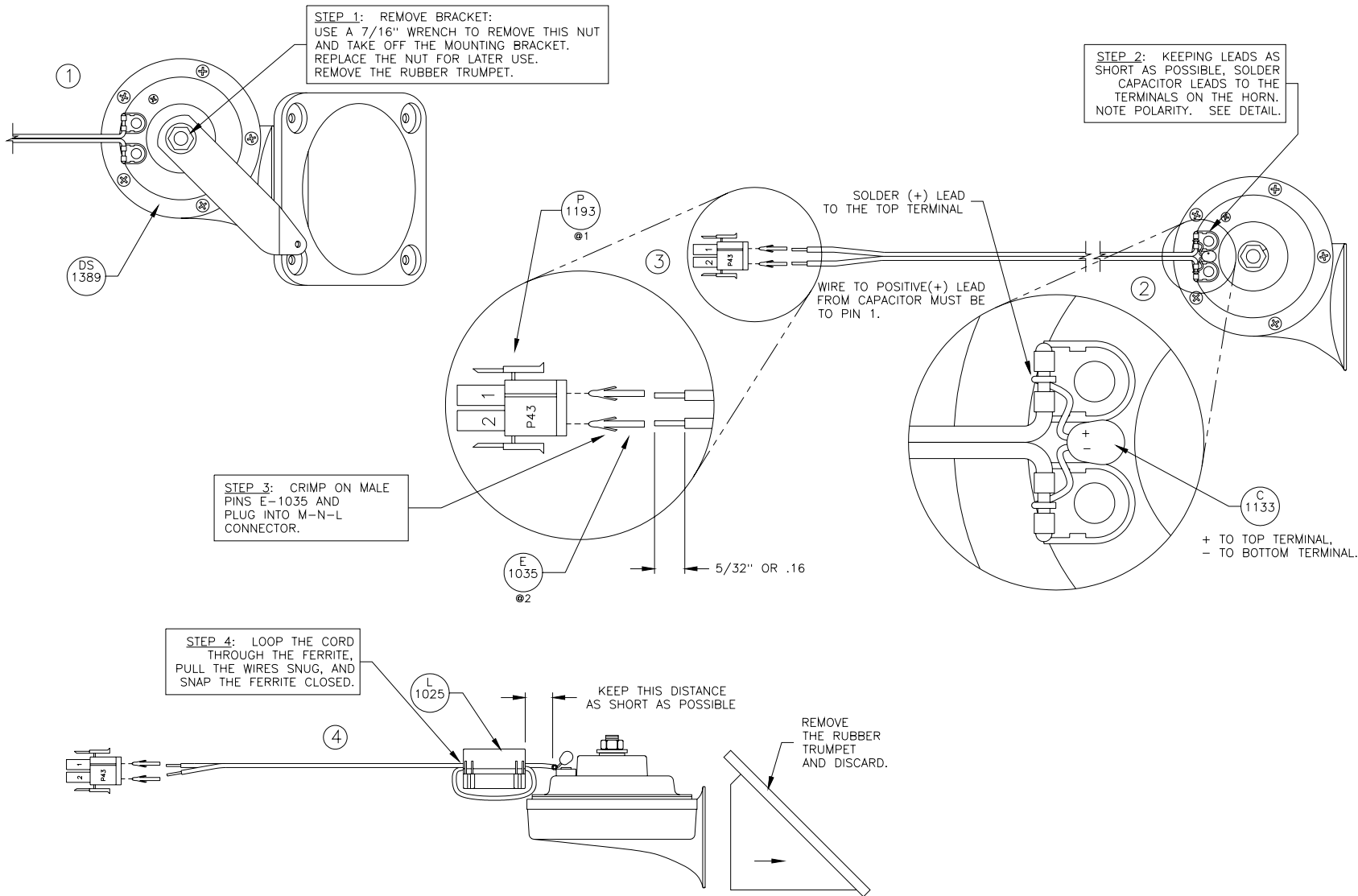
REVISION

APPR. BY:

SCALE: 1=16

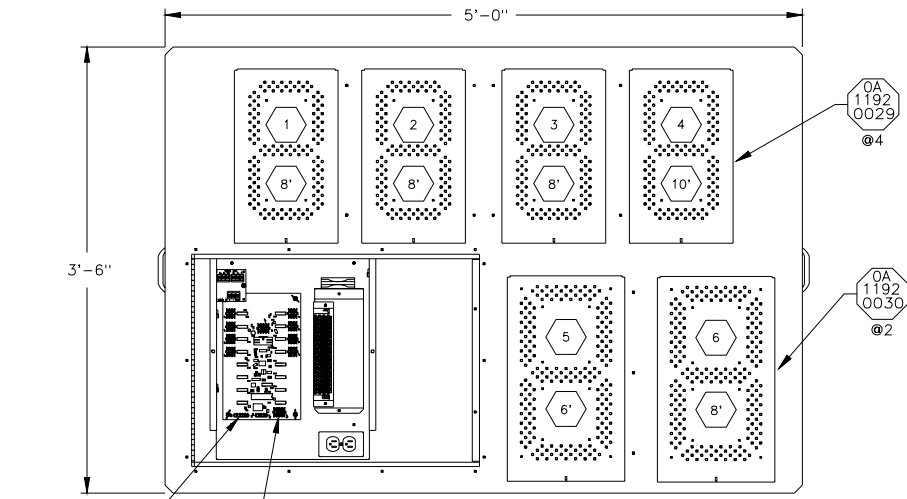
1192-E07A-171767

| REV. | DATE | DESCRIPTION | BY | APPR. |
|------|------|-------------|----|-------|
| | | | | |

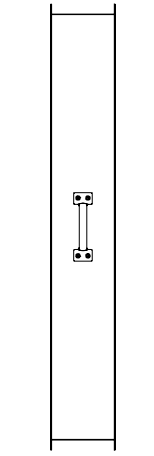


| REV. | DATE | DESCRIPTION | BY | APPR. |
|------|-----------|--|-----|-------|
| 06 | 06MAR02 | UPDATED STEP PROCEDURE TO ASSEMBLY HORN | NMB | |
| 05 | 13FEB02 | UPDATED SPELLING, CHANGED NOTES FOR WIRES GOING TO CAPACITOR | NMB | |
| 04 | 07FEB02 | CHANGED CABLE CONNECTION NOTES | THS | |
| 3 | 16 JAN 02 | CHANGED DRAWING SIZE FROM B TO A. ADDED PLUG TO THE END OF WIRE IN STEP 3. | NMB | |
| 2 | 23 MAY 00 | CHANGED POLARIZATION INSTRUCTIONS TO ORIENT CAPACITOR TO THE WIRE. | AVB | |
| 01 | 23 MAR 99 | ADDED NOTE TO REMOVE RUBBER TRUMPET. ADD NOTE TO MAKE A BLACK STRIPE ON THE NEGATIVE WIRE. | AVB | |

