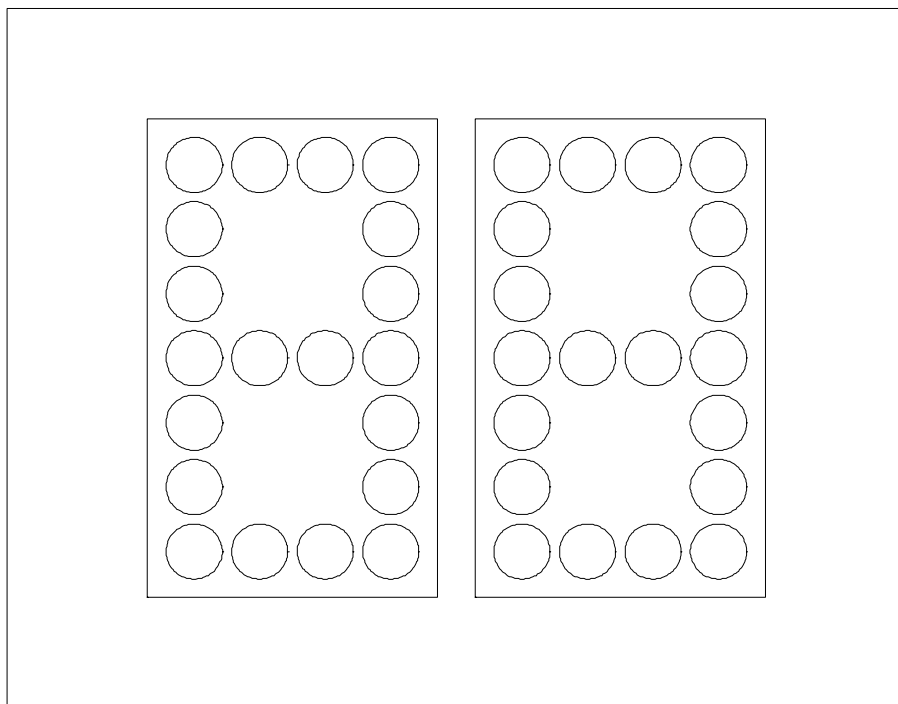

ELECTRO-MECH SCOREBOARD CO.



MP-320 DELAY OF GAME TIMER SCOREBOARD

OWNER'S HANDBOOK

Thank you for choosing an Electro-Mech Scoreboard for your athletic complex. We are confident that your new scoreboard will give many years of reliable service.

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MP-320 DELAY OF GAME TIMER SPECIFICATIONS

GENERAL: This ETL listed system includes two delay of game timer units (home and visitor teams), mounting hardware, control cable (sold separately), two 10 ft. extension cables, and two junction boxes. The MP-320 may be purchased with or without a control console. It is 100 % compatible with any MP football control console.

UNIT DIMENSIONS: 4' L x 38" H x 6" D (MP-320 with side sponsor panel measures 6' L x 38" H x 6" D)

UNIT WEIGHT: Approximately 70 lbs (MP-320 with side sponsor panel weighs 90 lbs.)

UNIT CONSTRUCTION: The outer frame is made from extruded aluminum. Internal structural parts may be extruded aluminum or formed from aluminum sheet. The face and back are made from aluminum sheet. The face is finished with enamel paint. Black is the standard face color. White is the standard color for the captions. Mounting hardware is included.

DISPLAY: The MP-320 DELAY OF GAME TIMER is a two digit counter which can be set from 1 to 99 seconds.

LAMP BANKS: A 4 x 7 matrix of lamps forms each 24" digit. The scoreboard uses 15 watt 120 VAC frosted medium based appliance lamps (also known as 15A15IF lamps). Recessed aluminum reflectors provide a crisp separation between each lamp. Expanded metal screens protect the lamps.

UNIT POWER REQUIREMENTS: **Scoreboard** - 120 VAC, 5 A, 60 Hz, 600 watts maximum, (8 A service recommended). **Control Console** - 120 VAC, 0.5 A, 60 Hz

UNIT ELECTRONICS: 100% solid state fully enclosed within a plug in module.

CONTROL CONSOLE: The microprocessor control console is constructed of a rugged plastic housing with a metal back plate. It features a 37 key sealed membrane keypad, a LCD display of game information, an attached 6 foot power cord, and a lithium cell battery backup to retain game information.

