

Outdoor LED Tennis Scoreboards

Installation Manual

DD2157207

Rev 5 – 10 February 2014

DAKTRONICS

Models	
TN-2601	TN-2650
TN-2603	TN-2651
TN-2604	TN-2652
TN-2605	TN-2653
TN-2606	TN-2654
TN-2607	TN-2655
	TN-2656
	TN-2657

DD2157207
Product 1164
Rev 5 – 10 February 2014

DAKTRONICS, INC.

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Section 1: Introduction

This manual explains the installation of Daktronics outdoor LED tennis scoreboards. For additional information regarding the safety, installation, operation, or service of this system, refer to the telephone numbers listed in **Section 4**. This manual is not specific to a particular installation. Project-specific information takes precedence over any other general information found in this manual.

IMPORTANT SAFEGUARDS:

- Please read and understand all instructions before beginning the installation process.
- Do not drop control equipment or allow it to get wet.
- Do not disassemble control equipment or electronic controls of the display; failure to follow this safeguard will make the warranty null and void.
- Disconnect display power when not in use or when servicing.
- Disconnect display power before servicing power supplies to avoid electrical shock. Power supplies run on high voltage and may cause physical injury if touched while powered.
- Do not modify the scoreboard structure or attach any panels or coverings to the scoreboard without the express written consent of Daktronics, Inc.

1.1 Scoreboard Controllers

Daktronics outdoor tennis scoreboards are designed for use with the RC-100 handheld controller. Single-court scoreboards with optional Team Name Message Centers (TNMCs) require an All Sport® 5000 series control console. Multi-court scoreboards with optional TNMCs require a computer running DakTennis™ control software. The RC-100 and All Sport 5000 use keyboard overlays (sport inserts) to control numerous sports and scoreboard models. Refer to the following manuals for operating instructions:

- **Remote Control System RC-100 All Sport Operation Manual (ED-15133)**
- **All Sport 5000 Series Control Console Operation Manual (ED-11976)**
- **DakTennis Version 3 Installation & Operation Manual (DD1965926)**

These manuals are available online at www.daktronics.com/manuals.

1.2 Troubleshooting

For an extensive troubleshooting guide and instructions on how to replace scoreboard components, refer to the following manual:

- **Outdoor LED Scoreboards Service Manual (DD2124597)**

The service manual is available online at www.daktronics.com/manuals.

1.3 Specifications Label

Power specifications as well as serial and model number information can be found on an ID label on the display, similar to the one shown in **Figure 1**.

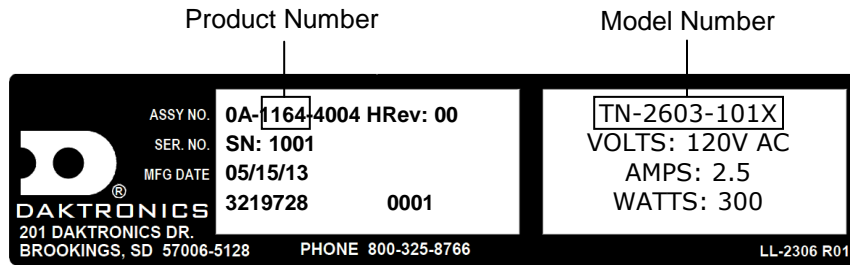


Figure 1: Specifications Label

Please have the assembly number, model number, and the date manufactured on hand when calling Daktronics customer service to ensure the request is serviced as quickly as possible. Knowing the facility name and/or job number will also be helpful. Note that the Product Number(s) are sometimes used to distinguish different generations of the scoreboards having the same model number.

1.4 Resources

Figure 2 illustrates a Daktronics drawing label. The drawing number is located in the lower-right corner of a drawing. This manual refers to drawings by listing the last set of digits and the letter preceding them. In the example, the drawing would be referred to as **Drawing C-325405**.

THE CONCEPTS EXPRESSED AND DETAILS SHOWN IN THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY, WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2008 DAKTRONICS, INC.			
DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: DAKTRONICS UNIVERSITY			
TITLE: SYSTEM RISER DIAGRAM			
DES. BY: AORMESH		DRAWN BY: AORMESH	
DATE: 15 JAN 08			
REVISION	APPR BY-	14963-R01	
00	SCALE- NONE	C-325405	

Figure 2: Daktronics Drawing Label

Reference Drawing:

System Riser Diagram.....**Drawing C-325405**

Daktronics identifies manuals by the DD or ED number located on the cover page of each manual. For example, this manual would be referred to as **DD2157207**.

1.5 Product Safety Approval

Daktronics outdoor scoreboards are ETL listed and tested to CSA standard for outdoor use. Contact Daktronics with any questions regarding testing procedures.

Section 2: Mechanical Installation

Mechanical installation consists of installing concrete footing and steel beams and mounting the scoreboard and accompanying ad panels to the beams. The product specification sheets listed in **Appendix A** include installation specification drawings that show the recommended number of beams and spacing between them. The drawings also indicate the size of beams required to support the scoreboard at different heights and at various wind speeds.

The column and footing size dimensions are to assist with estimating installation costs. They are estimates only and are not intended for actual construction purposes. Be sure that the installation complies with local building codes and is suitable for the particular soil and wind conditions. The columns, footings, and all connection details must be designed and certified by a professional engineer licensed to practice in the state of the scoreboard installation.

Note: Daktronics does not assume any liability for any installation derived from the information provided in this manual or installations designed and installed by others.

2.1 Lifting the Scoreboard

Daktronics scoreboards are shipped equipped with eyebolts used to lift them. The eyebolts are located along the top of the cabinet for each scoreboard or scoreboard section. Daktronics scoreboards use $1/2$ " and $5/8$ " shoulder-type eyebolts mounted to a $1/8$ " aluminum plate or steel nut plate.

Daktronics strongly recommends using a spreader bar, or lifting bar, to lift the display. Spreader bars ensure the force on the eyebolts remains straight up, minimizing lifting stress.

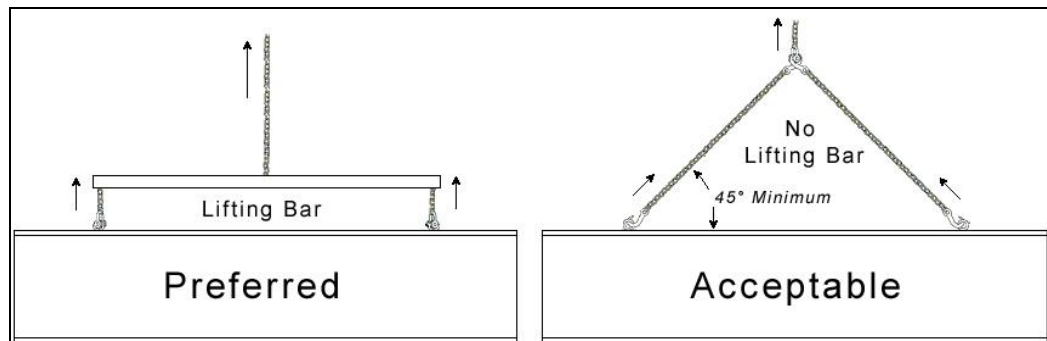


Figure 3: Lifting Methods

Figure 3 illustrates the preferred scoreboard lifting method on the left and an acceptable alternative lifting method on the right. When lifting the display:

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

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. The smaller the angle between the cable and the top of the display, the lighter the sign must be to safely lift it. If this method must be used, ensure a minimum angle between the chain and scoreboard of at least 45°.

Do NOT attempt to lift the display if the angle is less than 45°. Exceeding load angles or weight limits could cause the bolts in the scoreboard cabinet to buckle, resulting in serious damage to the scoreboard or injury to personnel. Also, loads should be applied directly in the plane of the eyebolt as shown in **Figure 4**.

Note: Daktronics assumes no liability for damages resulting from incorrect setup or lifting methods. Eyebolts are intended for lifting only. Do not attempt to permanently support the display by the eyebolts.

If installers remove the eyebolts, plug the holes with bolts and the rubber washers that are used with the eyebolts. Apply silicone or another waterproof sealant to the eyebolt openings. Also 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.

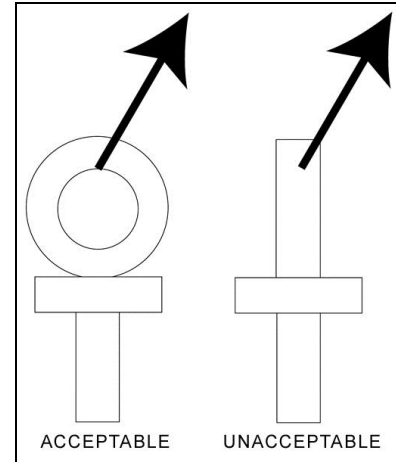


Figure 4: Eyebolt Plane Load

2.2 Single-Court Scoreboard Mounting

Two standard mounting methods are available for Daktronics single-court tennis scoreboards.

Clamping Angles

Mounting hardware includes C-channels; rear clamping angles; $\frac{1}{2}$ -13 x 15" threaded rods; and $\frac{1}{2}$ " square nuts, hex nuts, and lock washers. Refer to **Figure 5** and **Drawing A-1130246** in **Appendix B**.

1. Position the scoreboard at the front of the beams, and lift it to the desired height.
2. Place a C-channel against the upper rear flange of the scoreboard next to each beam.
3. With the C-channel as a template, use a $\frac{9}{16}$ " bit to drill holes in the upper rear flange of the scoreboard cabinet where the rods will pass through. The rods should be as close to the beam as possible.
4. Push the rods through the holes in the rear flange of the scoreboard cabinet and into the C-channel, and then thread $\frac{1}{2}$ " square nuts onto the rods inside the C-channel.
5. Place clamping angles over each pair of rods and secure with $\frac{1}{2}$ " lock washers and hex nuts.
6. Make final adjustments in the positioning of the scoreboard to ensure it is flush and level, and then firmly tighten all of the $\frac{1}{2}$ " hex nuts.
7. Repeat steps 2-6 for the lower rear flange of the scoreboard for every beam.

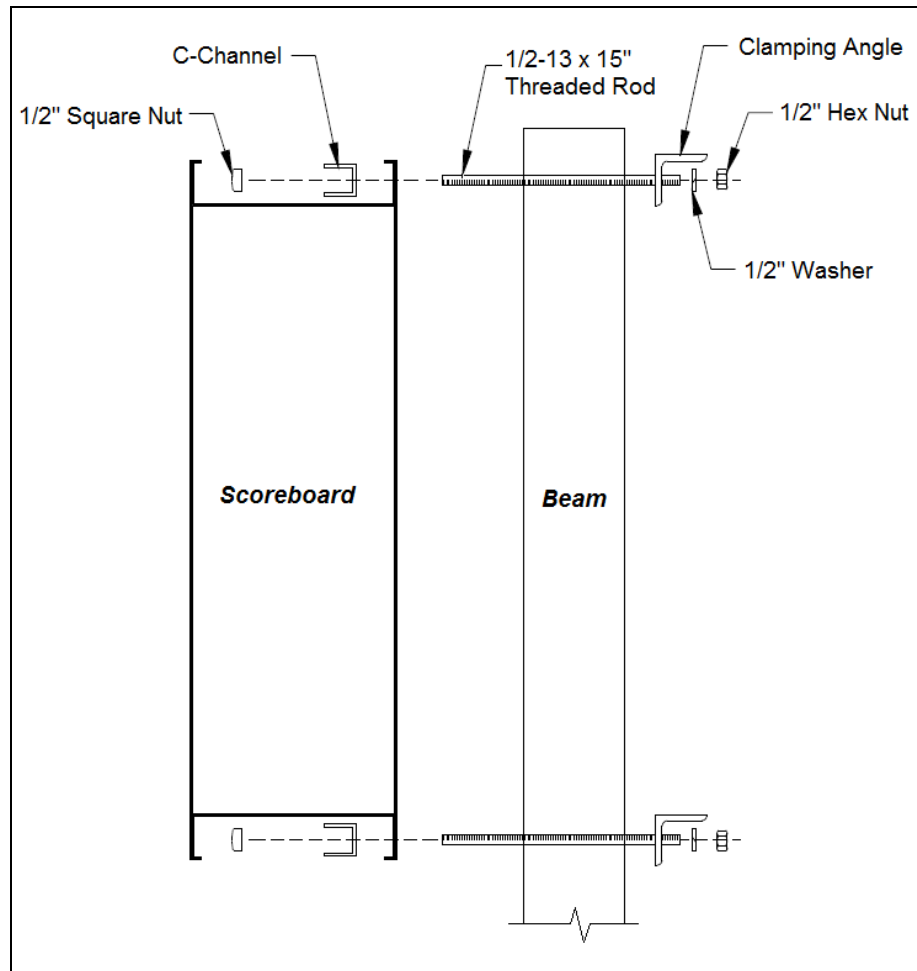


Figure 5: C-channel Mounting Method, Side View

I-Beam Clamps

Mounting hardware includes C-channels; washer plates; I-beam clamps; 1/2-13 x 3.5" bolts; self-drilling screws; and 1/2" square nuts, hex nuts, flat washers, and lock washers. Refer to **Figure 6** and **Drawing B-1129110** in **Appendix B**.

Note: I-beams must have a flange thickness of $\frac{3}{16}$ " - $\frac{3}{4}$ ". If flange thickness is greater than $\frac{3}{4}$ ", longer bolts will be required at added expense.

1. Position the scoreboard at the front of the beams, and lift it to the desired height.
2. Place a C-channel against the upper rear flange of the scoreboard next to each beam.
3. With the C-channel as a template, use a $\frac{9}{16}$ " bit to drill holes in the upper rear flange of the scoreboard cabinet where the bolts will pass through. The bolts should be as close to the beam as possible.
4. Slide a lock washer, flat washer, and I-beam clamp onto each bolt, then push the bolts through the holes in the rear flange of the scoreboard cabinet and into the C-channel.
5. Place the 2 washer plates and 1/2" square nuts inside the C-channel, and loosely tighten the square nut onto the bolts.
6. Make final adjustments in the positioning of the scoreboard to ensure it is flush and level, and then firmly tighten all of the bolts to 40 ft-lb torque.
7. Screw the self-drilling screws into the rear flange, snug up against the I-beam clamps.
8. Repeat steps 2-7 for the lower rear flange of the scoreboard for every beam.

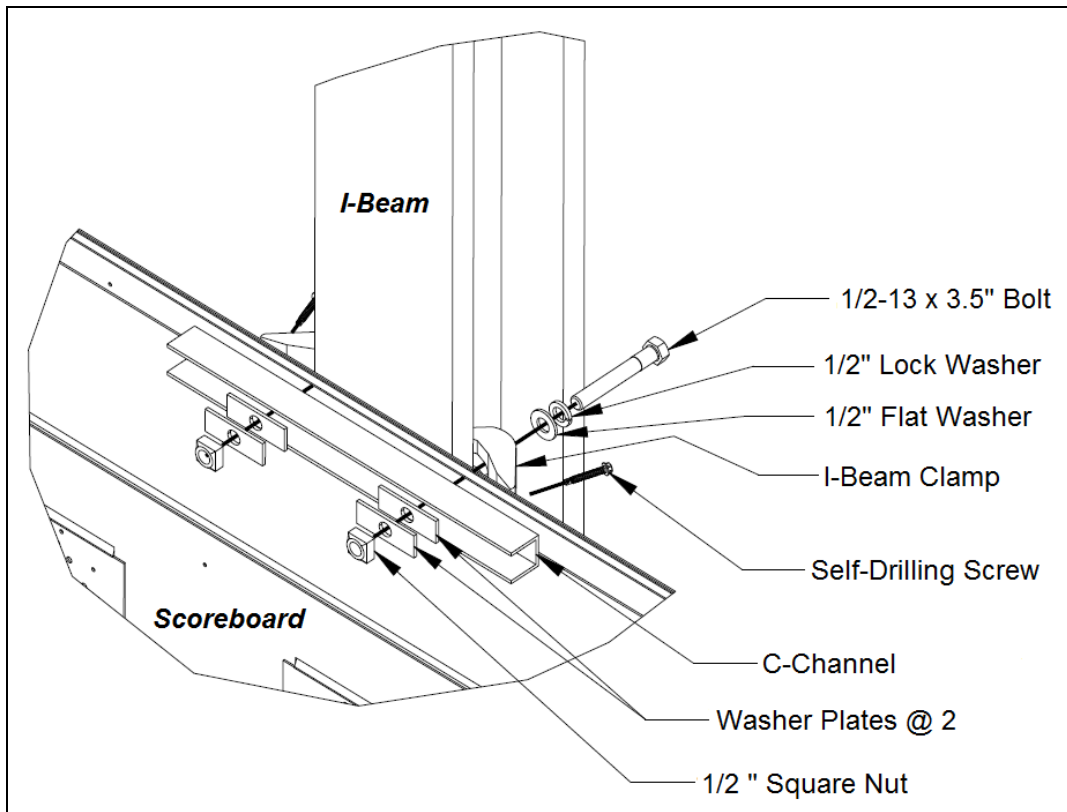
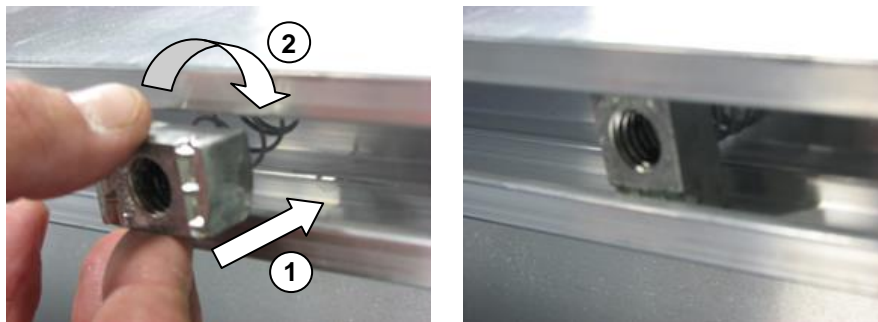


Figure 6: I-Beam Clamp Mounting Method, Front Rotated View

2.3 Multi-Court Scoreboard Mounting

Two standard mounting methods are available for Daktronics multi-court tennis scoreboards. Both methods require spring nuts to be inserted into the rear channel of the scoreboard:

1. Insert spring nuts into the top and bottom scoreboard channels. Twist the spring nuts until they are perpendicular to the scoreboard channel (**Figure 7**).



1) Insert into channel 2) Twist Correct spring nut position

Figure 7: Spring Nut Insertion

Note: Scoreboards require four spring nuts per beam (two at the top and two at the bottom).

2. Measure the beam spacing and position a spring nut on either side of the beams.

Once the spring nuts are in place, refer to the appropriate section below for the type of mounting hardware provided with the scoreboard.

I-Beam Clamps

This mounting method is used to mount a scoreboard to I-beams with a flange thickness of $\frac{1}{4}$ " - $\frac{3}{4}$ ". If flange thickness is greater than $\frac{3}{4}$ ", longer bolts will be required at additional expense.

Mounting hardware includes I-beam clamps, $\frac{1}{2}$ -13 x 3" bolts, $\frac{1}{2}$ " flat washers, and $\frac{1}{2}$ " lock washers. Refer to **Figure 8** and **Drawing A-1052565** in **Appendix B**.

1. Position the scoreboard at the front of the beams, and lift it to the desired height.
2. Slide a lock washer, flat washer, and I-beam clamp onto the bolt, and loosely screw the bolt into the spring nut.
3. Position each I-beam clamp assembly as close to the I-beam flanges as possible.
4. Make final adjustments in the positioning of the scoreboard to ensure it is flush and level, and firmly tighten all of the bolts.