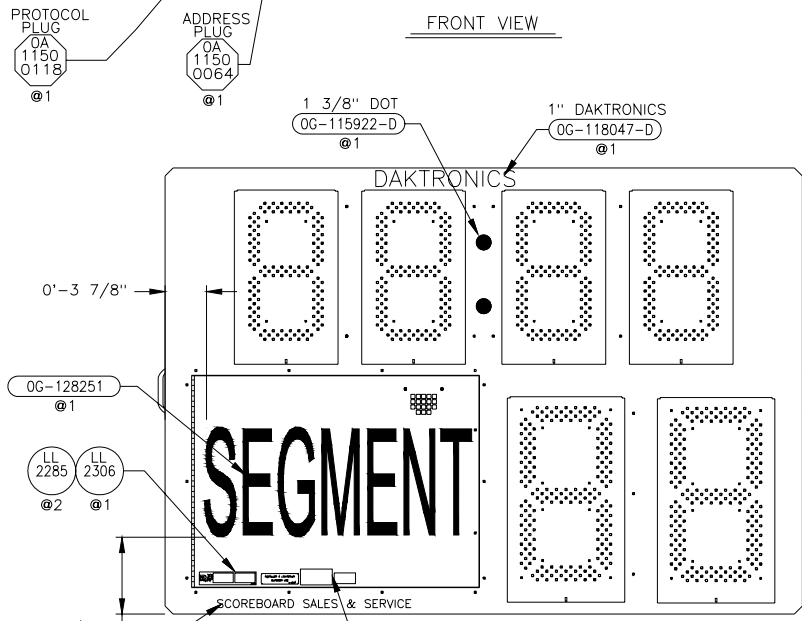
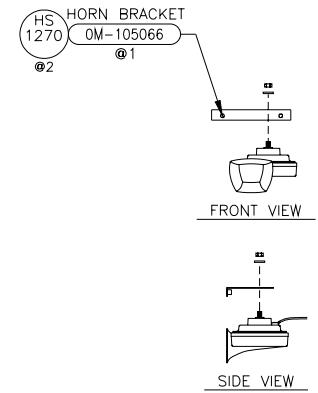
| | |
|--------------------------------------|------------------------|
| DAKTRONICS, INC. BROOKINGS, SD 57006 | |
| PROJ.: | |
| TITLE: | HORN, 12V DC W/ FILTER |
| DES. BY: | AVB |
| APPR. BY: | A VANBEMMEL |
| DATE: | 19 JAN 99 |
| REVISION | |
| SCALE: | 1=2 |
| 1072-E10B-111265 | |



FRONT VIEW

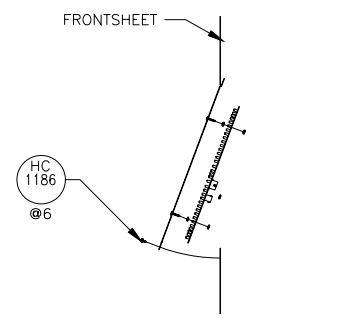


SIDE VIEW



FRONT VIEW

CAPTION
OG-108903-A
OPTIONAL



DIGIT INSTALLATION

| ADDRESS SETTINGS: | |
|-------------------|-----------------------------|
| DRIVER: | A1 |
| ADDRESS PLUG: | OA-1150-0064 |
| ADDRESS: | 1 |
| NOTES: | CUT ALL BUT THE BROWN WIRE. |

| TI-2012-11 | |
|----------------------------|------------|
| SPECIFICATIONS FOR LL-2306 | |
| MODEL: | TI-2012-11 |
| VOLTS: | 120V AC |
| MAX WATTS: | 150 |
| AMPS: | 1.3 |

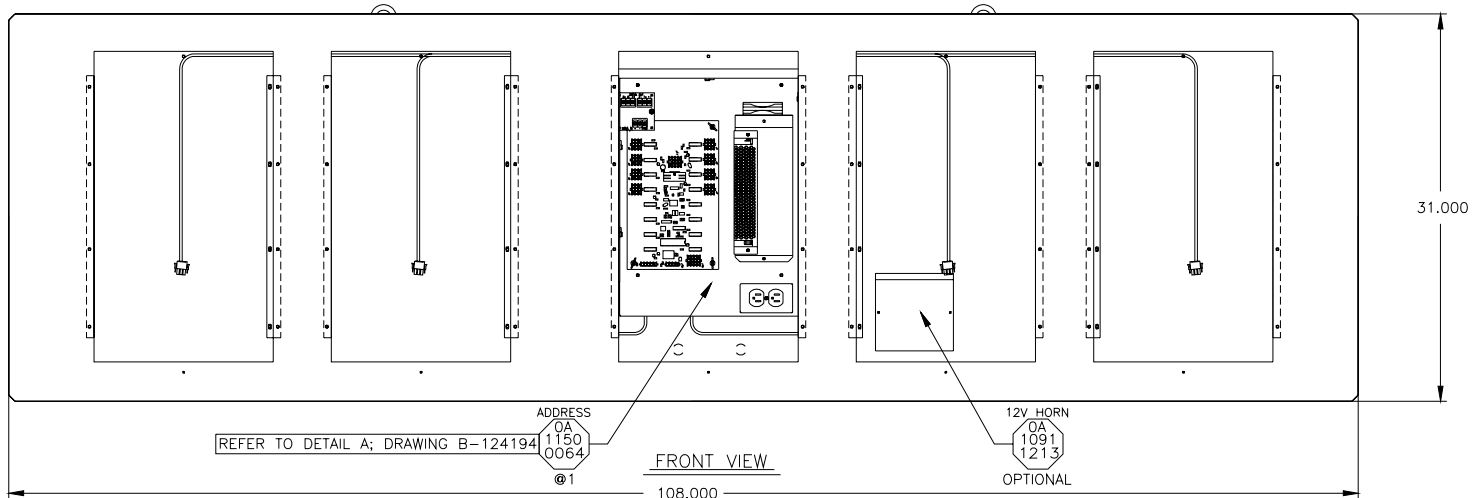
- 4 = DRIVER PLUG NUMBER THAT DIGIT IS CONNECTED TO
- 10' = 9 TO 9 PIN DIGIT CABLE LENGTH