CONTROL CABLE: The cable has two 22 AWG stranded copper conductors with semi-rigid PVC insulation. It also has a braided shield and a foil shield. The polyethylene jacket is rated at 300 volts. The cable is direct burial rated and measures approximately ¼" in diameter. One length is required to run from each unit to the point of operation (conduit installation recommended).

JUNCTION BOX AND EXTENSION CABLE: A 4 ¼" x 2 ¼" x 2" junction box with a stereo jack mounted on the face is attached to each control cable at the point of operation. The ten foot extension cables connect the control console to the junction boxes.

WARRANTY: Five year limited warranty.

SCOREBOARD INSTALLATION

The MP-320 Delay of Game Timer units are typically installed in or behind the end zones of the football field. Typical installation of the MP-320 consists of positioning the posts, mounting the units on the posts, and making the proper electrical connections. **Note: Installation of a unit on a wall will force a service technician to remove the unit from the wall in order to remove the plug in module inside the unit for repair.**

Items not provided by Electro-Mech Scoreboard Company which are necessary for installation:

- Four posts
- Power cable to connect each unit to your power source
- Grounding hardware
- A grounded NEMA 5-15R 120 VAC receptacle for the control console.

Items not provided which are recommended by Electro-Mech Scoreboard Company for installation:

- A weatherproof power disconnect at each unit
- A weatherproof NEMA 5-15R 120 VAC convenience receptacle at each unit

While Electro-Mech Scoreboard Company does not perform installations, we will make every effort to answer your installation questions. Installation should be performed by qualified personnel. Consult national and local codes before installation.

POSITIONING THE POSTS

Each unit is designed to be mounted on two posts. We suggest that the front of each unit should be angled away from the afternoon sun, if possible. Typically installers will use steel pipes or I-beams. The mounting hardware will accommodate posts up to 4.5 inches outer diameter. We recommend that the posts be sunk in reinforced concrete footings. Figure 1 shows the spacing of the posts for a MP-320. It suggests one possible installation for a MP-320 in silty sand soil. **No dimensional data in this manual is intended to be specifications except the size of the unit cabinet and the distance between the posts.** The specifications for the posts and concrete footings are dependent upon the expected local wind and soil conditions, the height of the scoreboard from the ground, and the local building codes. Electro-Mech Scoreboard Company assumes no responsibility for the installation of scoreboards by others.