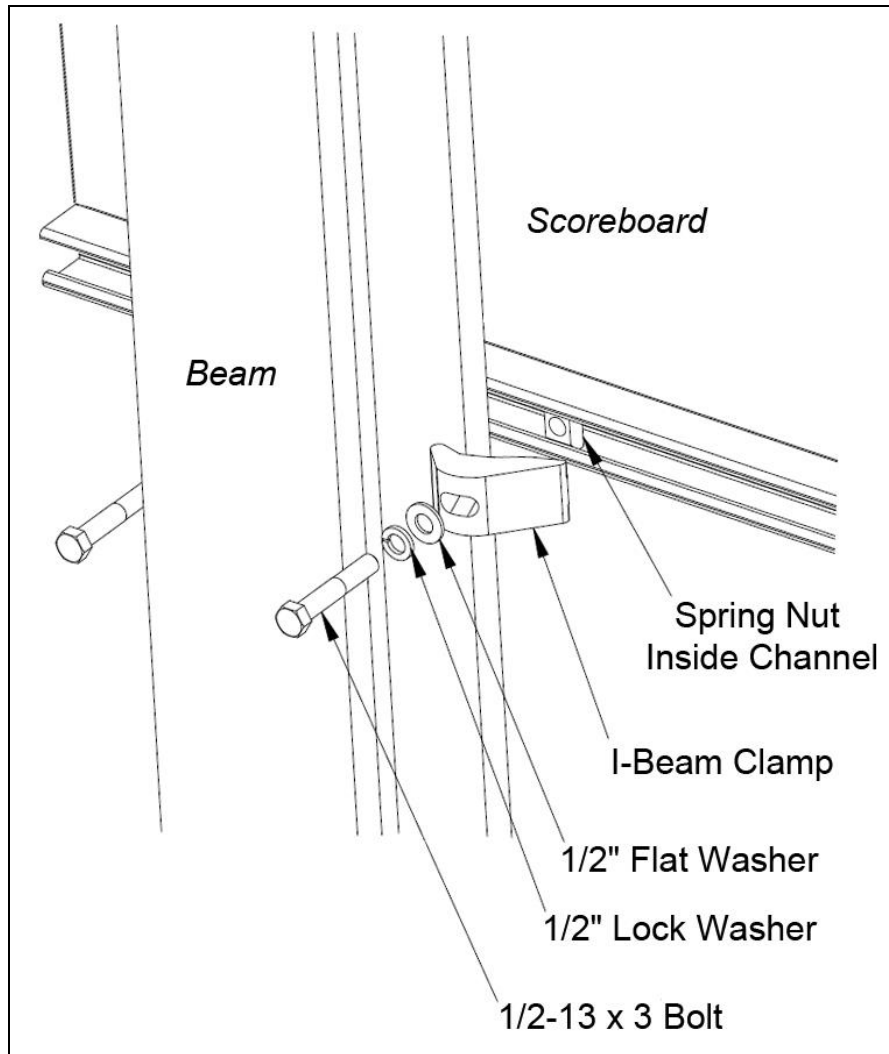


Figure 8: I-beam Clamp Mounting Method, Rear Isometric View

Clamping Angles

This mounting method may be used to mount a scoreboard to I-beams or any beam/pole that does not have flanges.

Mounting hardware includes rear clamping angles; 1/2-13 x 24" threaded rods; and 1/2" nuts, flat washers, and lock washers. Refer to **Figure 9** and **Drawing A-1048184** in **Appendix B**.

Note: The threaded rods do not pass through the beams; they run along both sides.

1. Screw a threaded rod into each of the spring nuts as far as it will go.
2. Position the scoreboard at the front of the beams with the threaded rods extending from the rear of the spring nuts, straddling the beams.
3. Lift the scoreboard to the desired height.
4. Slide clamping angles over the ends of the rods and loosely install the washers and nuts.
5. Make final adjustments in the positioning of the scoreboard to ensure it is flush and level, and firmly tighten all of the 1/2" hex nuts.

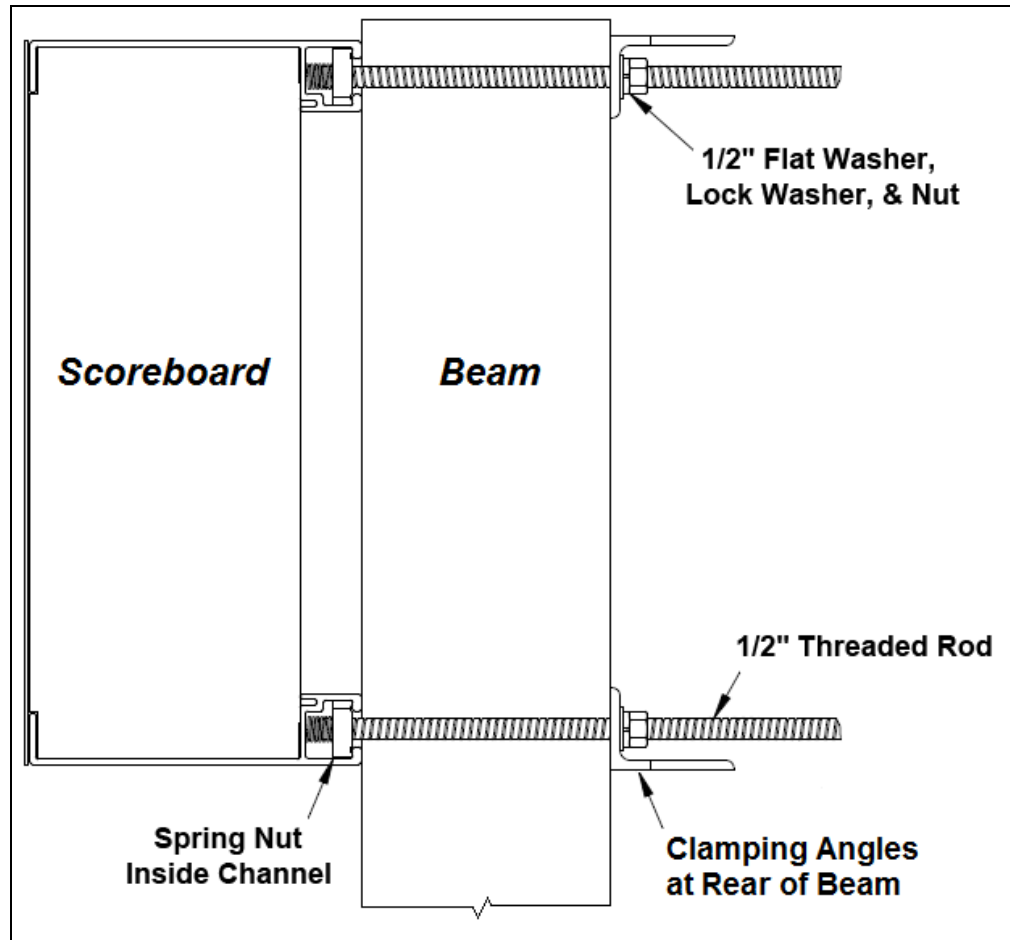


Figure 9: Clamping Angle Mounting Method, Side View

2.4 Ad Panel Mounting

Unistrut Attachment

1. Using the backup channel as a template, drill four $\frac{7}{16}$ " holes in the upper and lower rear flanges of the ad panel where the beams will be located.

Note: Try to ensure that the two center holes will be within the width of the beam.

2. If the ad panel has backsheets, remove them as needed to access the ad panel interior.
3. Attach the piece of unistrut to the ad panel with the included hardware, as shown in **Figure 10**.

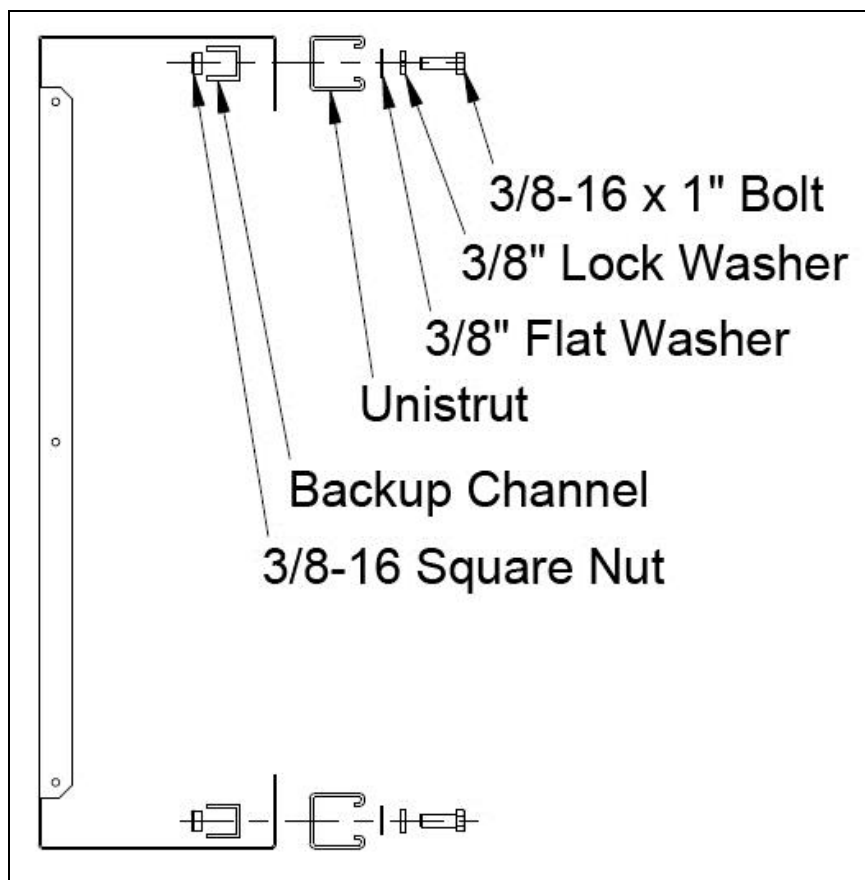


Figure 10: Unistrut Attachment, Side View

4. If any backsheets were removed, put them back on at this time.
5. Place spring nuts into the unistrut. Twist the spring nuts until they are perpendicular to the unistrut channel (refer to **Figure 7** from **Section 2.3**).

Once the unistrut is attached and the spring nuts are in place, refer to the appropriate section below for the type of mounting hardware provided with the ad panel.

I-Beam Clamps

Mounting hardware includes I-beam clamps, $1/2$ -13 x 3" bolts, $1/2$ " flat washers, and $1/2$ " lock washers. Refer to **Figure 11** and **Drawing A-1052539** in **Appendix B**.

Note: I-beams must have a flange thickness of $1/4$ " - $3/4$ ". If flange thickness is greater than $3/4$ ", longer bolts will be required at added expense.

1. Position the ad panel at the front of the beams, and lift it to the desired height.
2. Slide a lock washer, flat washer, and I-beam clamp onto the bolt, and loosely screw the bolt into the spring nut.
3. Position each I-beam clamp assembly as close to the I-beam flanges as possible.
4. Make final adjustments in the positioning of the ad panel to ensure it is flush and level, and firmly tighten all of the bolts.

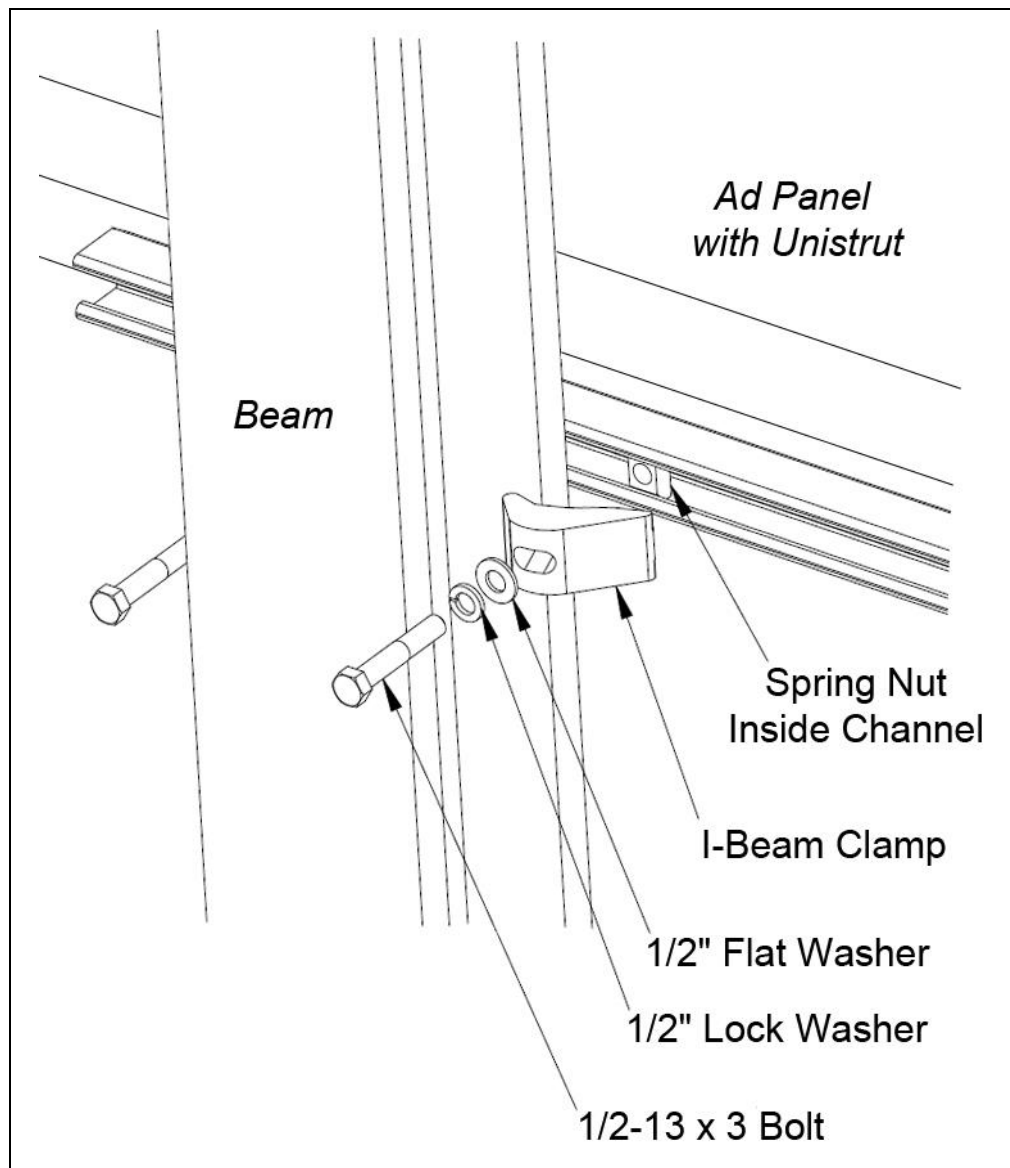


Figure 11: Ad Panel Mounting with I-beam Clamps, Rear Isometric View

Clamping Angles

Mounting hardware includes rear clamping angles; 1/2-13 x 24" threaded rods; and 1/2" nuts, flat washers, and lock washers. Refer to **Figure 12** and **Drawing A-1052388** in **Appendix B**.

Note: The threaded rods do not pass through the beams; they run along both sides.

1. Screw a threaded rod into each of the spring nuts as far as it will go.
2. Position the scoreboard at the front of the beams, and lift it to the desired height.
3. Slide clamping angles over the ends of the rods and loosely install the washers and nuts.
4. Make final adjustments in the positioning of the ad panel to ensure it is flush and level, and firmly tighten all of the 1/2" hex nuts.

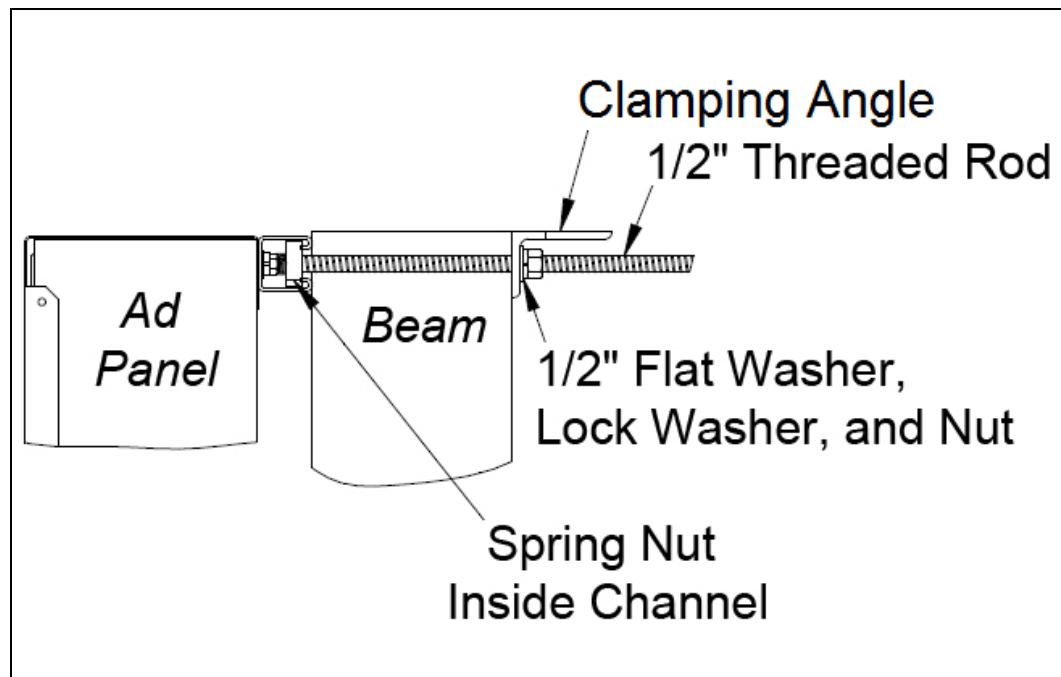


Figure 12: Ad Panel Mounting with Clamping Angles, Side View

2.5 Scoreboard Protective Devices

Daktronics makes optional protective devices, including screens and netting, to help prevent damage to the scoreboard due to normal ball impacts.

Note: Some users install devices to protect the scoreboard 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.

Section 3: Electrical Installation

CAUTION: Only qualified individuals should terminate power and signal cable and access the electrical components of the display and its associated equipment. It is the responsibility of the electrical contractor to ensure that all electrical work meets or exceeds local and national codes.

Daktronics engineering staff must approve all changes or the warranty will be void.

3.1 Single-Court Installation Overview

The diagram shown in **Figure 13** illustrates a typical wireless setup between a single-court tennis scoreboard and the control system. Daktronics part numbers are shown in parentheses. **Drawings A-177098** and **A-252412** in **Appendix B** also show power and signal layouts.