ASSEMBLY PACKET
OA-1192-1198....F. ASSY: TI-2012-11

DAKTRONICS, INC. BROOKINGS, SD 57006

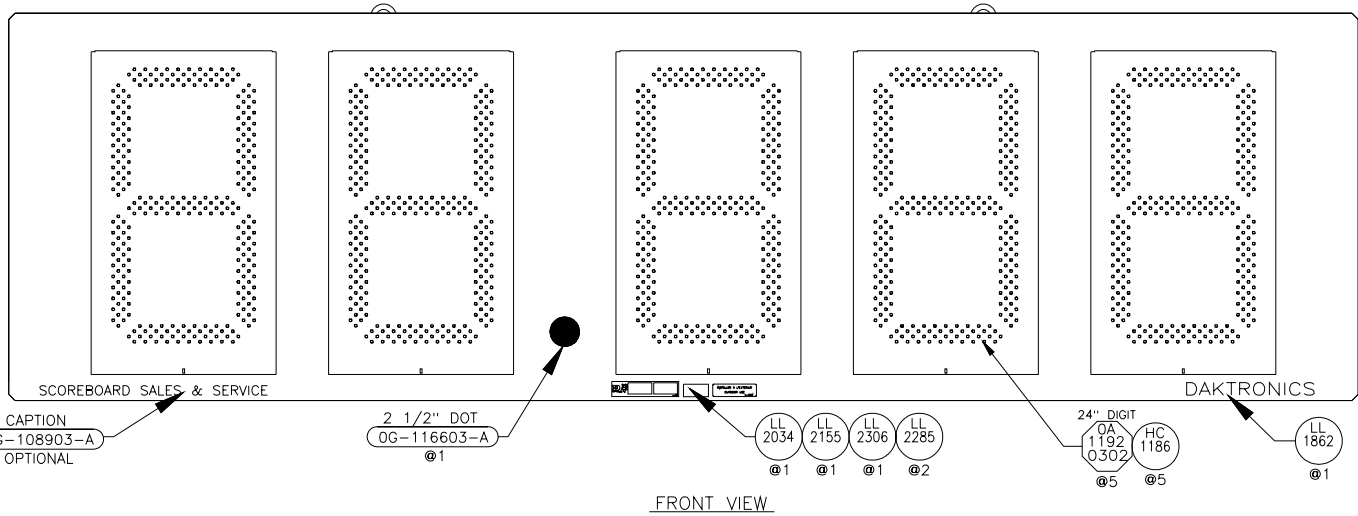
| | | | |
|----------|-------------------------|-----------|------------------|
| PROJ: | OUTDOOR LED SCOREBOARDS | | |
| TITLE: | F. ASSY: TI-2012-11 | | |
| DES. BY: | MCOPLAN | DRAWN BY: | MCOPLAN |
| DATE: | 14MAR02 | DATE: | 14MAR02 |
| REVISION | APPR. BY: | SCALE: | 1=12 |
| | | | 1192-E10B-164156 |

| REV. | DATE | DESCRIPTION | BY | APPR. |
|------|-----------|---|-------|-------|
| 03 | 16 JAN 03 | ADDED PROTOCOL PLUG IDENTIFIER | AJL | |
| 02 | 03APR02 | CHANGED THE POWER WATTAGE AND AMPERAGE PER NEW CALCULATION METHODS. | THS | MWW |
| 01 | 27MAR02 | REMOVED SIGNAL AND POWER CORDS FROM THE SIDE VIEW OF THE CABINET | MCOPL | |



| |
|--|
| ADDRESS SETTINGS: |
| DRIVER: A1 |
| ADDRESS PLUG: 0A-1150-0064 |
| ADDRESS: 12 |
| NOTES: CUT ALL BUT THE TAN AND ORANGE WIRES. |

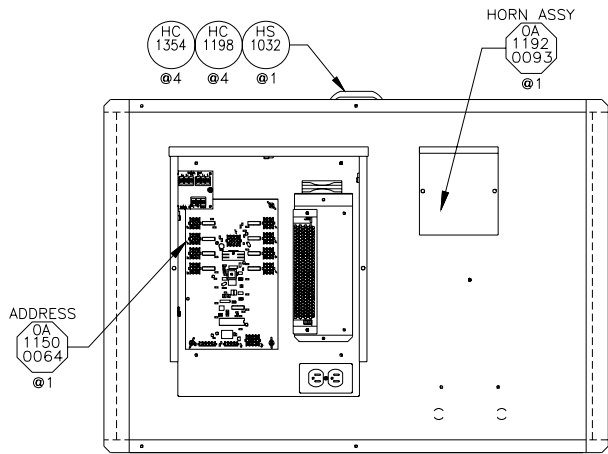
| RO-2010-11 W/ LED DIGITS |
|--------------------------|
| SPECIFICATIONS |
| MODEL: RO-2010-11 |
| VOLTS: 120V AC |
| AMPS: 1.25 |
| MAX WATTS: 150 |