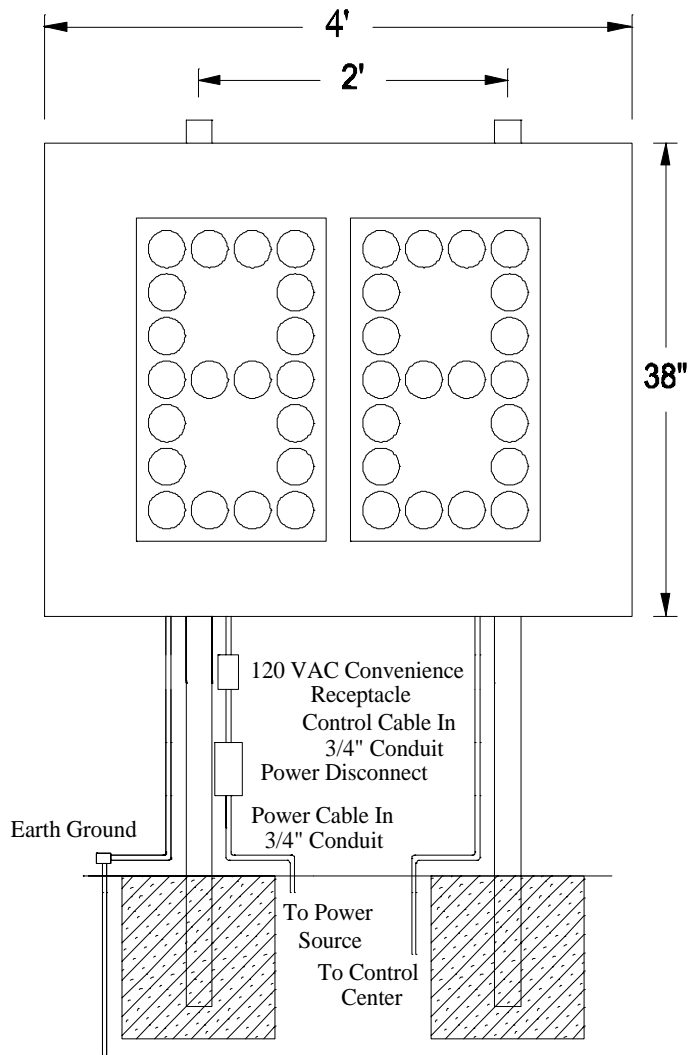


Figure 1 MP-320 Post Spacing

Figure 2 shows the spacing of the posts for a MP-320 with an optional side sponsor panel.