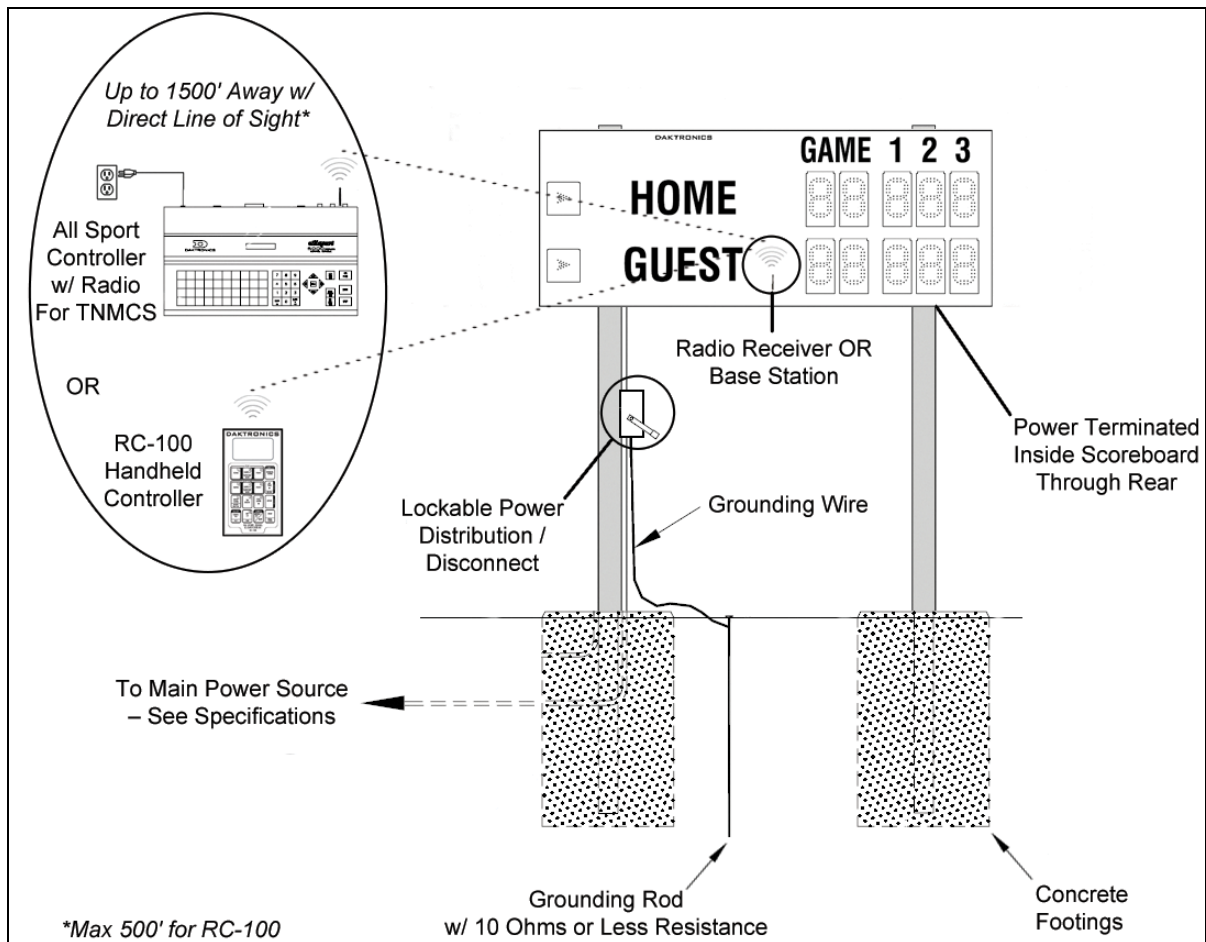


Figure 13: Wireless Installation

The diagram shown in **Figure 14** illustrates a typical wired setup between a single-court tennis scoreboard and the control system. Daktronics part numbers are shown in parentheses.

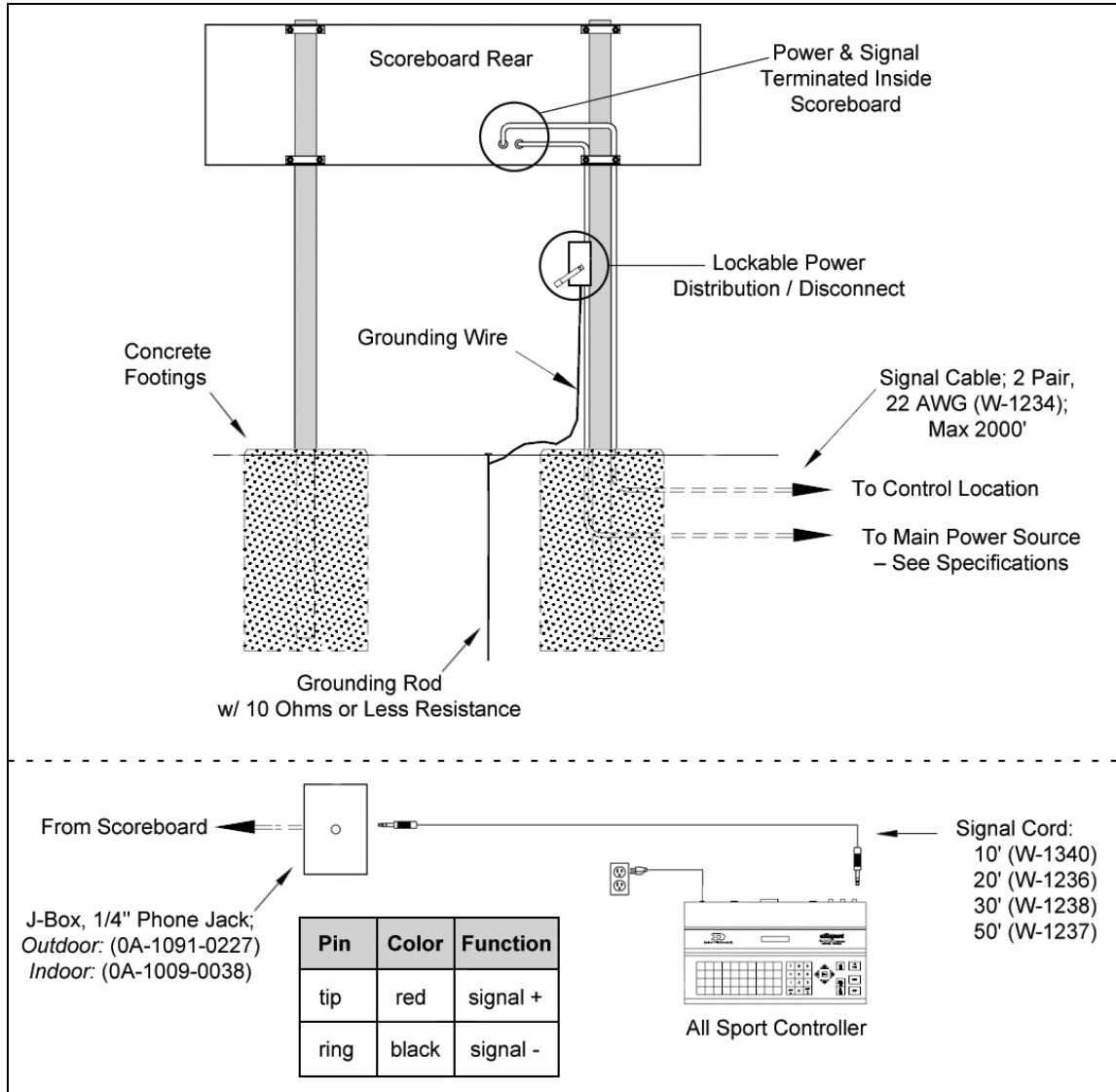


Figure 14: Wired Installation

3.2 Multi-Court Installation Overview

The diagram shown in **Figure 15** illustrates a typical wireless setup between a multi-court scoreboard and the control system. Daktronics part numbers are shown in parentheses. See also **Drawing B-233254** in **Appendix B**.

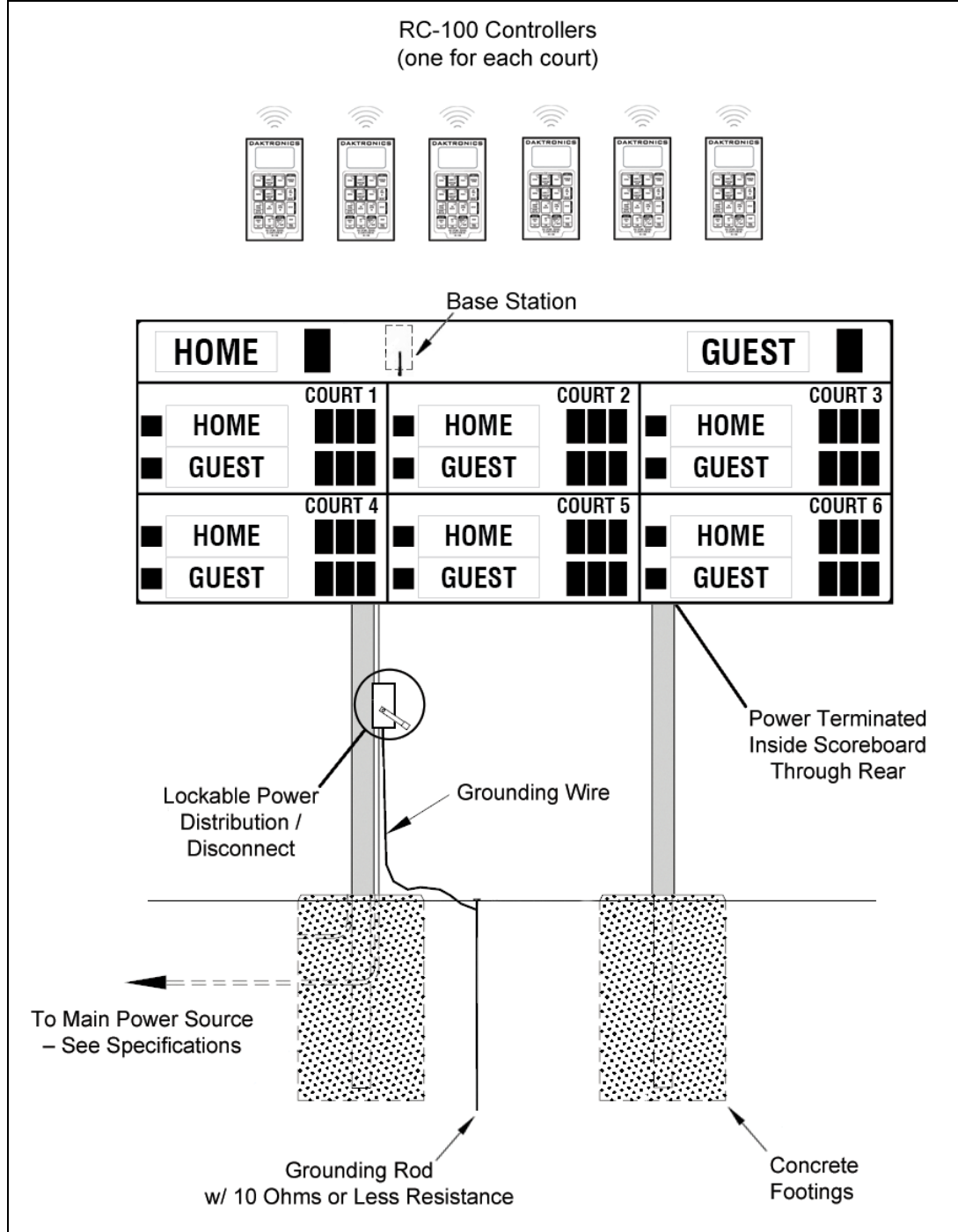


Figure 15: Multi-Court Installation

The diagram shown in **Figure 16** illustrates a typical setup between a multi-court scoreboard, optional single-court scoreboards, and the DakTennis control system when using optional team name message centers (TNMCs). Daktronics part numbers are shown in parentheses. See also **Drawing B-281236** and **Drawing A-1040167** in **Appendix B**.

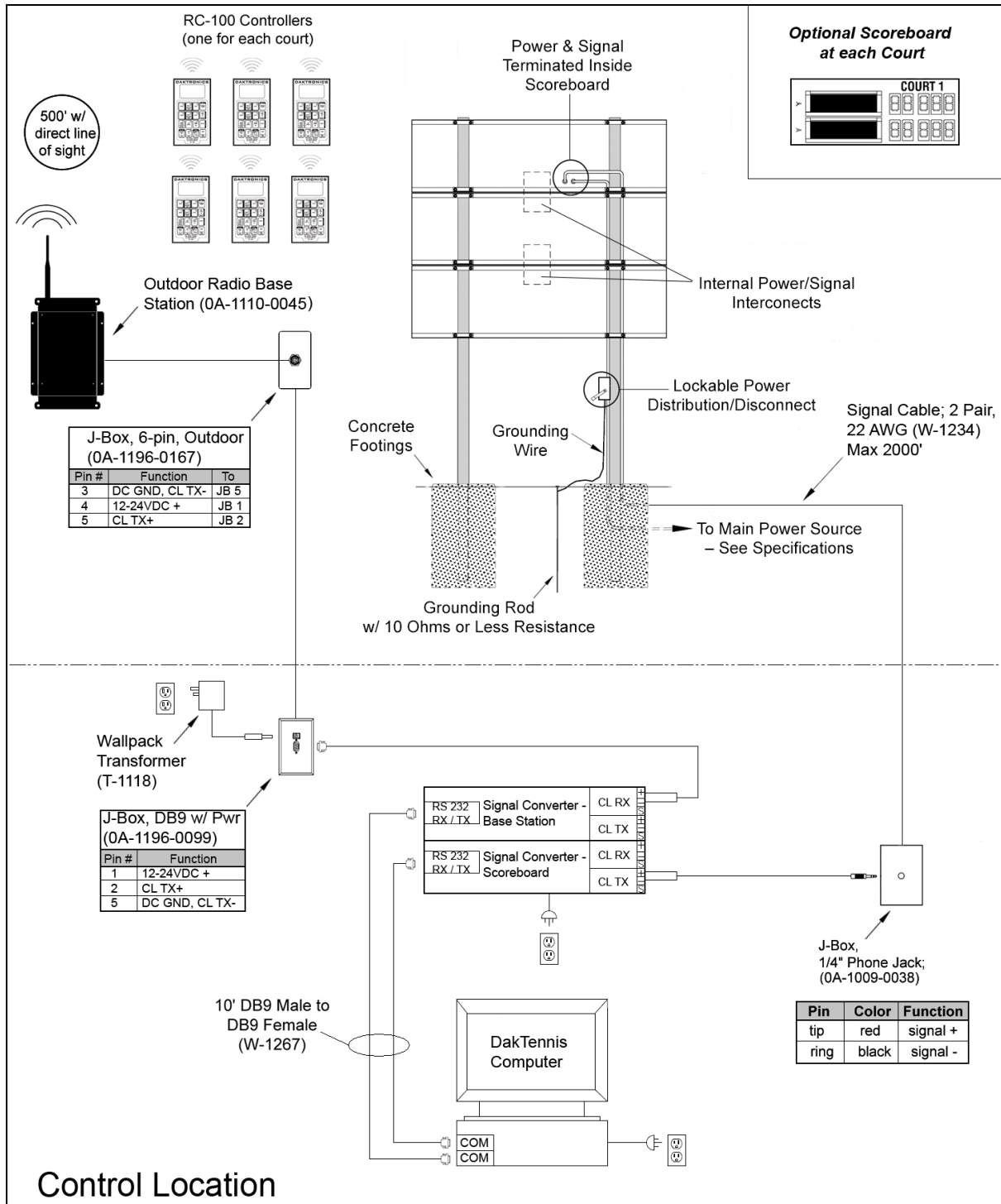


Figure 16: Multi-Court Installation w/ TNMCs

Note: If there is a wireless connection from DakTennis to the scoreboard, refer to **Drawing B-1077063**.

When several single-court scoreboards are used together with a multi-court DakTennis™ scoreboard system, the scoreboards on each court must be manually set to specific driver addresses. Refer to the Service Manual for information on setting driver addresses.

Instead of a single signal cable coming from the control location, there may be one for every additional scoreboard at each court. Alternately, there may be signal cable “daisy-chained” between single-court scoreboards.

3.3 Power

Correct power installation is imperative for proper display operation. The subsections that follow give details of display 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 or injury to personnel.

- Single-court outdoor tennis scoreboards require a dedicated 120 V or 240 V circuit for incoming power.
- Multi-court outdoor tennis scoreboards require a dedicated 120/240 VAC single phase circuit for incoming power. A 120/208-2P circuit is also acceptable.

WARNING: It is critical that 120 V scoreboard circuits be fused at 15 A and that all conductors used must be designed to pass a 15 A current in normal operation. For 240 V scoreboards, consult local electrical codes. Failure to meet wiring and overcurrent protection device requirements will void the scoreboard warranty.

Grounding

The display must be properly grounded according to local and national codes or the warranty will be void. Proper grounding is necessary for reliable equipment operation and protects the equipment from damaging destructive disturbances and lightning.

Daktronics recommends a resistance-to-ground of 10 ohms or less. The electrical contractor performing the electrical installation can verify ground resistance. Daktronics Sales and Service personnel can also provide this service.

The display system must be earth-ground. The material for an earth-ground electrode differs from region to region and may vary according to conditions present at the site. Consult local and national electrical codes.

Daktronics does not recommend using the support structure as an earth-ground electrode; concrete, primer, corrosion, and other factors make the support structure a poor ground.

Note: The support structure may be used as an earth-ground electrode only if designed to do so. A qualified inspector must approve the support structure and grounding methods.

There are two types of 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. In this circumstance, do not connect neutral to ground at the disconnect or at the display as this would violate electrical codes and void the warranty. Use a disconnect so that all ungrounded lines 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.

Single-Court Power Connection

Both power and signal cables are routed into the scoreboard from the rear through two plastic plugs for conduit connection. All power and signal wiring terminates at the master driver enclosure. Note that systems with radio control do not require external signal wiring.

Look for a warning label similar to **Figure 17** to locate the front access panel to the driver enclosure. Refer to the component location drawings attached to the product specification sheets listed in **Appendix A** for precise power/signal termination location for each model. Remove the screws or loosen the latches to open the access door panel. Remove the metal cover of the driver enclosure to expose the driver components (**Figure 18**).



Figure 17: Power Warning Label

Connect the appropriate wires coming through the rear of the scoreboard to the power terminal block, as shown in **Figure 18**.

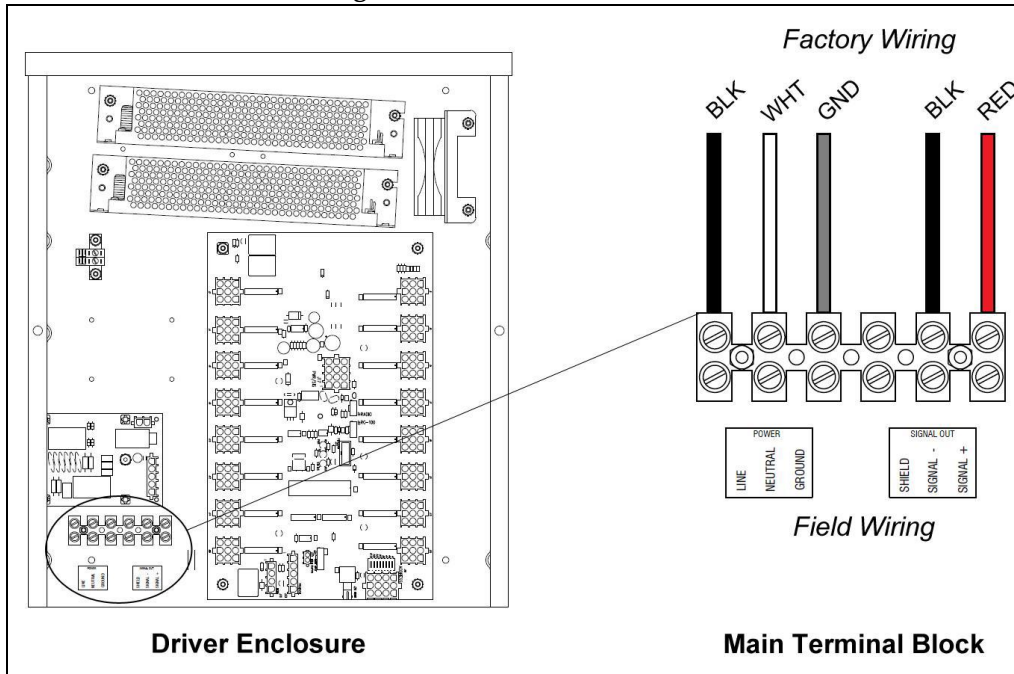


Figure 18: Driver Enclosure & Power Terminal Block

Note: If a power receptacle is needed to operate the control console at the scoreboard for troubleshooting, Daktronics recommends that an installation electrician provides a 120 V outlet close to the disconnect box specifically for this purpose.