ASSEMBLY PACKET
 0A-1162-0024.....F. ASSY; RO-2010-11

| | | | |
|--------------------------------------|-------------------|------------------|--|
| DAKTRONICS, INC. BROOKINGS, SD 57006 | | | |
| PROJ: RODEO SCOREBOARDS | | | |
| TITLE: F. ASSY; RO-2010-11 | | | |
| DES. BY: MCOPLAN | DRAWN BY: MCOPLAN | DATE: 21MAR02 | |
| REVISION | APPR. BY: | 1162-E10B-164487 | |
| SCALE: 1=10 | | | |

| REV. | DATE | DESCRIPTION | BY | APPR. |
|------|---------|--------------------|-------|-------|
| 01 | 11APR02 | ADDED 0A-1091-1213 | MCOPL | |



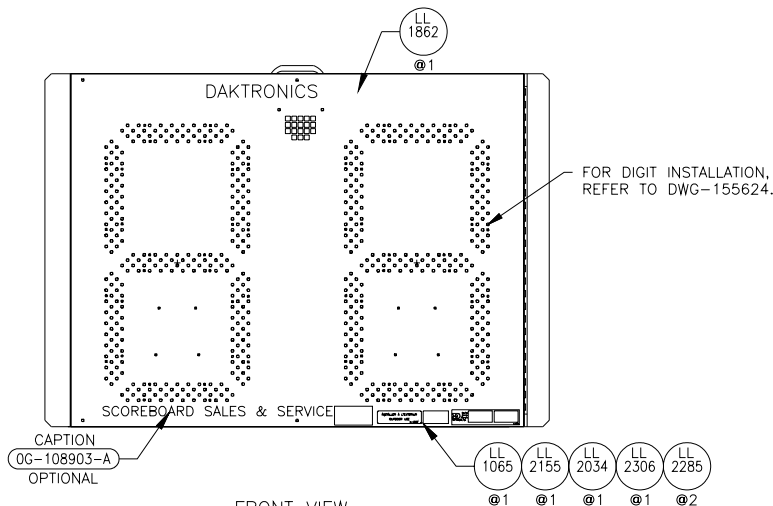
FRONT VIEW
DOOR SHOWN OPEN

| |
|--|
| ADDRESS SETTINGS: |
| DRIVER: A1 |
| ADDRESS PLUG: OA-1150-0064 |
| ADDRESS: 2 |
| NOTES: CUT THE BLACK, VIOLET, BLUE, PINK, TAN, ORANGE & BROWN WIRES. |

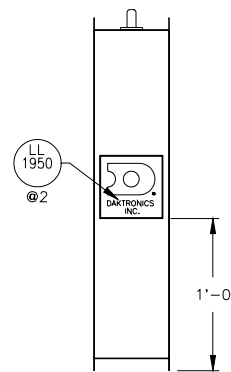
| TI-2015-11 WITH LED DIGITS |
|----------------------------|
| SPECIFICATIONS |
| MODEL: TI-2015-11 |
| VOLTS: 120V AC |
| AMPS: 1.25 |
| MAX WATTS: 150 |

OR

| TI-2015-21 WITH LED DIGITS |
|----------------------------|
| SPECIFICATIONS |
| MODEL: TI-2015-21 |
| VOLTS: 120V AC |
| AMPS: 1.25 |
| MAX WATTS: 150 |



FRONT VIEW
CAPTION PLACEMENT



SIDE VIEW

ASSEMBLY PACKET

OA-1192-1199.....F. ASSY; TI-2015-11
OA-1192-1296.....F. ASSY; TI-2015-21

| | |
|--------------------------------------|-------------------|
| DAKTRONICS, INC. BROOKINGS, SD 57006 | |
| PROJ: OUTDOOR LED SCOREBOARDS | |
| TITLE: F. ASSY; TI-2015-11 | |
| DES. BY: MCOPLAN | DRAWN BY: MCOPLAN |
| DATE: 28MAR02 | |
| REVISION | SCALE: 1=10 |
| APPR. BY: | 1192-E10B-164682 |

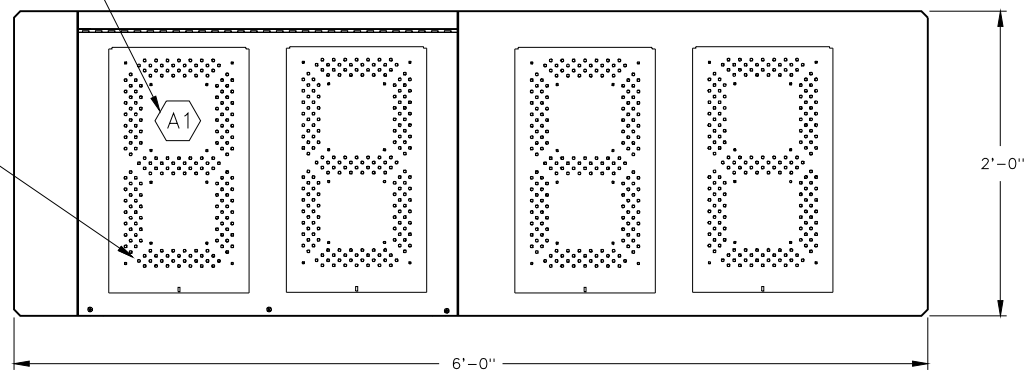
| REV. | DATE | DESCRIPTION | BY | APPR. |
|------|---------|---|-------|-------|
| 02 | 21AUG02 | ADDED AMBER LED ASSEMBLY NUMBERS | MCOPL | |
| 01 | 03APR02 | CHANGED THE POWER RATTAGE AND AMPERAGE PER NEW CALCULATION METHODS. | THS | MWM |

SEE DETAIL A; DRAWING B-124194

DRIVER A1 IS LOCATED BEHIND THIS PANEL.

ADDRESS
0A
1150
0064
@1

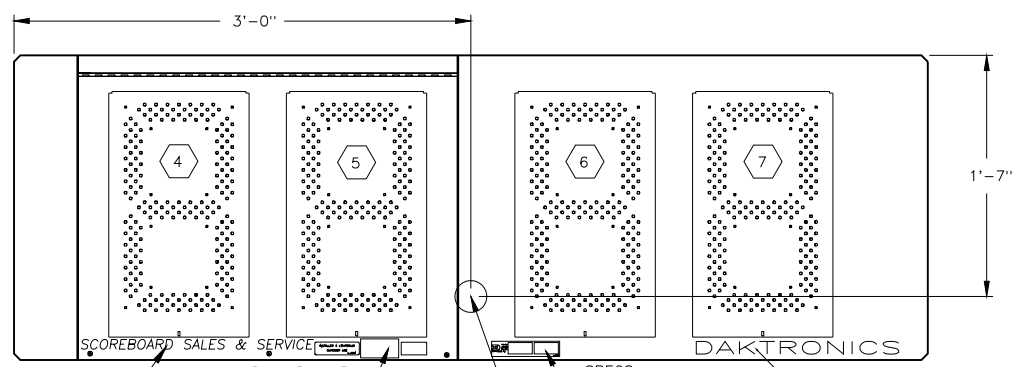
18" LED DIGIT
HC 1186
0A 1192
0030
@4 @4



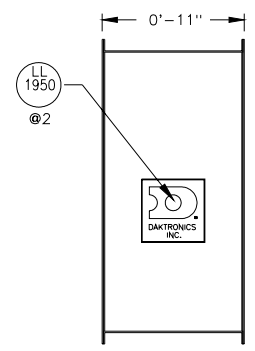
FRONT VIEW

| |
|--|
| ADDRESS SETTINGS: |
| DRIVER: A1 |
| ADDRESS PLUG: 0A-1150-0064 |
| ADDRESS: 12 |
| NOTES: CUT THE BLACK, VIOLET, BLUE, PINK, BROWN & RED WIRES. |

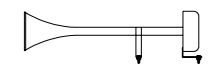
| RO-2011-11 WITH LED DIGITS | |
|----------------------------|------------|
| SPECIFICATIONS | |
| MODEL: | RO-2011-11 |
| VOLTS: | 120V AC |
| AMPS: | 1.3 |
| MAX WATTS: | 150 |



FRONT VIEW
CAPTION PLACEMENT



SIDE VIEW
TYP. BOTH SIDES



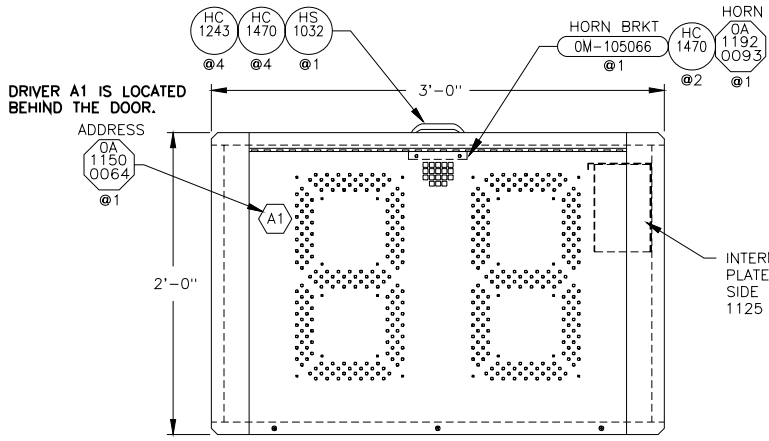
IF A 12V HORN ASSEMBLY (0A-1091-1213) IS REQUIRED YOU CAN MOUNT THE HORN ON EITHER END OF THE SCOREBOARD. DISCARD THE METAL ANGLE BRACKET THAT COMES WITH THE HORN ASSEMBLY AND DRILL HOLES AS NECESSARY FOR MOUNTING AND ROUTING HARNESSSES OUT THE END OF THE SCOREBOARD.

ASSEMBLY PACKET

0A-1162-0029.....F. ASSY; RO-2011-11

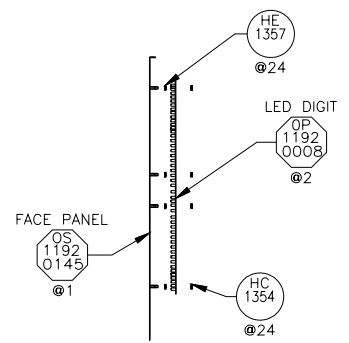
| | | | |
|--------------------------------------|---------------------|------------------|-----------|
| DAKTRONICS, INC. BROOKINGS, SD 57006 | | | |
| PROJ: | RODEO SCOREBOARDS | | |
| TITLE: | F. ASSY; RO-2011-11 | | |
| DES. BY: | BPETERSON | DRAWN BY: | CHEIER |
| | | DATE: | 18 APR 02 |
| REVISION | APPR. BY: | 1162-E10B-165689 | |
| | SCALE: | 1=10 | |

| REV. | DATE | DESCRIPTION | BY | APPR. |
|------|------|-------------|----|-------|
| | | | | |



FRONT VIEW
DIGIT INSTALLATION

INTERNALLY MOUNT THE HORN PLATE ENCLOSURE TO THE RIGHT SIDE OF THE CABINET USING HC-1125 RIVETS @2.

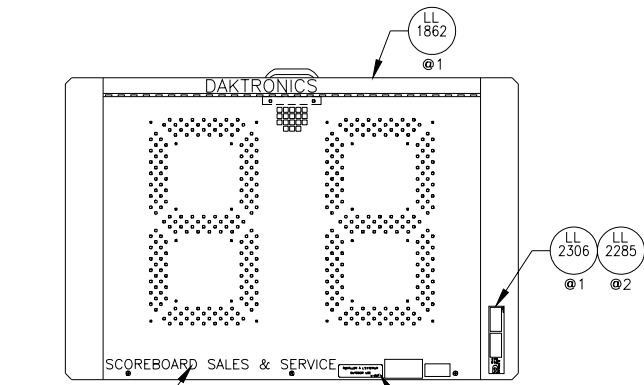


DIGIT ATTACHMENT

TYPICAL 2 PLACES THE LEDs MUST PROTRUDE OUT THROUGH THE FACE PANEL.