Multi-Court Power Connection

Daktronics multi-court tennis scoreboards have a built-in breaker for power termination. Refer to the component location drawings in **Appendix A** for precise power/signal termination location for each model.

1. Route the power cables via conduit into rear of scoreboard.
2. Look for a warning label similar to **Figure 17** to locate the appropriate access panel to the power breaker enclosure.
3. Loosen the screws or latches to open the access panel.
4. Route the power cables up through the bottom of the enclosure.
5. Use a flathead screwdriver to rotate the two latches $\frac{1}{4}$ turn, and then remove the enclosure cover.
6. Connect the power cables as follows and shown in **Figure 19**:

- neutral (white) wire to NEUT.
- live wires to LINE 1 (black) and LINE 2 (red)
- ground wire (green/yellow) to the grounding buss bar, E41

7. Reattach the metal enclosure cover and secure the access panel.

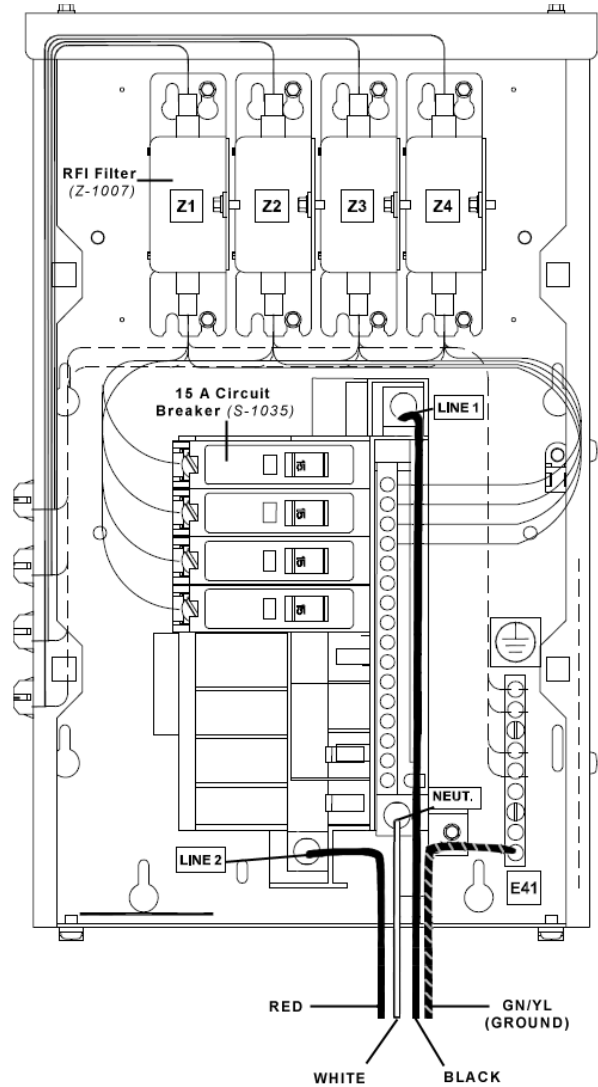


Figure 19: Multi-Court Power Termination (120/240 V)

3.4 Power-On Self-Test (POST)

The scoreboard performs a self-test each time that power is turned on and the control console is powered off or not attached to the scoreboard. If the control console is attached and powered on, the self-test does not run, and data from the control console is displayed on the scoreboard after a brief period of time. Each scoreboard self-test pattern will vary depending on the scoreboard model, the number of drivers and types of digits. **Figure 21** shows an example of the LED bar test pattern that each digit performs.

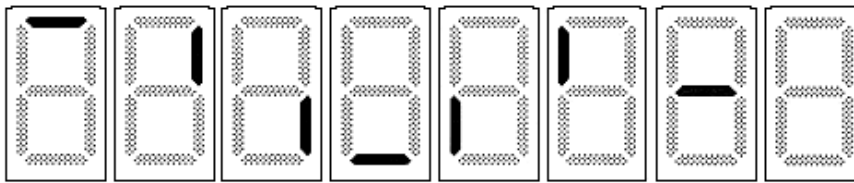


Figure 21: Digit Segment POST

Radio Settings

During the POST, the radio channel settings will be displayed on the scoreboard (Figure 20). When using the RC-100 controller, the scoreboard will display “CXX”, where the XX is a channel from 01-15.

Scoreboards that do not show game score will only display the second digit of the channel number. If an optional Time of Day clock is installed, the radio settings will appear there.

For single-court scoreboards using the All Sport 5000 controller, the scoreboard will display “bX CY” where X is the Broadcast group number and Y is the Channel number. Scoreboards that do not have game scores will only display the channel number.

Note: If these settings do not appear, the radio receiver(s) may need to be repaired/replaced. The TN-2605 is unable to display radio settings.

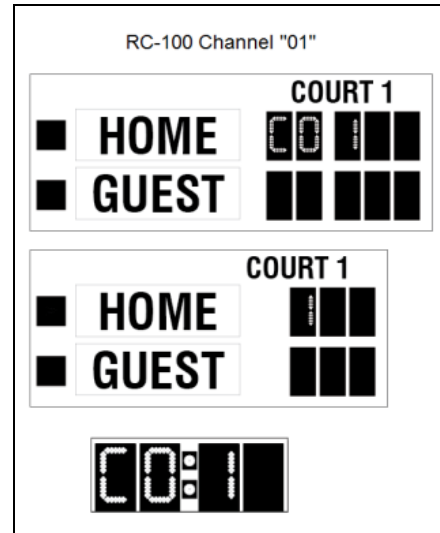


Figure 20: RC-100 Radio Settings

These values must match the settings within the console. Refer to the appropriate control console manual listed in Section 1.1.

3.5 Signal Connection

For scoreboards using a wired setup, route signal cable through the conduit knockout on the rear of the scoreboard to the signal surge arrestor card (Figure 22), located just above the power termination block in the driver enclosure.

At the SIGNAL IN terminal block, connect red signal wire to positive (+) and black signal wire to negative (-).

Note: Be sure to properly connect the shield (silver) wire to the SHIELD terminal.

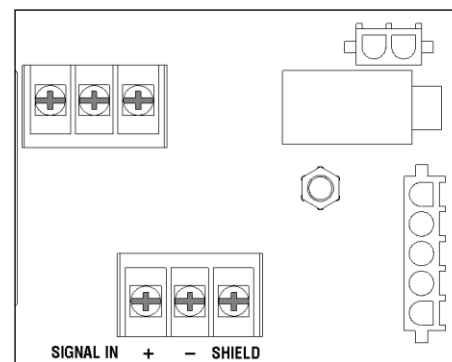


Figure 22: Signal Surge Arrestor Card

For signal cable, Daktronics recommends, as a minimum, single-pair, shielded cable, 22 AWG (part # W-1077). Two-pair shielded cable (part # W-1234) is preferred. For multi-court scoreboards using team name message centers (TNMCs), signal installation also requires an enclosed wireless base station to receive the signal from the handheld RC-100 controllers, a computer running DakTennis™ software, and signal converters to receive and transmit the scoring data. Refer to Figure 16 for a typical setup diagram.

Fiber Optic

Another common signal communication method is fiber optic cabling. A minimum cabling of multi-mode, 62.5/125 um, and 2-core fiber cable is recommended (part # W-1242). See **Figure 23** for the location of the fiber connector on a 16-column driver. This method requires a signal converter between the All Sport console's scoreboard output and the fiber optic cable (not provided by Daktronics).

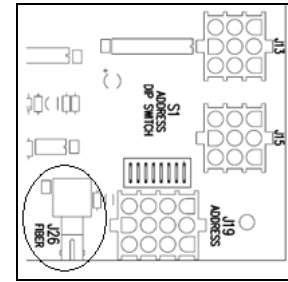


Figure 23: Driver Fiber Connection Location

3.6 Power/Signal Between Sections

Multi-court scoreboard models require multiple drivers in each scoreboard section, and use a master/slave driver system. When one section has multiple drivers, they simply plug into one another, and this is done at the factory. Drivers between sections, however, require additional on-site connection as described below.

Three-Section Models

The primary driver and power panel will be located in the top section. Refer to the component location drawings attached to the product specification sheets listed in **Appendix A** for exact driver locations.

Open access panels as needed to locate the coiled bundles of interconnect cable, then route and connect the cables as described below and shown in **Figure 24**.

1. Route the interconnect cable labeled P51 coming from the A2 driver in the middle section up into the top section and connect it to the J51 jack coming from the power panel and A1 driver.
2. Route one end of the other interconnect cable labeled P51 from the middle section up into the top section and connect it to the J50 jack coming from the power panel and A1 driver.
3. Route the other end of the interconnect cable labeled J52 from the middle section down into the bottom section and connected to the P52 plug coming from the A5 driver.

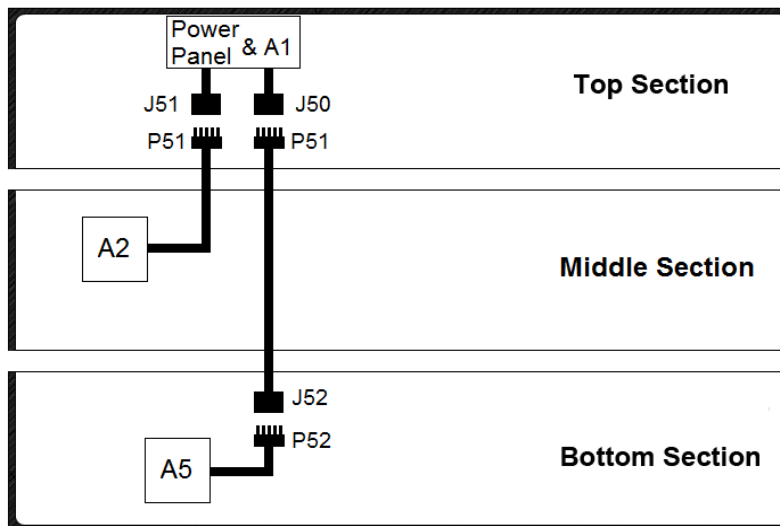


Figure 24: Power/Signal Connection – TN-2650 & TN-2651

Four-Section Models

The primary driver and power panel will be located in the top section (Section A). Refer to the component location drawings attached to the product specification sheets listed in **Appendix A** for exact driver locations.

Open access panels as needed to locate the coiled bundles of interconnect cable, then route and connect the cables as described below and shown in **Figure 24**.

1. Route the interconnect cable labeled P50 coming from the A3 driver in Section B up into Section A and connect it to the J50 jack coming from the power panel.
2. Route one end of the interconnect cable labeled P51 from Section B up into Section A and connect it to the J51 jack coming from the power panel.
3. Route one end of the interconnect cable labeled P52 from Section B up into Section A and connect it to the J52 jack coming from the power panel.
4. Route the interconnect cable labeled P51 coming from the A5 driver in Section C up into Section B and connect it to the interconnect cable labeled J51.
5. Route the interconnect cable labeled P52 in Section C up into Section B and connect it to the interconnect cable labeled J52.
6. Route the interconnect cable labeled P53 coming from the A7 driver in Section D up into Section C and connect it to the interconnect cable labeled J53.

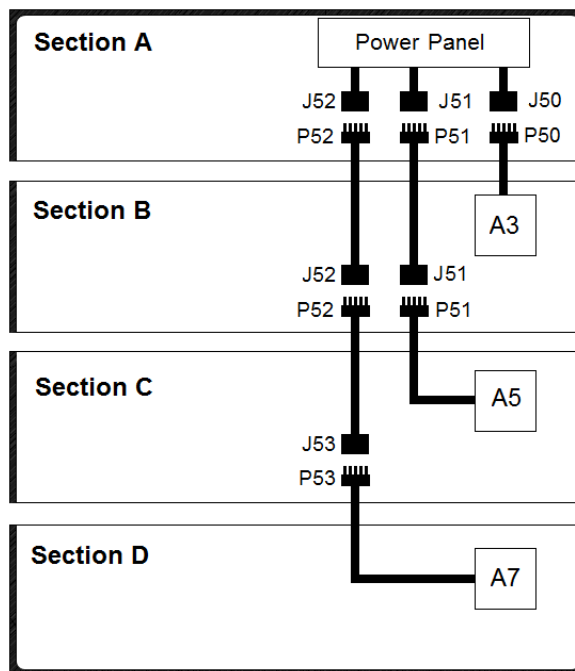


Figure 25: Power/Signal Connection – TN-2652 & TN-2653

3.7 Lightning Protection

The use of a disconnect near the scoreboard to completely cut all current-carrying lines significantly protects the circuits against lightning damage. 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 circuitry.

Section 4: Daktronics Exchange and Repair & Return Programs

4.1 Exchange Program

The Daktronics Exchange Program is a service for quickly replacing key components in need of repair. If a component fails, Daktronics sends a replacement part to the customer who, in turn, returns the failed component to Daktronics. This decreases equipment downtime. Customers who follow the program guidelines explained below will receive this service.

Before Contacting Daktronics

Identify these important numbers:

Display Serial Number: _____
Display Model Number: _____
Job/Contract Number: _____
Date Installed: _____
Daktronics Customer ID Number: _____

To participate in the Exchange Program, follow these steps.

1. Call Daktronics Customer Service.

Market Description	Customer Service Number
Schools (including community/junior colleges), religious organizations, municipal clubs and community centers	877-605-1115
Universities and professional sporting events, live events for auditoriums and arenas	866-343-6018

2. When the new exchange part is received, mail the old part to Daktronics.

If the replacement part fixes the problem, send in the problem part being replaced.

- a. Package the old part in the same shipping materials in which the replacement part arrived.
- b. Fill out and attach the enclosed UPS shipping document.
- c. Ship the part to Daktronics.

3. The defective or unused parts must be returned to Daktronics within 5 weeks of initial order shipment.

If any part is not returned within five (5) weeks, a non-refundable invoice will be presented to the customer for the costs of replenishing the exchange parts inventory with a new part.

Daktronics reserves the right to refuse parts that have been damaged due to acts of nature or causes other than normal wear and tear.

4.2 Repair & Return Program

For items not subject to exchange, Daktronics offers a Repair & Return Program. To send a part for repair, follow these steps:

1. **Call or fax Daktronics Customer Service:**
Refer to the appropriate market number in the chart listed on the previous page.
Fax: 605-697-4444
2. **Receive a case number before shipping.**
This expedites repair of the part.
3. **Package and pad the item carefully to prevent damage during shipment.**
Electronic components, such as printed circuit boards, should be placed in an antistatic bag before boxing. Daktronics does not recommend using packing 'peanuts' when shipping.
4. **Enclose:**
 - name
 - address
 - phone number
 - the case number
 - a clear description of symptoms

Shipping Address

Daktronics Customer Service
[Case #]
201 Daktronics Drive, Dock E
Brookings, SD 57006

4.3 Daktronics Warranty and Limitation of Liability

The Daktronics Warranty and Limitation of Liability is located in **Appendix C**. The Warranty is independent of Extended Service agreements and is the authority in matters of service, repair, and display operation.

Appendix A: Specifications

All of the product specification sheets for the scoreboards in this manual are listed below. Product-specific installation and component location drawings are included with each spec sheet.

Note: Refer to **Figure 1** to determine a scoreboard's model number.

Model	Spec Sheet	Model	Spec Sheet
TN-2601	DD1104421	TN-2650	DD2731388
TN-2603	DD2731384	TN-2651	DD2731389
TN-2604	DD2731386	TN-2652	DD2731390
TN-2605	DD2731387	TN-2653	DD2731391
TN-2606	DD1073328	TN-2654	DD2731393
TN-2607	DD1073391	TN-2655	DD2731394
		TN-2656	DD2731397
		TN-2657	DD2731399

Viewing Product Specifications Online

If a specification sheet is incorrect or missing, they are all available for download online.

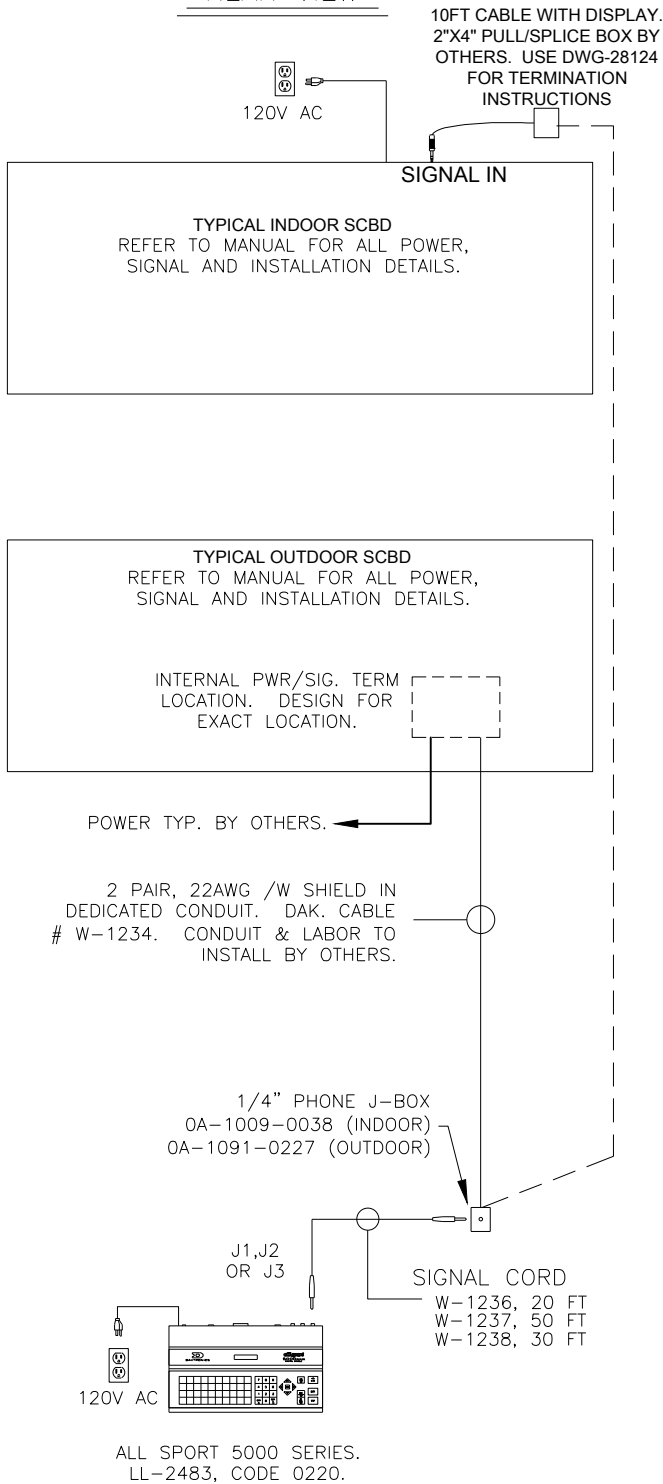
- When viewing the digital version of this manual, simply click a link above to open it.
- When referencing the printed version of this manual, open an Internet browser and go to <http://www.daktronics.com/Web%20Documents/HSPR-Documents/DD#####.pdf> (replace "DD#####" with one of the Spec Sheet numbers shown above).