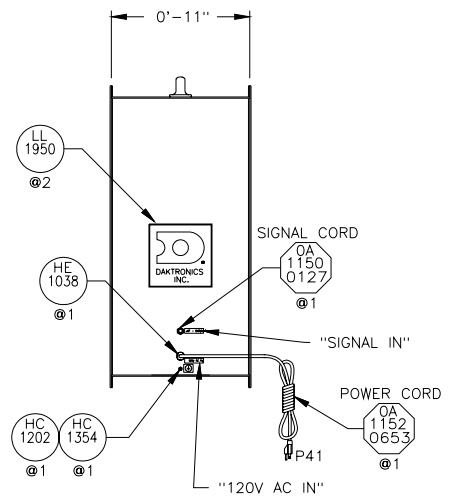
| |
|---|
| ADDRESS SETTINGS: |
| DRIVER: A1 |
| ADDRESS PLUG: 0A-1150-0064 |
| ADDRESS: 2 |
| NOTES: CUT THE BLACK, VIOLET, BLUE, PINK, TAN, ORANGE & BROWN WIRES. |

| TI-2010-11 W/ LED DIGITS | |
|--------------------------|------------|
| SPECIFICATIONS | |
| MODEL: | TI-2010-11 |
| VOLTS: | 120V AC |
| AMPS: | 1.25 |
| MAX WATTS: | 150 |

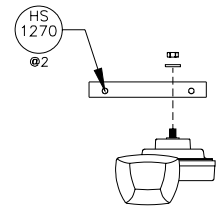


FRONT VIEW
CAPTION PLACEMENT

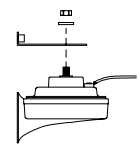
CAPTION
0G-108903-A
OPTIONAL



SIDE VIEW



FRONT VIEW



SIDE VIEW

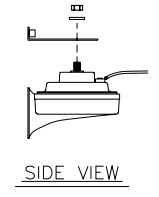
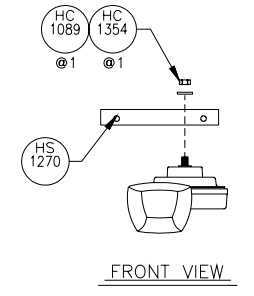
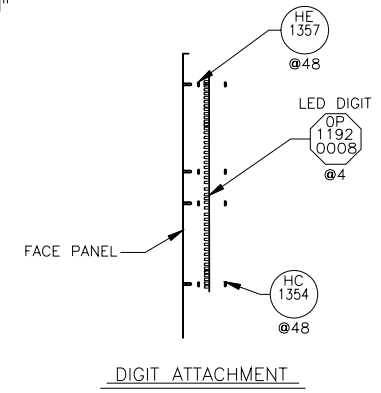
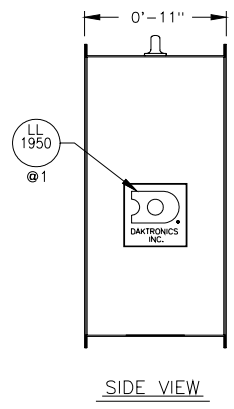
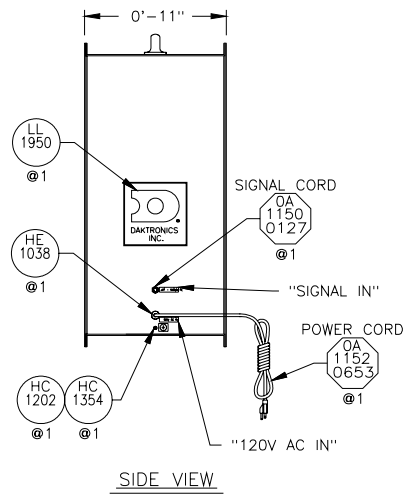
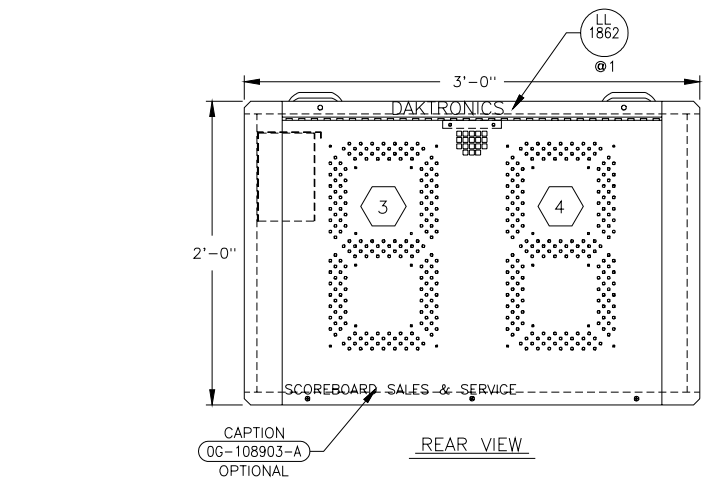
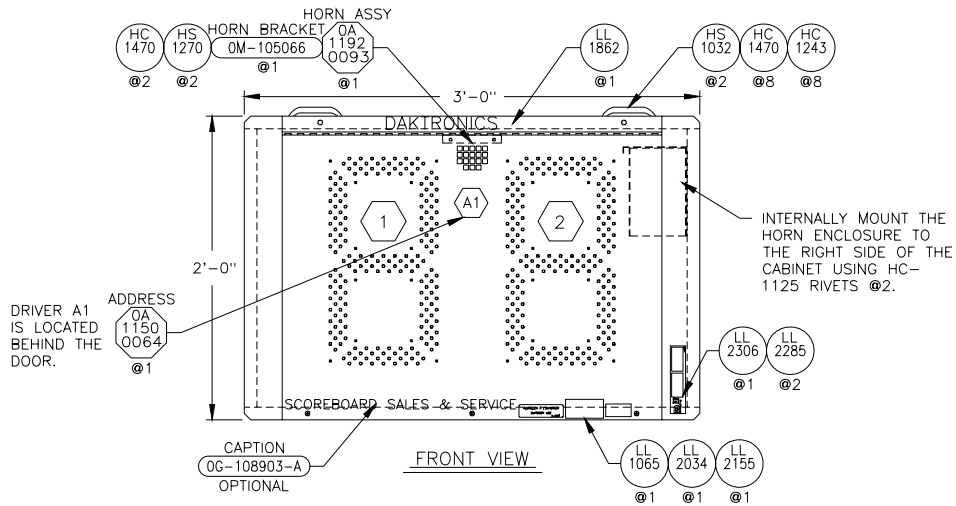
HORN DETAIL
SCALE 1=7.5