Appendix B: Reference Drawings

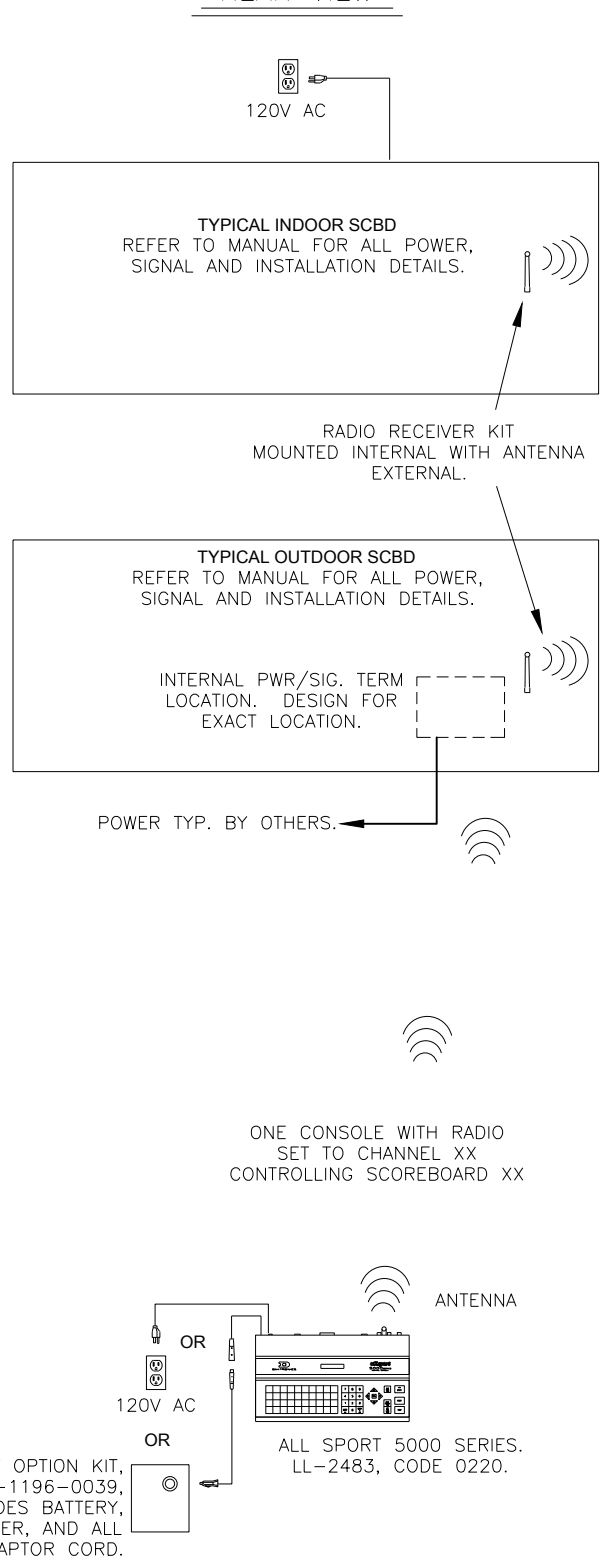
<i>Drawing Title</i>	<i>Drawing Number</i>
System Riser; Tennis; Single Court w/ TNMC, AS 5000	A-177098
System Riser; Tennis; Multi-Court, RC-100 Direct	B-233254
System Riser; Tennis; Indoor/Outdoor Single Court, RC-100	A-252412
System Riser; Tennis; Outdoor Multi-Court DakTennis, CG	B-281236
System Riser; Tennis; DakTennis & Remote Base Station.....	A-1040167
P1647; Pole Mounting Options	A-1048184
Ad Panel Pole Mounting	B-1052388
Ad Panel Rocker Clamp Mounting.....	B-1052539
P1647; Rocker Clamp Mounting.....	A-1052565
System Riser; Tennis; Multi-Court, DakTennis, Radio, CG.....	B-1077063
I-Beam Clamp Mounting, Sheet Metal Attachment	B-1129110
Scoreboard Mounting	A-1130246

Note: Site-specific system diagrams take precedence over any general setup drawings listed.

WIRE COMMUNICATION
REAR VIEW



RADIO COMMUNICATION
REAR VIEW

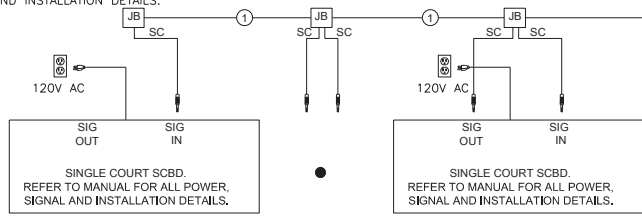


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	DO NOT SCALE DRAWING	

REV 03	DATE: 26 SEP 12	UPDATED BOARD AND TITLE BLOCK REMOVED PART NUMBER FROM THE RADIO RECIEVER TAG SO WE CAN USE MORE GENERATIONS	BY: MWM
REV 02	DATE: 23AUG05	REMOVED ALL SPORT 1600 SERIES CONTOLLER CHANGED NAME OF DRAWING	BY: TAJ
REV 01	DATE: 28 MAY 03	SEPERATED THE WIRE AND THE RADIO ILLUSTRATIONS.	BY: MWM

PROJ: TENNIS SCOREBOARDS			
TITLE: SYSTEM RISER; TENNIS; SINGLE COURT W/ TNMC, AS 5000			
DESIGN: MMILLER		DRAWN: MMILLER	
SCALE: NONE			
SHEET	REV	JOB NO:	FUNC-TYPE-SIZE
	03	P 1164	R - 01 - A
			177098

INDOOR SCOREBOARD LAYOUT
REFER TO MANUAL FOR ALL POWER, SIGNAL AND INSTALLATION DETAILS.

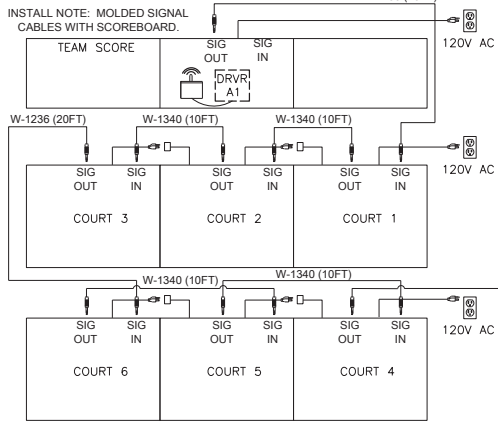


JB & SC 10FT CABLE WITH DISPLAY. 2"x4" PULL/SPLICE BOX BY OTHERS. USE DWG-28124 FOR TERMINATION INSTRUCTIONS

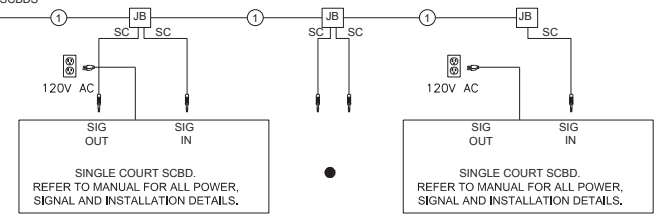
SB 2"x4" PHONE JACK J-BOX. 0A-1009-0038 BY DAKTRONICS. INSTALL BY OTHERS.

① 2 PAIR, 22AWG W/ SHIELD IN DEDICATED CONDUIT. DAK. CABLE # W-1234. CONDUIT & LABOR TO INSTALL BY OTHERS

REAR VIEW



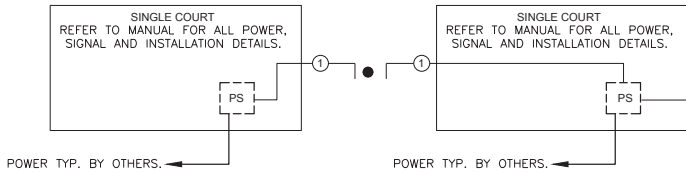
ADD ONLY FOR SINGLE COURT SCBDS



ADD ONLY FOR SINGLE COURT SCBD SECTIONS W-1236 (20FT)

OUTDOOR SCOREBOARD LAYOUT

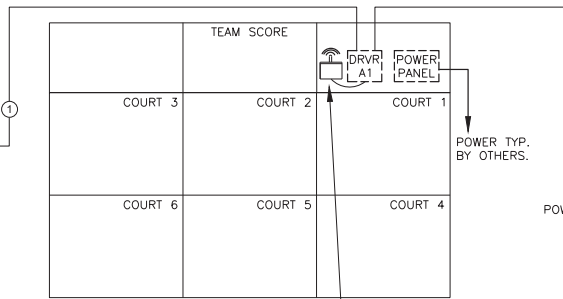
REFER TO MANUAL FOR ALL POWER, SIGNAL AND INSTALLATION DETAILS.



POWER TYP. BY OTHERS.

POWER TYP. BY OTHERS.

REAR VIEW



POWER TYP. BY OTHERS.

POWER TYP. BY OTHERS.

POWER TYP. BY OTHERS.

PS INTERNAL PWR/SIG. TERM LOCATION. EXACTLY LOCATION IS DETERMINED BY MODEL PURCHASED.

① 2 PAIR, 22AWG W/ SHIELD IN DEDICATED CONDUIT. DAK. CABLE # W-1234. CONDUIT & LABOR TO INSTALL BY OTHERS

0A-1110-0035
FUNCTION SETTING = 5

NOTE: RC-100 SCOREBOARD RECEIVER BASE STATION IS TYPICALLY LOCATED BEHIND THE FRONT ACCESS LOCATION OF DISPLAY FOR BOTH INDOOR AND OUTDOOR.

RC-100 AT EACH COURT. COMMUNICATION TO MAIN MULTI-COURT RECEIVER.



0A-1110-0053
CODE: 08
INSERT: LL-2607
TYP. ⑥6

NOTE: THE 6 RC-100 CONTROLLERS USE CHANNELS 1-15. HOWEVER, THE BASE STATION AND HAND HELD CONTROLLERS MUST BE OPERATING ON THE SAME CHANNEL.

FUNCTION NUMBER	DESCRIPTION
0	DEFAULT FUNCTION (LAST POWER UP FUNCTION) CAN HAND HELD (JUDGES) CONSOLE
2	BASEBALL/TENNIS SCOREBOARD CONTROLLER GEN I (ALLSPORT)
3	DATETIME/DATAMASTER DISPLAY CONTROL
5	BASEBALL/TENNIS SCOREBOARD CONTROLLER GEN II (ALLSPORT)

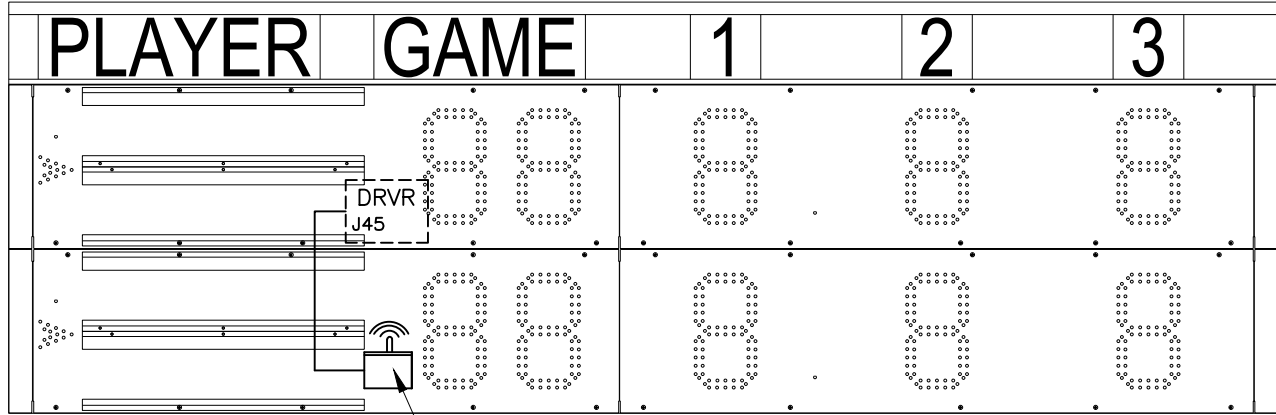
REV	DATE	DESCRIPTION	BY
05	02 DEC 13	MOVED POWER AND SIGNAL CABLES TO THE MIDDLE SECTION OF THE TOP TEAM SCORE SCOREBOARD	ACB
04	08 OCT 12	UPDATE BOARD TO B-SIZE. SHOW INDOOR AND OUTDOOR DETAIL UPDATES	MWM
03	27 APR 12	UPDATED RC-100 HANDHELD PART NUMBER UPDATED BOARDER AND TITLE BLOCK	JFL
02	15 JAN 07	ADDED FUNCTION 5 GEN II	JRA
01	23AUG05	ADDED 6 COURT SCORING DIAGRAM CHANGED NAME OF DRAWING	TJL

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PROJ: TENNIS SCOREBOARDS			
TITLE: SYSTEM RISER; TENNIS; MULTI-COURT, RC-100 DIRECT			
DESIGN:	DRAWN: RTAGTOW	DATE: 02 FEB 05	
SCALE: NONE	REV	JOB NO.	FUNC-TYPE-SIZE
SHEET	05	P1164	R-01-B
			233254

NOTE:
 SAMPLE SCOREBOARD MODEL SHOWN. SEE
 SPECIFICATION MATERIAL ON MODEL PURCHASED.



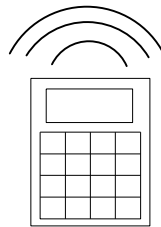
0A-1110-0035
 FUNCTION SETTING = 5

NOTE: RC-100 SCOREBOARD RECEIVER
 BASE STATION IS LOCATED BEHIND THE
 FRONT ACCESS PANEL OF DISPLAY.


NOTE:
 THE WIRELESS BASE STATION COMES PRE-SET TO
 CHANNEL 1. HOWEVER, CHANNELS 1-15 CAN BE
 USED.

FUNCTION TABLE

FUNCTION NUMBER	DESCRIPTION
0	DEFAULT FUNCTION (LAST POWER UP FUNCTION)
1	CAN HAND HELD (JUDGES) CONSOLE
2	BASEBALL/TENNIS SCOREBOARD CONTROLLER GEN I (ALLSPORT)
3	DATETIME/DATAMASTER DISPLAY CONTROL
5	BASEBALL/TENNIS SCOREBOARD CONTROLLER GEN II (ALLSPORT)



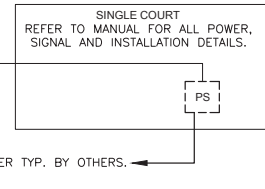
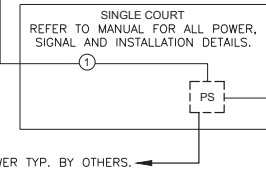
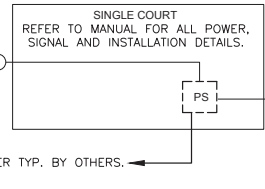
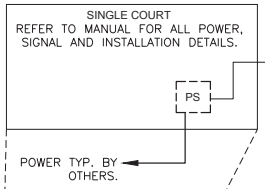
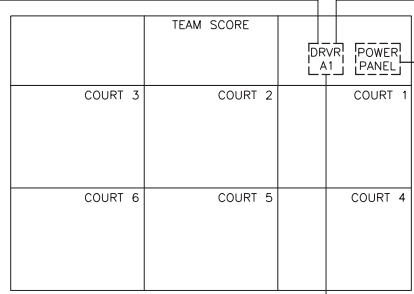
0A-1110-0053
 INSERT: LL-2607 (TENNIS) CODE 08

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	DO NOT SCALE DRAWING	
PROJ: TENNIS SCOREBOARDS TITLE: SYSTEM RISER; TENNIS; INDOOR/OUTDOOR SINGLE COURT, RC-100		
DESIGN: SCALE: NONE	DRAWN: TJOHNSON JOB NO: P1164	DATE: 29AUG05 FUNC-TYPE-SIZE: R-01-A
SHEET: 02 REV: 02	JOB NO: P1164	252412

REV 02	DATE: 27 APR 12	UPDATED RC-100 HANDHELD PART NUMBER UPDATED BOARDER AND TITLE BLOCK	BY: JFL
01	22 OCT 09	UPDATED FUNCTION SETTING AND TABLE. ALSO ADDED NOTE ABOUT SCOREBOARD.	EJS

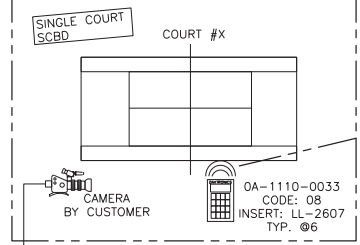
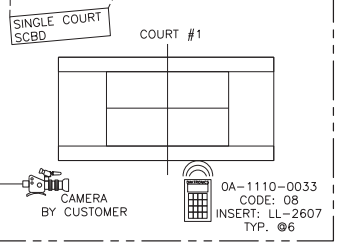
OUTDOOR SCOREBOARD LAYOUT
REFER TO MANUAL FOR ALL POWER,
SIGNAL AND INSTALLATION DETAILS.

REAR VIEW



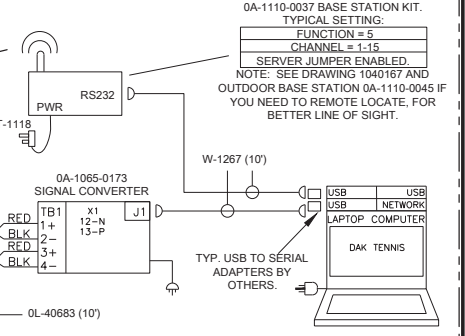
PS INTERNAL PWR/SIG. TERM LOCATION. EXACTLY LOCATION IS DETERMINED BY MODEL PURCHASED.

① 2 PAIR, 22AWG /W SHIELD IN DEDICATED CONDUIT. DAK. CABLE # W-1234. CONDUIT & LABOR TO INSTALL BY OTHERS

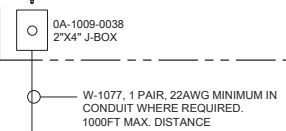
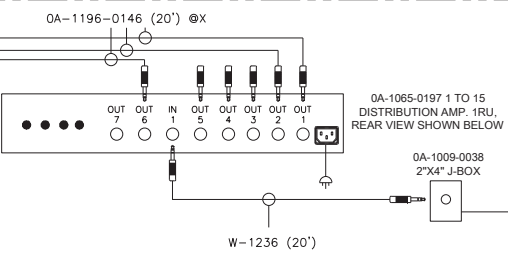
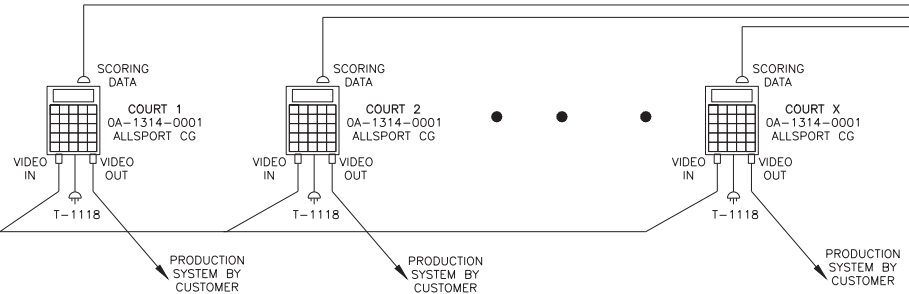


NOTE: THE 6 RC-100 CONTROLLERS USE CHANNELS 1-15. HOWEVER, THE BASE STATION AND HAND HELD CONTROLLERS MUST BE OPERATING ON THE SAME CHANNEL.

DAK TENNIS CONTROL LOCATION CLEAR LINE OF SIGHT REQUIRED.



PRODUCTION LOCATION ALLSPORT CG SETUP

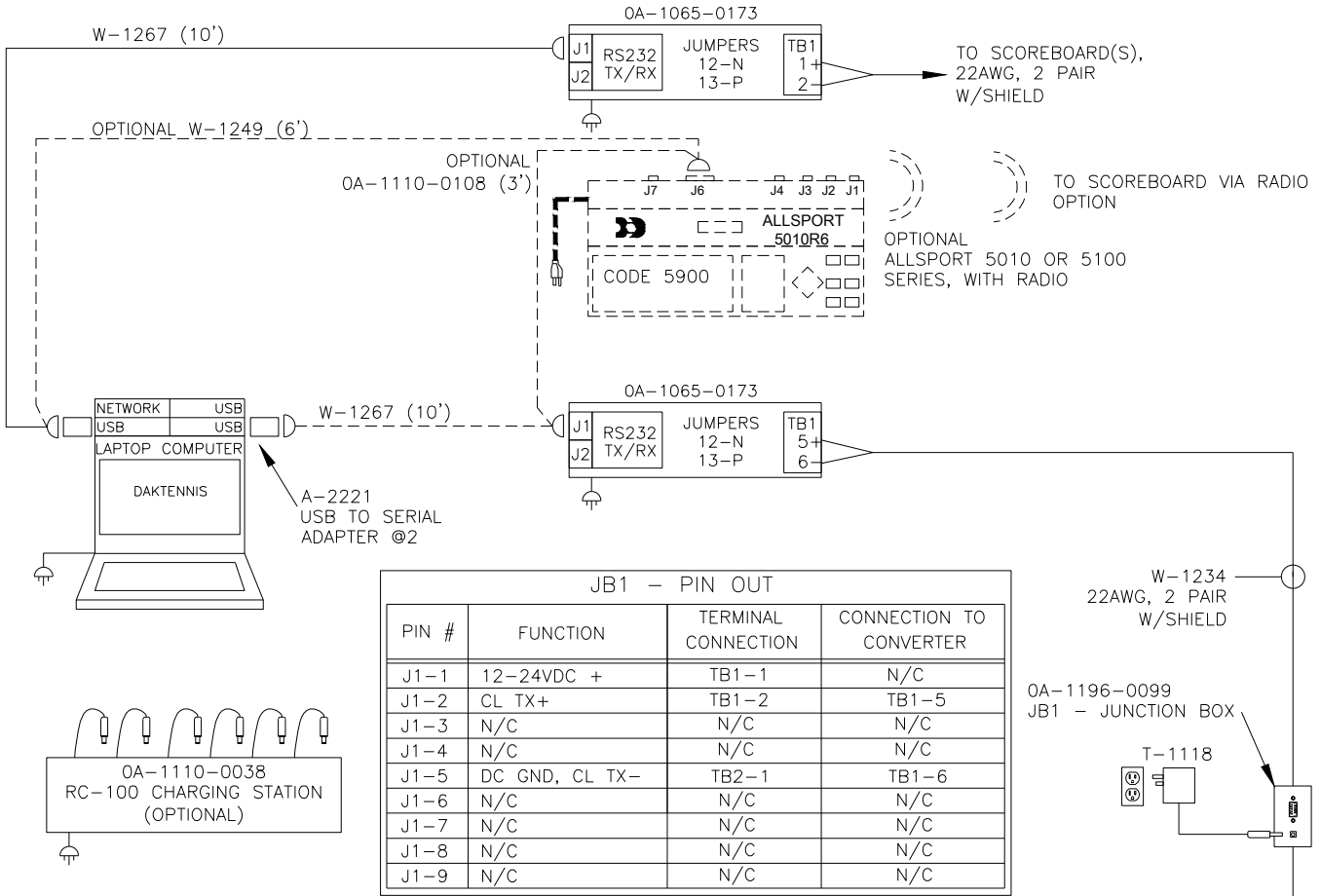


DAKTRONICS, INC.
BROOKINGS, SD 57006
DO NOT SCALE DRAWING

PROJ: TENNIS SCOREBOARDS		DATE: 02 OCT 06	
TITLE: SYSTEM RISER; TENNIS; OUTDOOR MULTI-COURT DAKTENNIS_CG		DESIGN: MMILLER DRAWN: MMILLER	
SCALE: NONE		SHEET 04	
REV 01	DATE 04 JAN 12	REV 04	DATE 04 JAN 12
BY: PJS		BY: MM	
JOB NO: P1164		FLUNC-TYPE-SIZE: R-01-B	
281236			

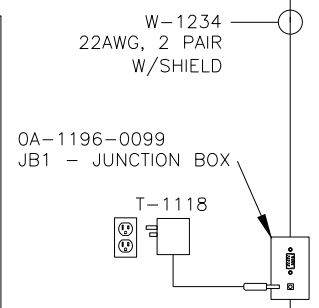
REV 03	DATE 16 OCT 15	UPDATED BASE STATION KIT # TO 0A-1110-0037	BY: PJS
REV 02	DATE 09 OCT 12	UPDATED DRAWING DETAILS TO SHOW THE SCOREBOARD LAYOUTS BETTER	BY: MM
REV 01	DATE 04 JAN 12	ADDED SINGLE COURT SCOREBOARDS	BY: JUL

CONTROL LOCATION



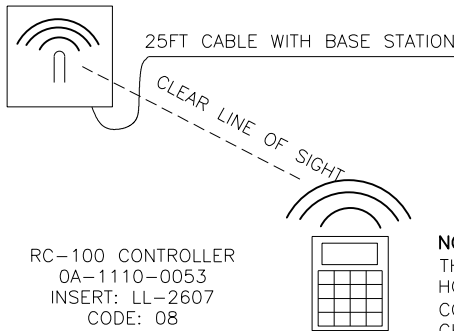
JB1 - PIN OUT

PIN #	FUNCTION	TERMINAL CONNECTION	CONNECTION TO CONVERTER
J1-1	12-24VDC +	TB1-1	N/C
J1-2	CL TX+	TB1-2	TB1-5
J1-3	N/C	N/C	N/C
J1-4	N/C	N/C	N/C
J1-5	DC GND, CL TX-	TB2-1	TB1-6
J1-6	N/C	N/C	N/C
J1-7	N/C	N/C	N/C
J1-8	N/C	N/C	N/C
J1-9	N/C	N/C	N/C



REMOTE LOCATION UP TO 125FT AWAY.

OUTDOOR BASE STATION
 OA-1110-0045
 FUNCTION SETTING = 5
 CHANNEL = (1-15)



W-1234, 22AWG, 2 PAIR W/SHIELD
 MAX 125FT.

JB2 - PIN OUT

PIN #	FUNCTION	TERMINAL CONNECTION
J3-1	RS232 TX +	N/C
J3-2	RS232 RX +	N/C
J3-3	DC GND, CL TX-	TB2-1
J3-4	12-24VDC +	TB1-1
J3-5	CL TX+	TB1-2
J3-6	NOT USED	N/C

OA-1196-0167
 JB2 - JUNCTION BOX

NOTE:
 THE RC-100 CONTROLLER(S) USE CHANNELS 1-15. HOWEVER, THE BASE STATION AND RC-100 CONTROLLER(S) MUST BE OPERATING ON THE SAME CHANNEL. MAX OF 8 RC-100 CONTROLLERS CAN BE USED WITH 1 BASE STATION.

REV	DATE	DESCRIPTION	BY
04	7 JAN 16	UPDATED JB1 & JB2 PIN OUT TABLES	MTR
03	09 MAR 15	ADDED OPTIONAL CABLE OA-1110-0108 TO CONTROL LOCATION	DCS
02	30 JAN 13	ADDED SOME TEXT UPDATES TO THE DATA CABLE RUN FROM JB1 TO JB2. ADDED USB TO SERIAL PART #, AND OPTIONAL ALLSPORT RADIO METHOD.	MWM
01	27 APR 12	ADDED PART NUMBER FOR RC-100 HANDHELD	JFL

DAKTRONICS, INC.
 BROOKINGS, SD 57006

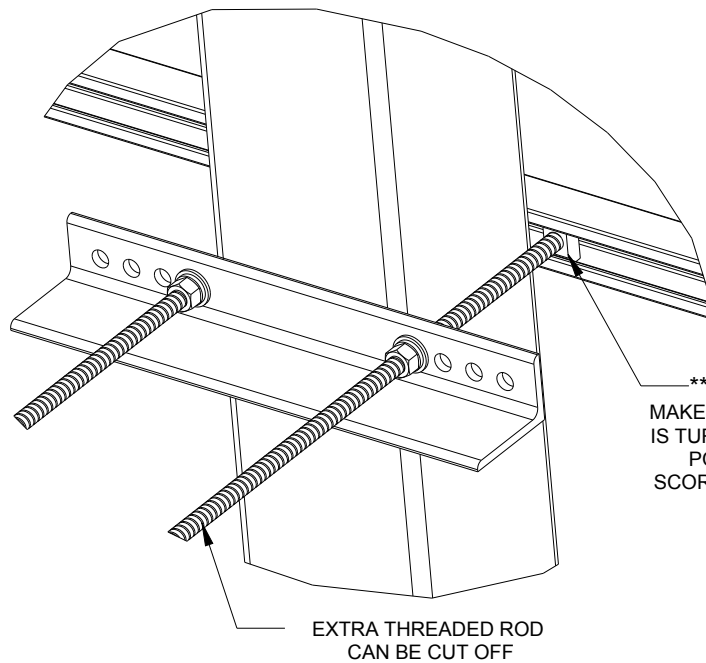
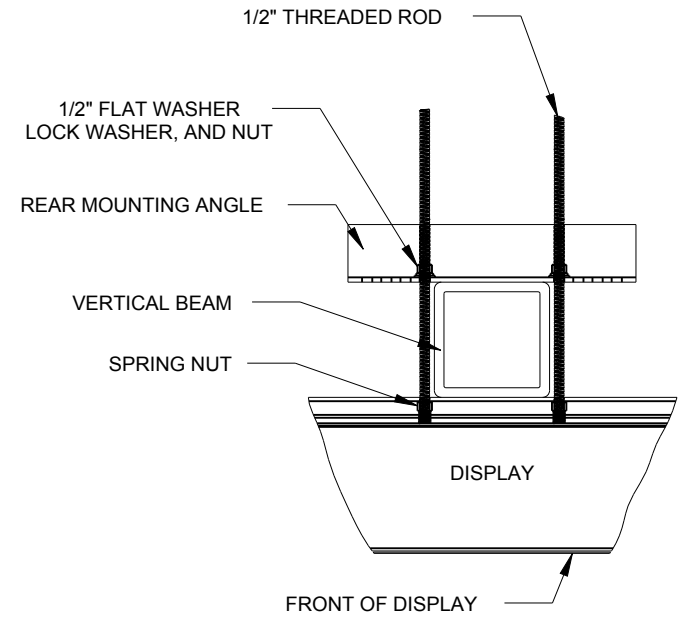
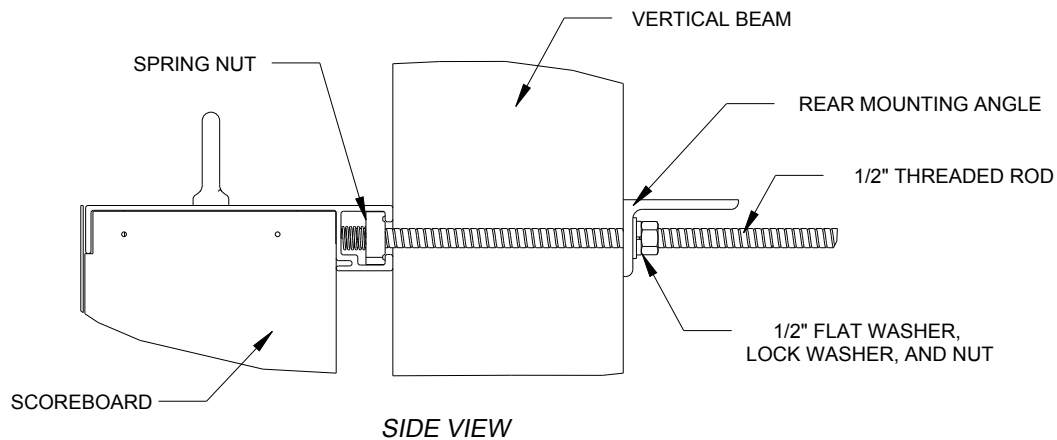
DO NOT SCALE DRAWING

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PROJ: RC-100 TENNIS
 TITLE: SYSTEM RISER; TENNIS; DAKTENNIS & REMOTE BASE STATION
 DESIGN: KBIERBA DRAWN: KBIERBA DATE: 15 DEC 10
 SCALE: NONE

SHEET	REV	JOB NO:	FUNC-TYPE-SIZE
	04	P1110	R-01-A

1040167



CRITICAL
 MAKE SURE SPRING NUT
 IS TURNED TO VERTICAL
 POSITION INSIDE
 SCOREBOARD CHANNEL

REAR ISOMETRIC VIEW

STRUCTURAL NOTES:
 - BOLT TORQUE: 30 FT-LB

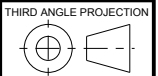
NOTES:
 - THREADED RODS RUN ALONG BOTH SIDES OF BEAM
 - RODS DO NOT PASS THROUGH THE FLANGES OF THE BEAM
 - NO DRILLING NECESSARY
 - MAKE SURE SPRING NUT IS PERPENDICULAR TO CHANNEL
 OPENING ON SCOREBOARD

CRITICAL
 DO NOT USE ANY LUBRICANT
 ON ANY MOUNTING HARDWARE
 OR WARRANTY WILL BE VOIDED

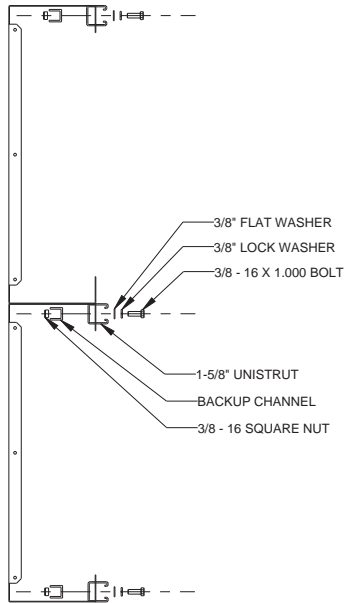
04	22 DEC 15	ADDED LUBRICANT WARNING	PJS	
03	03 JULY 13	ADDED STRUCTURAL NOTE	TTF	
02	20 SEP 12	PER EC-7114; REMOVED CHAMFER FROM 0M-133259	LMG	
01	06 OCT 11	REPLACED VERTICAL I-BEAM WITH 6" X 6" SQUARE TUBE	JAVA	
REV	DATE:		BY:	



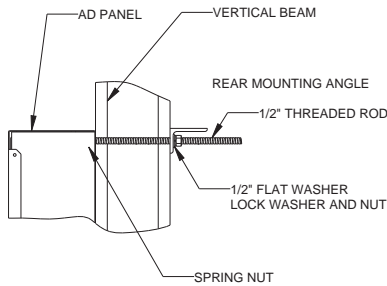
THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS WITHOUT THE EXPRESS WRITTEN CONSENT OF DAKTRONICS, INC. OR ITS WHOLLY OWNED SUBSIDIARIES. COPYRIGHT 2016 DAKTRONICS, INC. (USA)



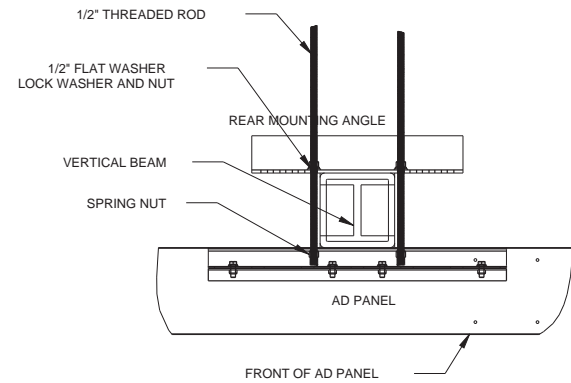
PROJECT: OUTDOOR SCOREBOARDS				
TITLE: P1647; POLE MOUNTING OPTIONS				
DATE: 22-DEC-15	DIM UNITS: INCHES [MILLIMETERS]		SHEET	REV
SCALE: 1/5	DO NOT SCALE DRAWING		1 OF 1	04
DESIGN: DOPPELT	JOB NO.	FUNC - TYPE - SIZE		
DRAWN: DOPPELT	P1647	E - 10 - A	1048184	



EXPLODED SIDE VIEW
UNISTRUT ATTACHMENT

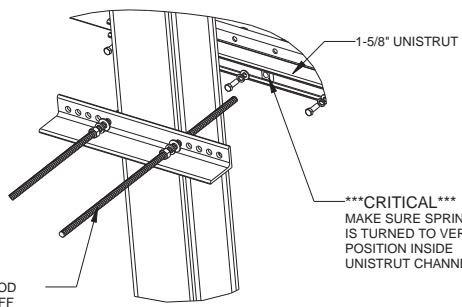


SIDE VIEW
AD PANEL ATTACHMENT



TOP VIEW
AD PANEL ATTACHMENT

*****CRITICAL*****
DO NOT USE ANY LUBRICANT
ON ANY MOUNTING HARDWARE
OR WARRANTY WILL BE VOIDED



EXTRA THREADED ROD
CAN BE CUT OFF

REAR ISOMETRIC VIEW

*****CRITICAL*****
MAKE SURE SPRING NUT
IS TURNED TO VERTICAL
POSITION INSIDE
UNISTRUT CHANNEL

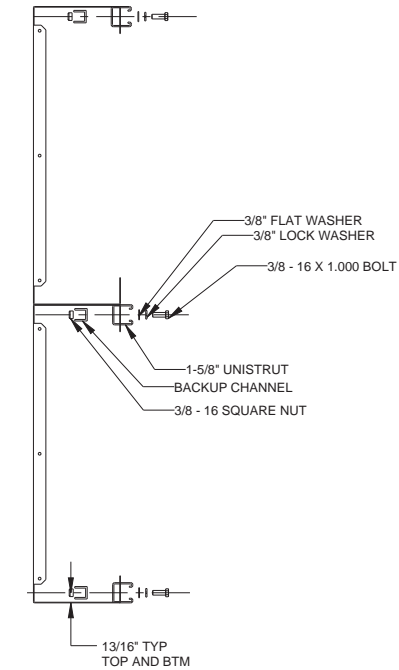
MOUNTING INSTRUCTIONS:

1. USING THE BACKUP CHANNEL AS A TEMPLATE, DRILL $\varnothing 7/16"$ HOLES IN THE UPPER AND LOWER REAR FLANGE OF THE AD PANEL WHERE THE VERTICAL BEAMS WILL BE LOCATED.
2. IF AD PANEL HAS BACKSHEETS, REMOVE BACKSHEETS NECESSARY AT THIS TIME TO ACCESS HARDWARE FOR UNISTRUT ATTACHMENT
3. ATTACH UNISTRUT TO AD PANEL THROUGH HOLES DRILLED IN STEP 1 AS SHOWN IN UNISTRUT ATTACHMENT SIDE VIEW
4. REPLACE BACKSHEETS REMOVED IN STEP 2
5. PLACE SPRING NUTS INTO UNISTRUT IN APPROXIMATE LOCATION OF VERTICAL BEAMS
6. THREAD THE 1/2" THREADED ROD INTO THE SPRING NUTS
7. LIFT AD PANEL INTO POSITION
8. PLACE REAR MOUNTING ANGLES OVER EACH PAIR OF THREADED RODS AND SECURE AS SHOWN IN SIDE AND TOP VIEW AD PANEL ATTACHMENT
9. MAKE SURE THE THREADED ROD IS AS CLOSE TO THE VERTICAL BEAM AS POSSIBLE
10. WHEN AD PANEL IS ADJUSTED TO FINAL DESIRED POSITION, TIGHTEN NUTS FIRMLY