ASSEMBLY PACKET

0A-1192-1197.....F. ASSY; TI-2010-11

| | | | |
|--|-------------------------|------------------|---------|
| THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2002 DAKTRONICS, INC. | | | |
| DAKTRONICS, INC. BROOKINGS, SD 57006 | | | |
| PROJ: | OUTDOOR LED SCOREBOARDS | | |
| TITLE: | F. ASSY; TI-2010-11 | | |
| DES. BY: | MCOPLAN | DRAWN BY: | MCOPLAN |
| | | DATE: | 04JUN02 |
| REVISION | APPR. BY: | 1192-E10B-168161 | |
| | SCALE: | 1=10 | |

| REV. | DATE | DESCRIPTION | BY | APPR. |
|------|------|-------------|----|-------|
|------|------|-------------|----|-------|



HORN DETAIL
SCALE 1=7.5

| |
|---|
| ADDRESS SETTINGS: |
| DRIVER: A1 |
| ADDRESS PLUG: 0A-1150-0064 |
| ADDRESS: 2 |
| NOTES: CUT THE BLACK, VIOLET, BLUE, PINK, TAN, ORANGE & BROWN WIRES. |

| |
|---|
| DOUBLE FACE TI-2010-11 W/ LED DIGITS |
| SPECIFICATIONS |
| MODEL: TI-2010-11, DF |
| VOLTS: 120V AC |
| AMPS: 1.25 |
| MAX WATTS: 150 |

ASSEMBLY PACKET
OW-57115-01.....F. ASSY; TI-2010-11, DF

| | |
|--|------------------|
| THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. | |
| DAKTRONICS, INC. BROOKINGS, SD 57006 | |
| PROJ: OUTDOOR LED SCOREBOARDS | |
| TITLE: F. ASSY; TI-2010-11, DF | |
| DES. BY: MCOPLAN | DATE: 19JUL02 |
| APPR. BY: | SCALE: 1=10 |
| REVISION | 1192-E10B-171747 |

| REV. | DATE | DESCRIPTION | BY | APPR. |
|------|------|-------------|----|-------|
| | | | | |

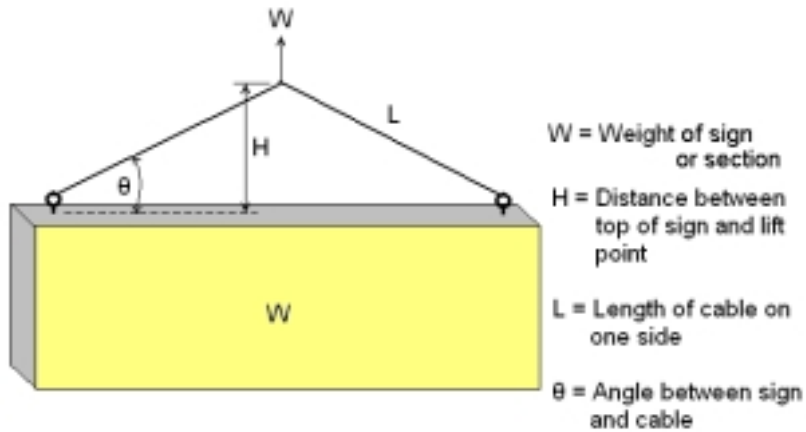
Appendix B: Eyebolts

EyeboltsED7244

Eyebolts

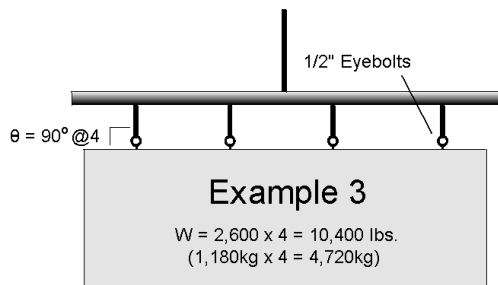
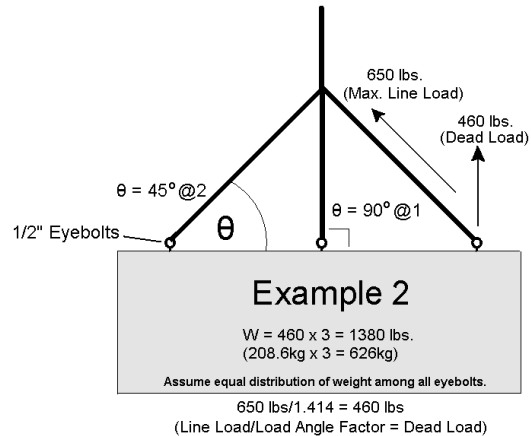
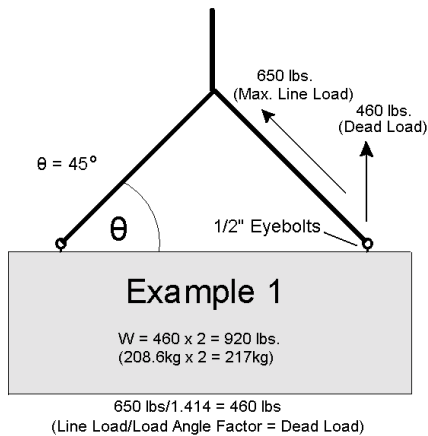
Almost every display that leaves Daktronics is equipped with eyebolts for lifting the display. There are two standard sizes of eyebolts: 1/2" and 5/8".