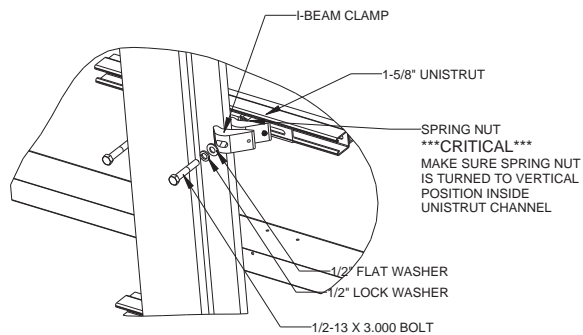
NOTES:

- THREADED RODS RUN ALONG BOTH SIDES OF BEAM
- RODS DO NOT PASS THROUGH THE FLANGE OF THE BEAM
- NO DRILLING REQUIRED
- MAKE SURE THE SPRING NUT IS PERPENDICULAR TO CHANNEL OPENING ON UNISTRUT

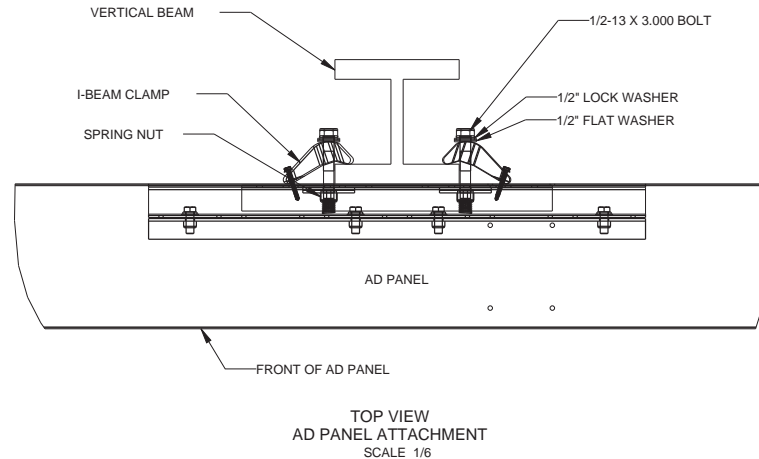
		<small>THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS WITHOUT THE EXPRESS WRITTEN CONSENT OF DAKTRONICS, INC. OR ITS WHOLLY OWNED SUBSIDIARIES. COPYRIGHT 2016 DAKTRONICS, INC. (USA)</small>				
PROJECT: OUTDOOR SCOREBOARDS						
TITLE: AD PANEL POLE MOUNTING						
02	22 DEC 15	ADDED LUBRICANT WARNING	PJS			
01	18 SEP 12	REMOVED CHAMFER FROM 0M-133259 PER EC-7114	LMG			
REV	DATE:		BY:			
<small>DIM UNITS: INCHES [MILLIMETERS]</small>		<small>SCALE: 1/10</small>		<small>DO NOT SCALE DRAWING</small>		<small>SHEET 1 OF 1</small>
<small>DESIGN: MCARSRU</small>		<small>JOB NO. P1647</small>		<small>FUNC - TYPE - SIZE E - 10 - B</small>		1052388
<small>DRAWN: MCARSRU</small>						



EXPLODED SIDE VIEW
UNISTRUT ATTACHMENT



EXPLODED REAR ISOMETRIC VIEW
AD PANEL ATTACHMENT



TOP VIEW
AD PANEL ATTACHMENT
SCALE 1/6

STRUCTURAL NOTES:

ALLOWABLE LOADS PER COLUMN CONNECTION

MAX ALLOWABLE WIND LOAD: 2,400 LBS
 MAX ALLOWABLE PANEL WEIGHT: 158 LBS
 COEFFICIENT OF FRICTION: 0.03
 BOLT TORQUE: 50 FT-LB
 MIN-MAX I-BEAM FLANGE THICKNESS: 0.25"-0.75"

*****CRITICAL***
 DO NOT USE ANY LUBRICANT
 ON ANY MOUNTING HARDWARE
 OR WARRANTY WILL BE VOIDED**

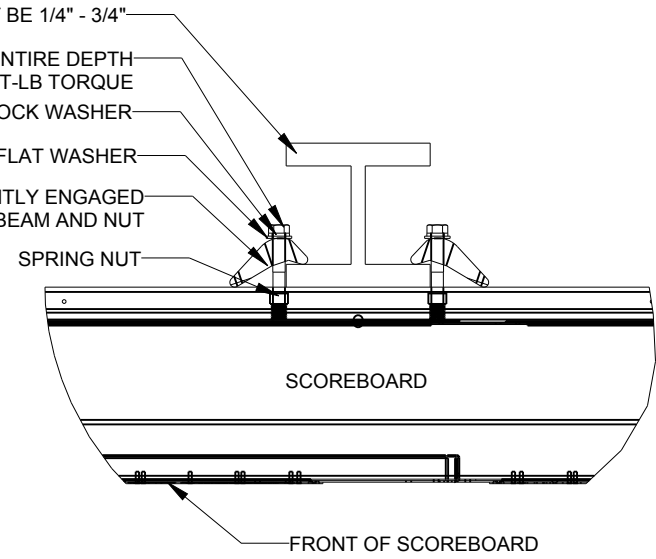
MOUNTING INSTRUCTIONS:

1. USING THE BACKUP CHANNEL AS A TEMPLATE, DRILL $\varnothing 7/16$ " HOLES IN THE UPPER AND LOWER REAR FLANGE OF THE AD PANEL WHERE THE VERTICAL BEAMS WILL BE LOCATED.
2. IF AD PANEL HAS BACKSHEETS, REMOVE BACKSHEETS NECESSARY AT THIS TIME TO ACCESS HARDWARE FOR UNISTRUT ATTACHMENT
3. ATTACH UNISTRUT TO AD PANEL THROUGH HOLES DRILLED IN STEP 1 AS SHOWN IN UNISTRUT ATTACHMENT SIDE VIEW
4. REPLACE BACKSHEETS REMOVED IN STEP 2
5. PLACE SPRING NUTS INTO UNISTRUT IN APPROXIMATE LOCATION OF VERTICAL BEAMS
7. LIFT AD PANEL INTO POSITION
8. ATTACH I-BEAM CLAMPS WITH 1/2" HARDWARE AS SHOWN IN TOP AND REAR ISOMETRIC VIEW AD PANEL ATTACHMENT
9. MAKE SURE THE 1/2-13 BOLTS ARE AS CLOSE TO THE I-BEAM FLANGES AS POSSIBLE
10. WHEN AD PANEL IS ADJUSTED TO FINAL DESIRED POSITION, TIGHTEN BOLTS FIRMLY

04	22 DEC 15	ADDED LUBRICANT WARNING	PJS		
03	17 APR 12	ADDED STACKED AD PANEL MOUNTING INSTRUCTIONS	JLR		
02	28 FEB 12	ADDED STRUCTURAL NOTES	MBC		
01	23 FEB 12	CHANGED ROCKER CLAMP/STOP TO I-BEAM CLAMP/STOP	KDD		
REV	DATE:		BY:		

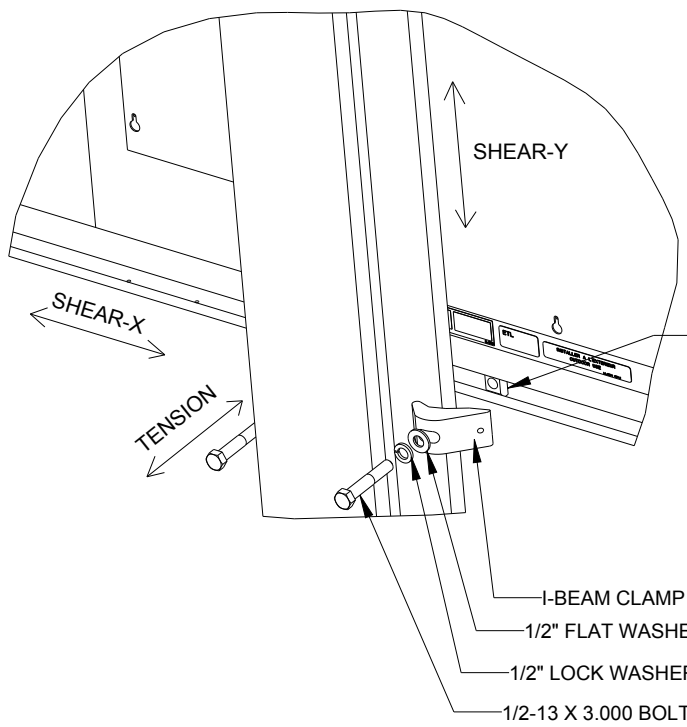
		<small>THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS WITHOUT THE EXPRESS WRITTEN CONSENT OF DAKTRONICS, INC. OR ITS WHOLLY OWNED SUBSIDIARIES. COPYRIGHT 2016 DAKTRONICS, INC. (USA)</small>		<small>THIRD ANGLE PROJECTION</small>	
PROJECT: OUTDOOR SCOREBOARDS					
TITLE: AD PANEL I-BEAM CLAMP MOUNTING					
DATE: 22-DEC-15		DIM UNITS: INCHES [MILLIMETERS]		SHEET 1 OF 1	
SCALE: 1/10		DO NOT SCALE DRAWING		REV 04	
DESIGN: MCARSRU	JOB NO. P1647	FUNC - TYPE - SIZE	E - 07 - B		
DRAWN: MCARSRU	1052539				

VERTICAL BEAM - FLANGE THICKNESS MUST BE 1/4" - 3/4"
 1/2-13 X 3.000 BOLT - BOLT THREAD MUST ENGAGE ENTIRE DEPTH OF SPRING NUT. BOLT MUST BE TIGHTENED TO 40FT-LB TORQUE
 1/2" LOCK WASHER
 1/2" FLAT WASHER
 I-BEAM CLAMP - ASSURE CLAMP IS TIGHTLY ENGAGED TO I-BEAM AND NUT



FRONT OF SCOREBOARD
 TOP VIEW

*****CRITICAL*****
 DO NOT USE ANY LUBRICANT ON ANY MOUNTING HARDWARE OR WARRANTY WILL BE VOIDED



EXPLODED REAR ISOMETRIC VIEW

SPRING NUT
*****CRITICAL*****
 MAKE SURE SPRING NUT IS TURNED TO VERTICAL POSITION INSIDE SCOREBOARD CHANNEL

I-BEAM CLAMP
 1/2" FLAT WASHER
 1/2" LOCK WASHER
 1/2-13 X 3.000 BOLT

STANDARD MOUNTING METHOD

- MOUNTING INSTRUCTIONS:
1. PLACE SPRING NUTS INTO SCOREBOARD CHANNEL IN APPROXIMATE LOCATION OF VERTICAL BEAMS
 2. LIFT SCOREBOARD INTO POSITION
 3. MAKE SURE THE 1/2-13 BOLTS ARE AS CLOSE TO THE I-BEAM FLANGES AS POSSIBLE
 4. WHEN SCOREBOARD IS ADJUSTED TO FINAL DESIRED POSITION, TIGHTEN BOLTS FIRMLY
 5. IF FLANGE THICKNESS IS MORE THAN 3/4" THICK LONGER BOLTS WILL BE REQUIRED AT THE CUSTOMER'S EXPENSE.

STRUCTURAL NOTES

ALLOWABLE CAPACITY PER EACH CLAMP:
 SHEAR = 160 LBS
 TENSION = 2300 LBS

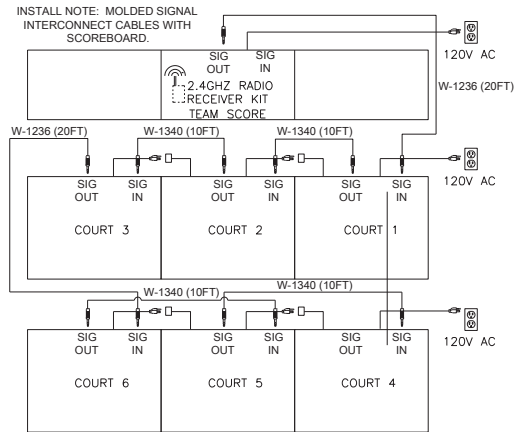
SHEAR AND TENSION LOAD DIRECTION ARE AS INDICATED ON REAR ISOMETRIC VIEW

05	22 DEC 15	ADDED LUBRICANT WARNING	PJS
04	06 JAN 14	ADDED ALLOWABLE TENSION AND SHEAR CAPACITY DETAILS	JAVA
03	23 OCT 13	PER EC-12382; CHANGED BOLT TORQUE FROM 30 FT-LB TO 40 FT-LB	NJM
02	07 MAR 12	ADDED STADNARD MOUNTING METHOD NOTES	KDD
01	21 FEB 12	CHANGED ROCKER TO I-BEAM	KDD
REV	DATE:		BY:

	<small>THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS WITHOUT THE EXPRESS WRITTEN CONSENT OF DAKTRONICS, INC. OR ITS WHOLLY OWNED SUBSIDIARIES. COPYRIGHT 2016 DAKTRONICS, INC. (USA)</small>			
	PROJECT: OUTDOOR SCOREBOARD			
TITLE: P1647; I-BEAM CLAMP MOUNTING				
DATE: 22-DEC-15	DIM UNITS: INCHES [MILLIMETERS]	SHEET	REV	
SCALE: 1/8	DO NOT SCALE DRAWING		1 OF 1	05
DESIGN: MCARSRU	JOB NO.	FUNC - TYPE - SIZE	1052565	
DRAWN: MCARSRU	P1647	E - 07 - A		

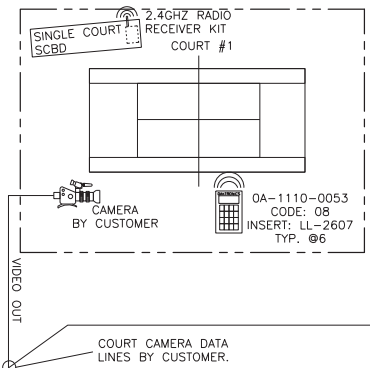
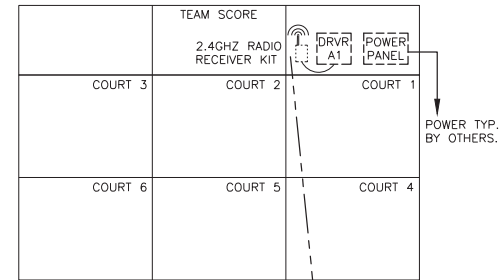
INDOOR MULTI-COURT SCOREBOARD LAYOUT
REFER TO MANUAL FOR ALL POWER, SIGNAL, AND
INSTALLATION DETAILS.

REAR VIEW

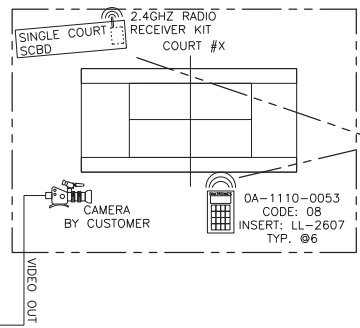


OUTDOOR MULTI-COURT SCOREBOARD LAYOUT
REFER TO MANUAL FOR ALL POWER, SIGNAL, AND
INSTALLATION DETAILS.

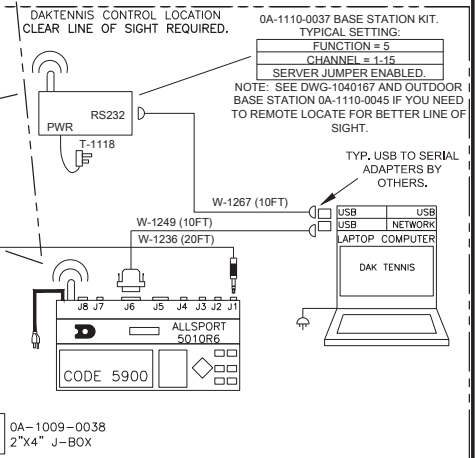
REAR VIEW



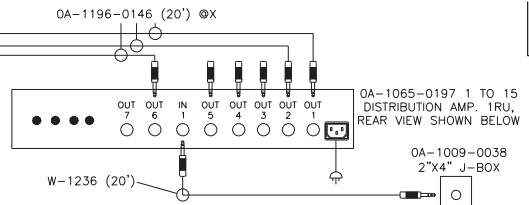
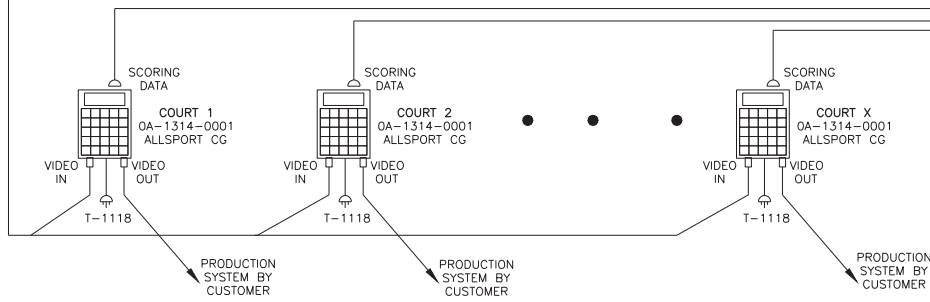
NOTE:
THE 6 RC-100 CONTROLLERS USE CHANNELS
1-15. HOWEVER, THE BASE STATION AND HAND
HELD CONTROLLERS MUST BE OPERATING ON THE
SAME CHANNEL.