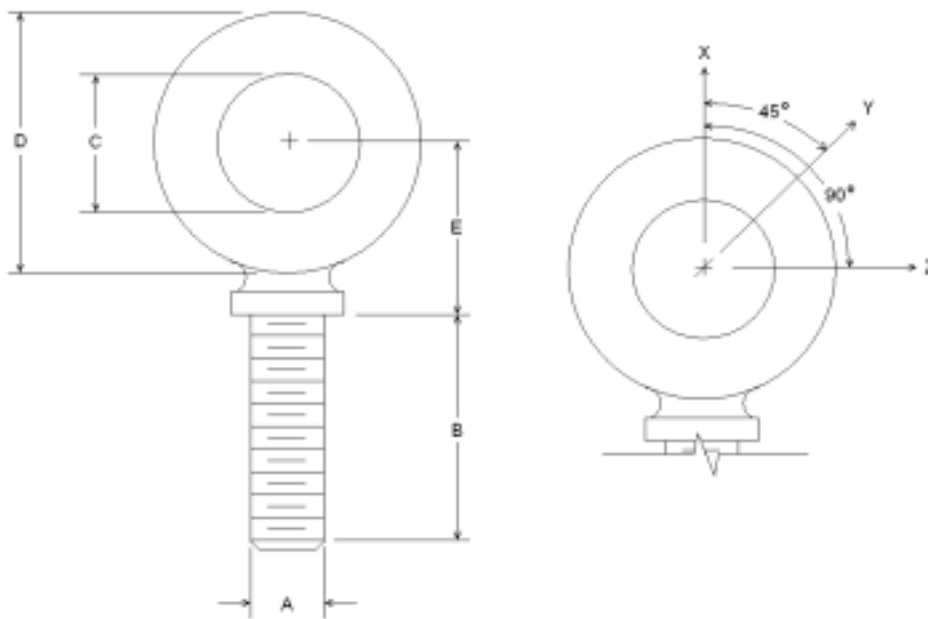
Load Increase Factor: The load increases as the lift angle (θ) decreases. The allowable load on the eyebolts also decreases with the lift angle due the bending stress on the eyebolts. In sum, the smaller the angle between the cable and the top of the display, the lighter the sign must be to safely lift it. *Do NOT attempt to lift the display when the lift angle is less than 30 degrees.*



| Horizontal Angle | Load Angle Factor (L/H) |
|------------------|-------------------------|
| 90 | 1.00 |
| 60 | 1.155 |
| 50 | 1.305 |
| 45 | 1.414 |
| 30 | 2.00 |

| θ | 1/2" | | 5/8" | |
|----------|-----------|---------------|-----------|---------------|
| | Line Load | Weight/Anchor | Line Load | Weight/Anchor |
| 90 | 2600 | 2600 | 4000 | 4000 |
| 60 | 1500 | 1299 | 3300 | 2858 |
| 45 | 650 | 460 | 1000 | 707 |
| 30 | 520 | 260 | 800 | 400 |





| A | B | C | D | E | No. | Min. Proof Load (lbs.) | Min. Break Load (lbs.) | Stocked | Min. Eff. Thrd. Length | Line Loads | | |
|------------|--------------|---------------|---------------|----------------|-----------|------------------------|------------------------|---------------------|------------------------|--------------|--------------|------------|
| | | | | | | | | | | Wx | Wy | Wz |
| 1/4 | 1 | 3/4 | 1-3/16 | 25/32 | 21 | 600 | 2,000 | Blank 1/4-20 | 7/8 | 400 | 100 | 80 |
| 3/8 | 1-1/4 | 1 | 1-21/32 | 1-3/16 | 23 | 2,100 | 5,000 | Blank 3/8-16 | 1-1/8 | 1,400 | 350 | 250 |
| 1/2 | 1-1/2 | 1-3/16 | 2-1/16 | 1-13/32 | 25 | 3,900 | 9,200 | Blank 1/2-13 | 1-11/32 | 2,600 | 650 | 520 |
| 9/16 | 1-5/8 | 1-9/32 | 2-13/16 | 1-17/32 | 26 | 4,500 | 11,830 | Blank 9/16-12 | 1-3/8 | 3,000 | 750 | 600 |
| 5/8 | 1-3/4 | 1-3/8 | 2-1/2 | 1-11/16 | 27 | 6,000 | 14,700 | Blank 5/8-11 | 1-9/16 | 4,000 | 1,000 | 800 |
| 3/4 | 2 | 1-1/2 | 2-13/16 | 1-13/16 | 28 | 9,000 | 21,700 | Blank 3/4-10 | 1-5/8 | 6,000 | 1,500 | 1,200 |
| 7/8 | 2-1/4 | 1-11/16 | 3-1/4 | 2-1/16 | 29 | 10,000 | 30,000 | Blank 7/8-9 | 1-13/16 | 6,600 | 1,670 | 1,330 |
| 1 | 2-1/2 | 1-13/16 | 3-9/16 | 2-5/16 | 30 | 12,000 | 39,400 | Blank 1-8 | 2-1/16 | 8,000 | 2,000 | 1,600 |
| 1-1/2 | 3-1/2 | 2-9/16 | 5-1/2 | 3-5/32 | 34 | 27,000 | 91,300 | Blank 1-1/2-6 | 3 | 17,800 | 4,500 | 3,600 |

- A. Do not use eyebolts on angular lifts unless absolutely necessary. For angular lifts, the shoulder pattern eyebolt is preferred.
- B. Load should always be applied to eyebolts in the plane of the eye, not at some angle to this plane.
- C. Shoulder eyebolts must be properly seated (should bear firmly against the mating part), otherwise the working loads must be reduced to those indicated for regular eyebolts. A washer or spacer may be required to put the plane of the eye in the direction of the load when the shoulder is seated.
- D. No load greater than the safe working load listed in the data table should be used.
- E. To obtain the greatest strength from the eyebolt, it must fit reasonably tight in its mounting hole to prevent accidental unscrewing due to twist of cable.
- F. Eyebolts should never be painted or otherwise coated when used for lifting. Such coatings may cover potential flaws in the eyebolt.
- G. To attain the safe working loads listed for regular eyebolts, 90% of the thread length must be engaged.