ALL RADIO
COMMUNICATION
REQUIRES CLEAR
LINE OF SIGHT



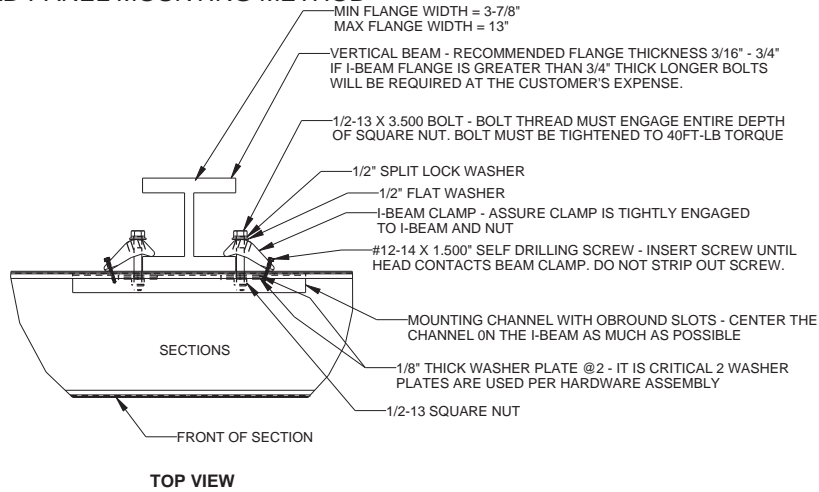
PRODUCTION LOCATION
ALLSPORT CG SETUP



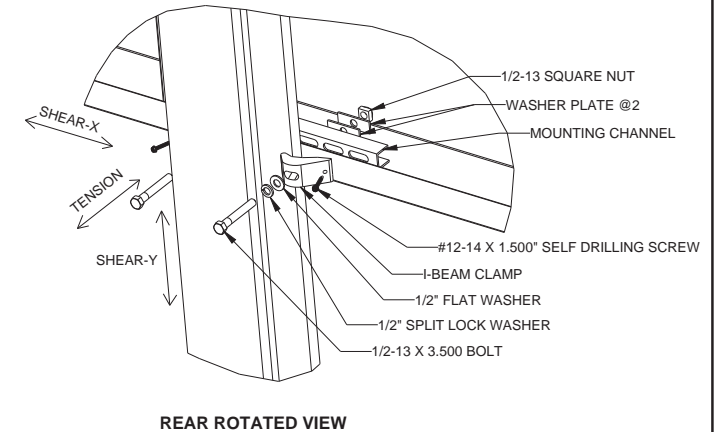
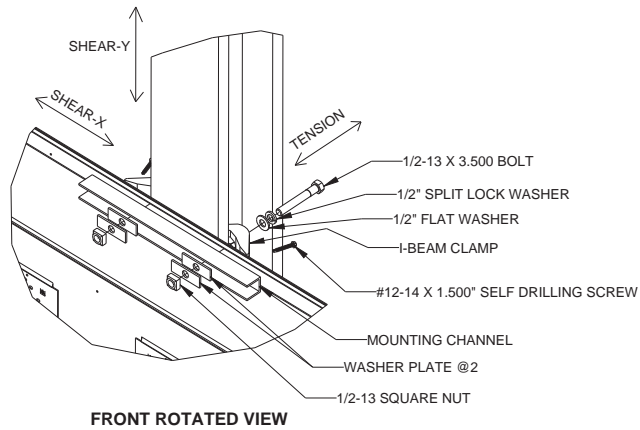
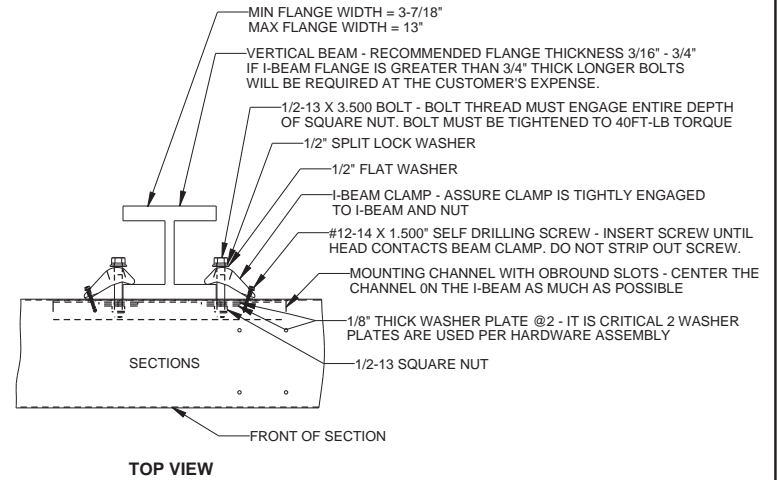
REV 05	DATE: 17 DEC 15	CHANGED WIRE 0A-1374-0106 TO W-1249 AT THE DAKTENNIS DETAIL	BY: MTR
REV 04	DATE: 4 DEC 15	UPDATED BASE STATION KIT FROM 0A-1110-0030 TO 0A-1110-0037	BY: MTR
REV 03	DATE: 02 DEC 13	MOVED POWER AND SIGNAL CABLES TO THE MIDDLE SECTION OF THE TOP TEAM SCORE SCOREBOARD	BY: ACB
REV 02	DATE: 09 OCT 12	UPDATED DRAWING DETAILS TO SHOW THE SCOREBOARD LAYOUTS BETTER	BY: MWM
REV 01	DATE: 19 JUL 12	UPDATED CABLE PART NUMBER FOR ALLSPORT	BY: K2B

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DO NOT SCALE DRAWING			
PROJ: TENNIS SCOREBOARD			
TITLE: SYSTEM RISER; TENNIS: MULTI-COURT, DAKTENNIS, RADIO, CG			
DESIGN: RTAGTOW		DRAWN: TJOHNSON	
SCALE: NONE		DATE: 24AUG05	
SHEET	REV 05	JOB NO: P1164	FLUNC-TYPE-SIZE E-10-B
			1077063

STANDARD SHEETMETAL SCOREBOARD/BACKLIT AD PANEL MOUNTING METHOD



STANDARD NON-BACKLIT AD PANEL MOUNTING METHOD



QUALIFIED FOR SECTIONS UP TO 5' IN HEIGHT USING RECOMMENDED STRUCTURE

ALLOWABLE CAPACITY PER EACH CLAMP:
SHEAR = 160 LBS
TENSION = 1376 LBS

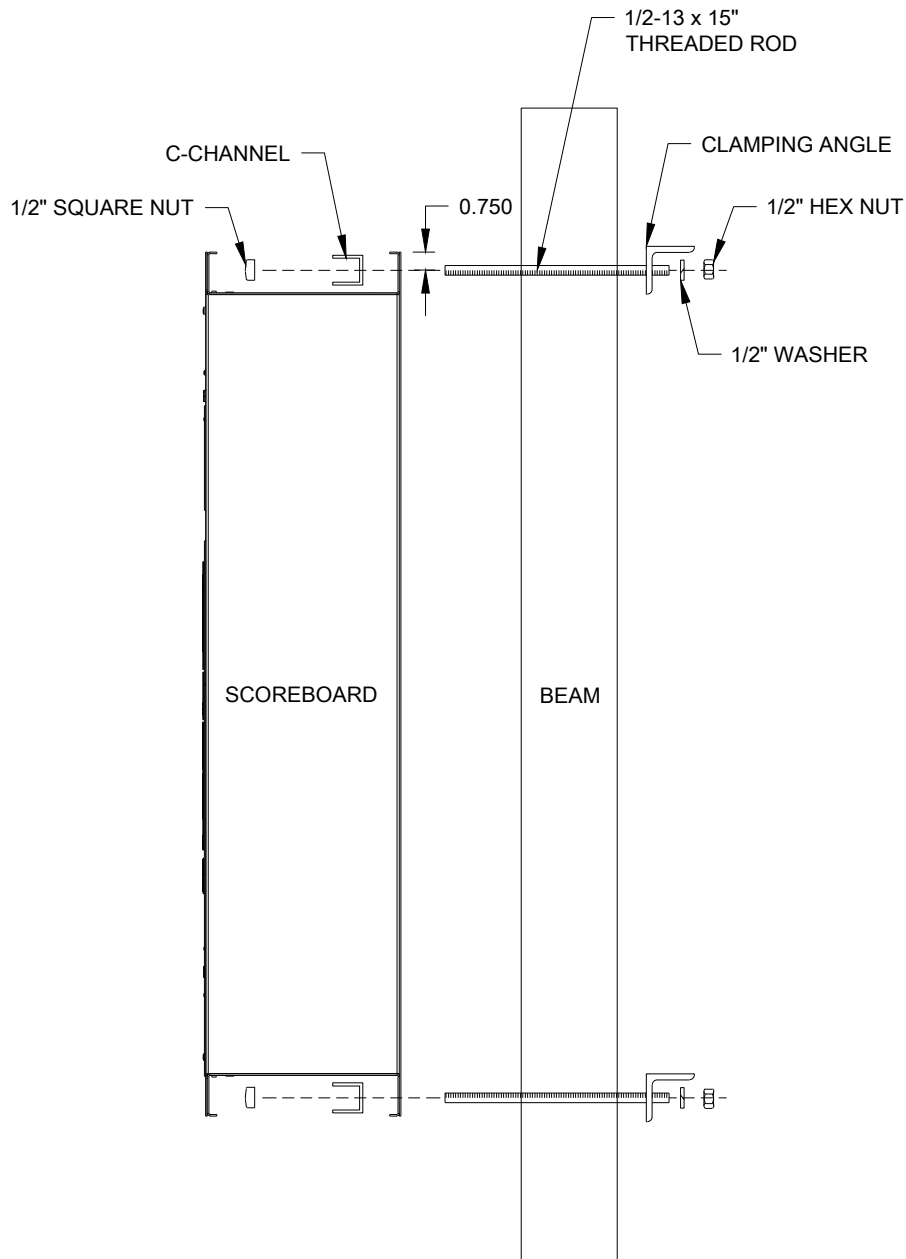
SHEAR AND TENSION LOAD DIRECTION ARE AS INDICATED ON ROTATED VIEWS

MOUNTING INSTRUCTIONS:

- LIFT THE FIRST SECTION OF THE DISPLAY INTO POSITION AGAINST I-BEAMS.
NOTE: IF THE DISPLAY IS MADE UP OF MULTIPLE SECTIONS ALWAYS INSTALL THE BOTTOM SECTION FIRST AND WORK UP.
- STARTING ON THE TOP OF THE SECTION BEING INSTALLED MARK AND DRILL 9/16" HOLES IN THE CENTER OF THE TOP FLANGE OF THE SECTION. MAKE SURE THE HOLES ARE POSITIONED AS CLOSE TO THE I-BEAM FLANGES AS POSSIBLE.
- INSTALL ALL THE HARDWARE SHOWN PROVIDED AND TIGHTEN THE SECTION IN THE DESIRED LOCATION.
- ONCE THE TOP OF THE SECTION IS SECURE MOVE TO THE BOTTOM OF THE SECTION AND REPEAT THE STEPS ABOVE.
- IF THE DISPLAY IS MADE OF MULTIPLE SECTIONS REPEAT THE ENTIRE PROCEDURE ABOVE.
- ENSURE ALL 1/2" HARDWARE IS TORQUED TO THE SPECIFIED AMOUNT.


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DO NOT SCALE DRAWING			
PROJ: OUTDOOR SCOREBOARD			
TITLE: I-BEAM CLAMP MOUNTING, SHEET METAL ATTACHMENT			
DESIGN: KSCHNABEL	DRAWN: KSCHNABEL	DATE: 17-JUN-15	
SCALE: 1/8"			
SHEET: 1 OF 1	REV: 02	JOB NO: P 1753	FUNC-TYPE-SIZE: E - 10 - B
			1129110

REV 02	DATE: 17 JUN 15	CHANGED TENSION CAPACITY TO 1376 LBS ADDED MINIMUM AND MAXIMUM FLANGE WIDTHS	BY: AMP
REV 01	DATE: 8 JAN 14	ADDED ALLOWABLE TENSION AND SHEAR CAPACITY DETAILS ADDED NON-BKLT AD PANEL MOUNTING DETAILS CHANGED DWG TO B SIZED.	BY: JAVA



MOUNTING INSTRUCTIONS:

1. USE THE MOUNTING CHANNEL TO DETERMINE WHICH HOLE COMBINATION SHOULD BE USED. BE SURE TO KEEP THE BOLT 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 SCOREBOARDS 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		THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2013 DAKTRONICS, INC.	
		DO NOT SCALE DRAWING	
PROJ: OUTDOOR SHEET METAL SCOREBOARDS TITLE: SCOREBOARD MOUNTING			
DESIGN: KDRAGT		DRAWN: KDRAGT	
SCALE: 1=8		DATE: 14 MAR 13	
SHEET	REV 00	JOB NO: P 1753	FUNC - TYPE - SIZE E - 10 - A
			1130246

Appendix C: Daktronics Warranty and Limitation of Liability

**DAKTRONICS
WARRANTY AND LIMITATION OF LIABILITY**

This Warranty and Limitation of Liability (the "Warranty") sets forth the warranty provided by Daktronics with respect to the Equipment. By accepting delivery of the Equipment, Purchaser agrees to be bound by and accept these terms and conditions. All defined terms within the Warranty shall have the same meaning and definition as provided elsewhere in the Agreement.

DAKTRONICS WILL ONLY BE OBLIGATED TO HONOR THE WARRANTY SET FORTH IN THESE TERMS AND CONDITIONS UPON RECEIPT OF FULL PAYMENT FOR THE EQUIPMENT.

1. Warranty Coverage

A. Daktronics warrants to the original end-user that the Equipment will be free from Defects (as defined below) in materials and workmanship for a period of one (1) year (the "Warranty Period"). The warranty period shall commence on the earlier of: (i) four weeks from the date that the equipment leaves Daktronics' facility; or (ii) Substantial Completion as defined herein. The warranty period shall expire on the first anniversary of the commencement date.

"Substantial Completion" means the operational availability of the Equipment to the Purchaser in accordance with the Equipment's specifications, without regard to punch-list items, or other non-substantial items which do not affect the operation of the Equipment.

B. Daktronics' obligation under this Warranty is limited to, at Daktronics' option, replacing or repairing, any Equipment or part thereof that is found by Daktronics not to conform to the Equipment's specifications. Unless otherwise directed by Daktronics, any defective part or component shall be returned to Daktronics for repair or replacement. Daktronics may, at its option, provide on-site warranty service. Daktronics shall have a reasonable period of time to make such replacements or repairs and all labor associated therewith shall be performed during regular working hours. Regular working hours are Monday through Friday between 8:00 a.m. and 5:00 p.m. at the location where labor is performed, excluding any holidays observed by either Purchaser or Daktronics.

C. Daktronics shall pay ground transportation charges for the return of any defective component of the Equipment. If returned Equipment is repaired or replaced under the terms of this warranty, Daktronics will prepay ground transportation charges back to Purchaser; otherwise, Purchaser shall pay transportation charges to return the Equipment back to the Purchaser. All returns must be pre-approved by Daktronics before shipment. Daktronics shall not be obligated to pay freight for any unapproved return. Purchaser shall pay any upgraded or expedited transportation charges.

D. Any replacement parts or Equipment will be new or serviceably used, comparable in function and performance to the original part or Equipment, and warranted for the remainder of the Warranty Period. Purchasing additional parts or Equipment from the Seller does not extend this Warranty Period.

E. Defects shall be defined as follows. With regard to the Equipment (excepting LEDs), a "Defect" shall refer to a material variance from the design specifications that prohibit the Equipment from operating for its intended use. With respect to LEDs, "Defects" are defined as LED pixels that cease to emit light. The limited warranty provided by Daktronics does not impose any duty or liability upon Daktronics for partial LED pixel degradation. Nor does the limited warranty provide for the replacement or installation of communication methods including but not limited to, wire, fiber optic cable, conduit, trenching, or for the purpose of overcoming local site interference radio equipment substitutions.

THIS LIMITED WARRANTY IS THE ONLY WARRANTY APPLICABLE TO THE EQUIPMENT AND REPLACES ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. SPECIFICALLY, EXCEPT AS PROVIDED HEREIN, THE SELLER UNDERTAKES NO RESPONSIBILITY FOR THE QUALITY OF THE EQUIPMENT OR THAT THE EQUIPMENT WILL BE FIT FOR ANY PARTICULAR PURPOSE FOR WHICH PURCHASER MAY BE BUYING THE EQUIPMENT. ANY IMPLIED WARRANTY IS LIMITED IN DURATION TO THE WARRANTY PERIOD. NO ORAL OR WRITTEN INFORMATION, OR ADVICE GIVEN BY THE COMPANY, ITS AGENTS OR EMPLOYEES, SHALL CREATE A WARRANTY OR IN ANY WAY INCREASE THE SCOPE OF THIS LIMITED WARRANTY.

THIS LIMITED WARRANTY IS NOT TRANSFERABLE.

2. Exclusion from Warranty Coverage

The limited warranty provided by Daktronics does not impose any duty or liability upon Daktronics for:

A. Any damage occurring, at any time, during shipment of Equipment unless otherwise provided for in the Agreement. When returning Equipment to Daktronics for repair or replacement, Purchaser assumes all risk of loss or damage, and agrees to use any shipping containers that might be provided by Daktronics and to ship the Equipment in the manner prescribed by Daktronics;

B. Any damage caused by the unauthorized adjustment, repair or service of the Equipment by anyone other than personnel of Daktronics or its authorized repair agents;



C. Damage caused by the failure to provide a continuously suitable environment, including, but not limited to: (i) neglect or misuse, (ii) a failure or sudden surge of electrical power, (iii) improper air conditioning or humidity control, or (iv) any other cause other than ordinary use;

D. Damage caused by fire, flood, earthquake, water, wind, lightning or other natural disaster, strike, inability to obtain materials or utilities, war, terrorism, civil disturbance or any other cause beyond Daktronics' reasonable control;

E. Failure to adjust, repair or replace any item of Equipment if it would be impractical for Daktronics personnel to do so because of connection of the Equipment by mechanical or electrical means to another device not supplied by Daktronics, or the existence of general environmental conditions at the site that pose a danger to Daktronics personnel;

F. Any statements made about the product by salesmen, dealers, distributors or agents, unless such statements are in a written document signed by an officer of Daktronics. Such statements as are not included in a signed writing do not constitute warranties, shall not be relied upon by Purchaser and are not part of the contract of sale;

G. Any damage arising from the use of Daktronics products in any application other than the commercial and industrial applications for which they are intended, unless, upon request, such use is specifically approved in writing by Daktronics; or

H. Any performance of preventive maintenance.

3. Limitation of Liability

Daktronics shall be under no obligation to furnish continued service under this Warranty if alterations are made to the Equipment without the prior written approval of Daktronics.

It is specifically agreed that the price of the Equipment is based upon the following limitation of liability. In no event shall Daktronics (including its subsidiaries, affiliates, officers, directors, employees, or agents) be liable for any special, consequential, incidental or exemplary damages arising out of or in any way connected with the Equipment or otherwise, including but not limited to damages for lost profits, cost of substitute or replacement equipment, down time, lost data, injury to property or any damages or sums paid by Purchaser to third parties, even if Daktronics has been advised of the possibility of such damages. The foregoing limitation of liability shall apply whether any claim is based upon principles of contract, tort or statutory duty, principles of indemnity or contribution, or otherwise.

In no event shall Daktronics be liable to Purchaser or any other party for loss, damage, or injury of any kind or nature arising out of or in connection with this Warranty in excess of the purchase price of the Equipment actually delivered to and paid for by the Purchaser. The Purchaser's remedy in any dispute under this Warranty shall be ultimately limited to the Purchase Price of the Equipment to the extent the Purchase Price has been paid.

4. Assignment of Rights

The Warranty contained herein extends only to the original end-user (which may be the Purchaser) of the Equipment and no attempt to extend the Warranty to any subsequent user-transferee of the Equipment shall be valid or enforceable without the express written consent of Daktronics.

5. Dispute Resolution

Any dispute between the parties will be resolved exclusively and finally by arbitration administered by the American Arbitration Association ("AAA") and conducted under its rules, except as otherwise provided below. The arbitration will be conducted before a single arbitrator. The arbitration shall be held in Brookings, South Dakota. Any decision rendered in such arbitration proceedings will be final and binding on each of the parties, and judgment may be entered thereon in any court of competent jurisdiction. This arbitration agreement is made pursuant to a transaction involving interstate commerce, and shall be governed by the Federal Arbitration Act.

6. Governing Law

The rights and obligations of the parties under this warranty shall not be governed by the provisions of the United Nations Convention on Contracts for the International Sales of Goods of 1980. Both parties consent to the application of the laws of the State of South Dakota to govern, interpret, and enforce all of Purchaser and Daktronics rights, duties, and obligations arising from, or relating in any manner to, the subject matter of this Warranty, without regard to conflict of law principles.

7. Availability of Extended Service Agreement

For Purchaser's protection, in addition to that afforded by the warranties set forth herein, Purchaser may purchase extended warranty services to cover the Equipment. The Extended Service Agreement, available from Daktronics, provides for electronic parts repair and/or on-site labor for an extended period from the date of expiration of this warranty. Alternatively, an Extended Service Agreement may be purchased in conjunction with this warranty for extended additional services. For further information, contact Daktronics Customer Service at 1-800-DAKTRONics (1-800-325-8766).