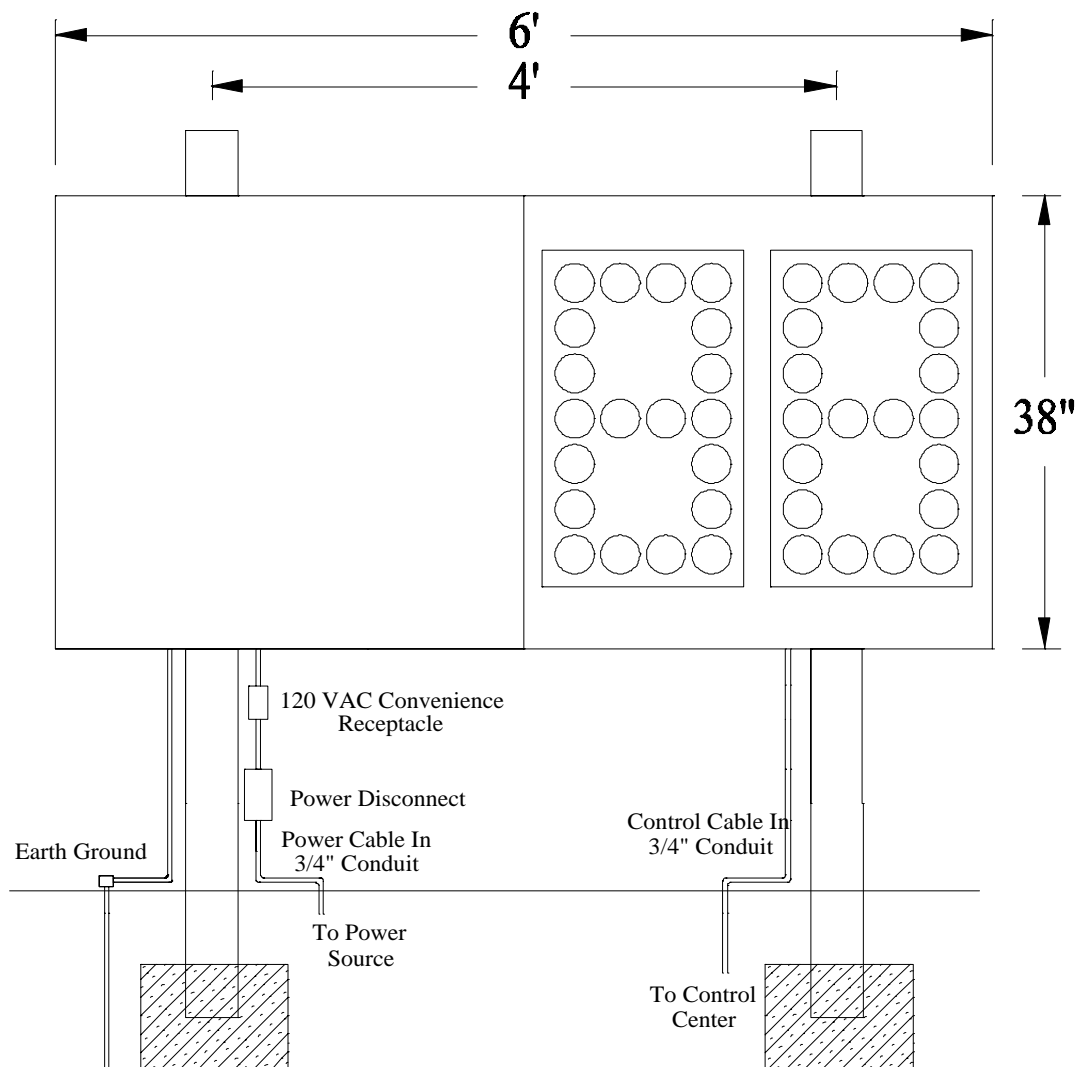


Figure 2 MP-320 with Optional Side Sponsor Panel Post Spacing

MOUNTING HARDWARE

Four sets of mounting hardware are provided to attach the scoreboard to the posts. Additional hardware sets are provided to attach the optional sponsor panels, if ordered. A mounting hardware set consists of a steel angle bracket, two threaded rods, two washers, and two nuts. Figure 3 shows an overhead cross section view and a side cross section view of the scoreboard attached to a post at a mounting point using the hardware. A steel bracket is riveted to the scoreboard's aluminum extrusion frame. The bracket has two tapped holes. The threaded rods screw into these tapped holes. The washers and nuts are used to clamp the steel angle bracket against the steel post and hold the scoreboard in place.

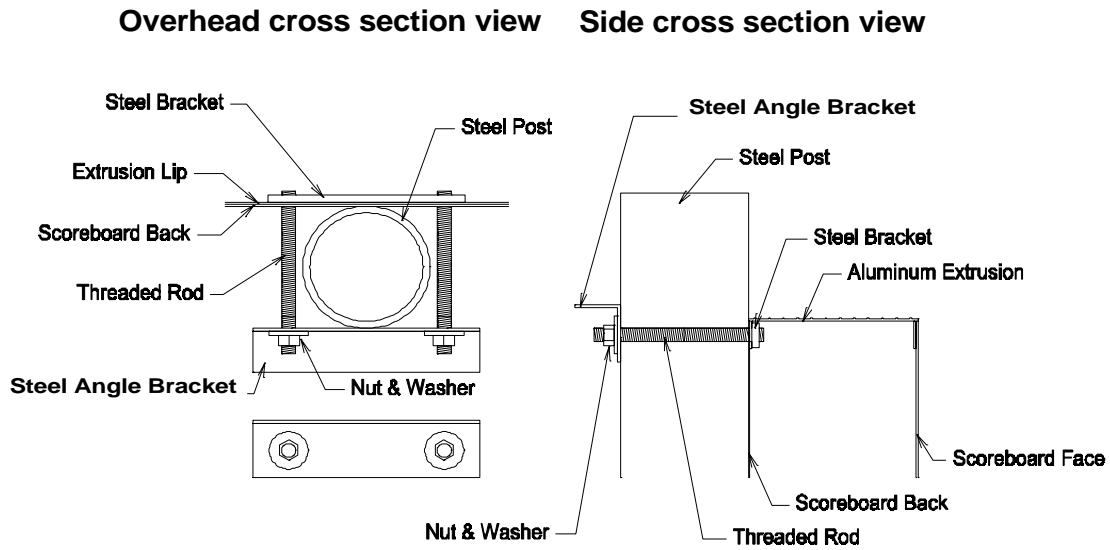


Figure 3 Standard Mounting Method

MOUNTING THE SCOREBOARD

The scoreboard is attached to the posts at four points. Figure 4 shows the location of the mounting points on the rear of the scoreboard.

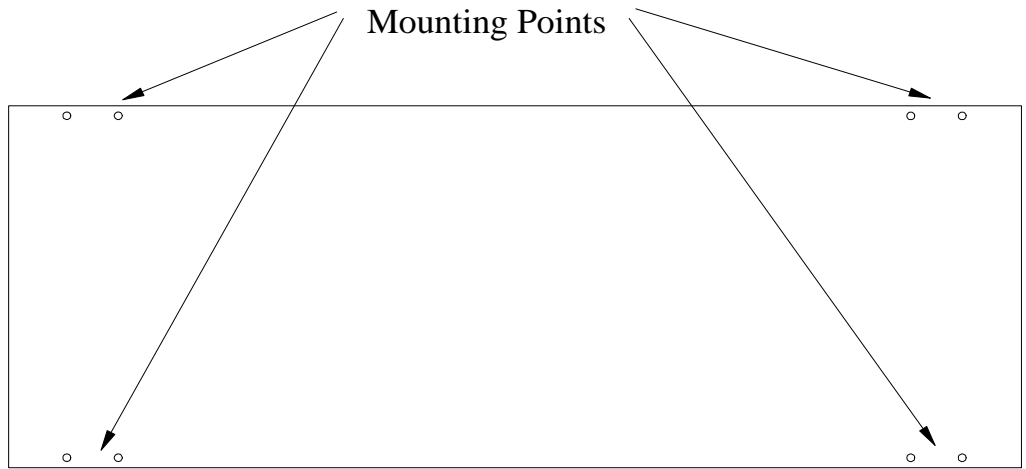


Figure 4 Mounting Points

The following steps describe how to mount the scoreboard on the posts:

1. Place the scoreboard cabinet against the posts on the ground. Make sure the mounting points are aligned with the posts.
2. Screw the threaded rods into the tapped holes in the scoreboard.
3. Place a steel angle bracket over the threaded rods at a mounting point.
4. Place a washer over each threaded rod.
5. Screw the nuts onto the threaded rods so that the bracket is **loosely** held in place.
6. Repeat steps 4 -6 at the other mounting points.
7. Raise the scoreboard into place and tighten the nuts to clamp the scoreboard in place on the posts.

ELECTRICAL CONNECTIONS

We recommend a qualified electrician perform the needed electrical connections to ensure proper operation of your scoreboard. These connections include grounding the scoreboard, connecting the scoreboard to a power source, installing the control cable, and connecting the control console.

Ground Connection

The National Electrical Code **requires** a scoreboard (electric sign) to be grounded. Grounding the scoreboard helps the scoreboard electronics operate properly and helps minimize damage if it is struck by lightning. Metal posts do **not** provide an adequate ground path when they are placed in concrete. One method of grounding is to connect the scoreboard cabinet to one or more grounding rods which are driven into the ground near the scoreboard via a large gauge copper wire. The self tapping sheet metal screws on the back of the scoreboard cabinet provide a convenient connection point.

Connecting The Scoreboard To Your Power Source

The scoreboard requires 120 VAC service at the scoreboard to operate properly.

Maximum power consumption of Model MP-320: 600 Watts. Make sure that power cable is rated for this electrical load. Electro-Mech Scoreboard Company recommends that your power cable is installed in conduit. **Avoid** running your power cables in close proximity to your control cable. The following steps describe how to connect the scoreboard to your power source:

1. Remove the hex head screws which hold the rear upper access panel in place (Figure 5).

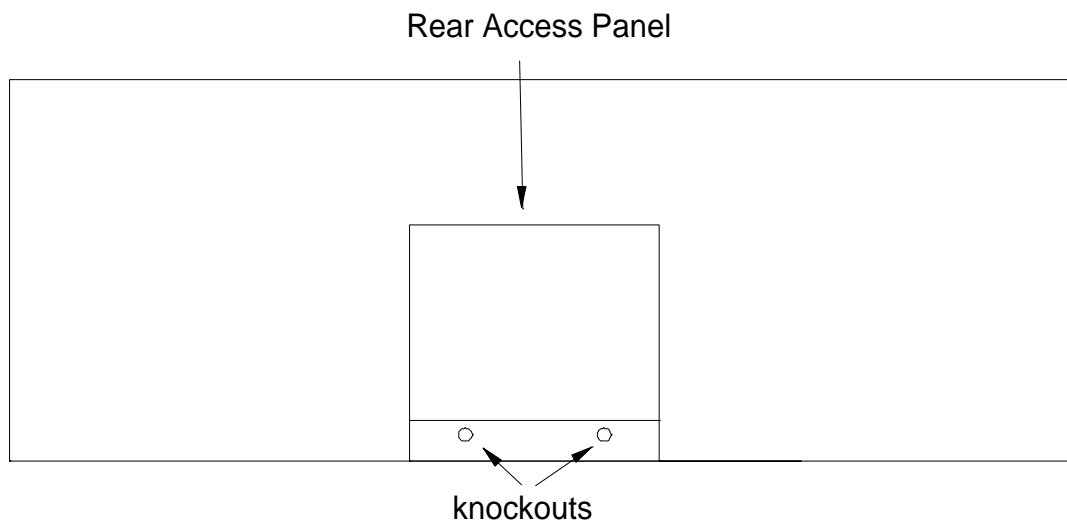


Figure 5 Upper Access Panel

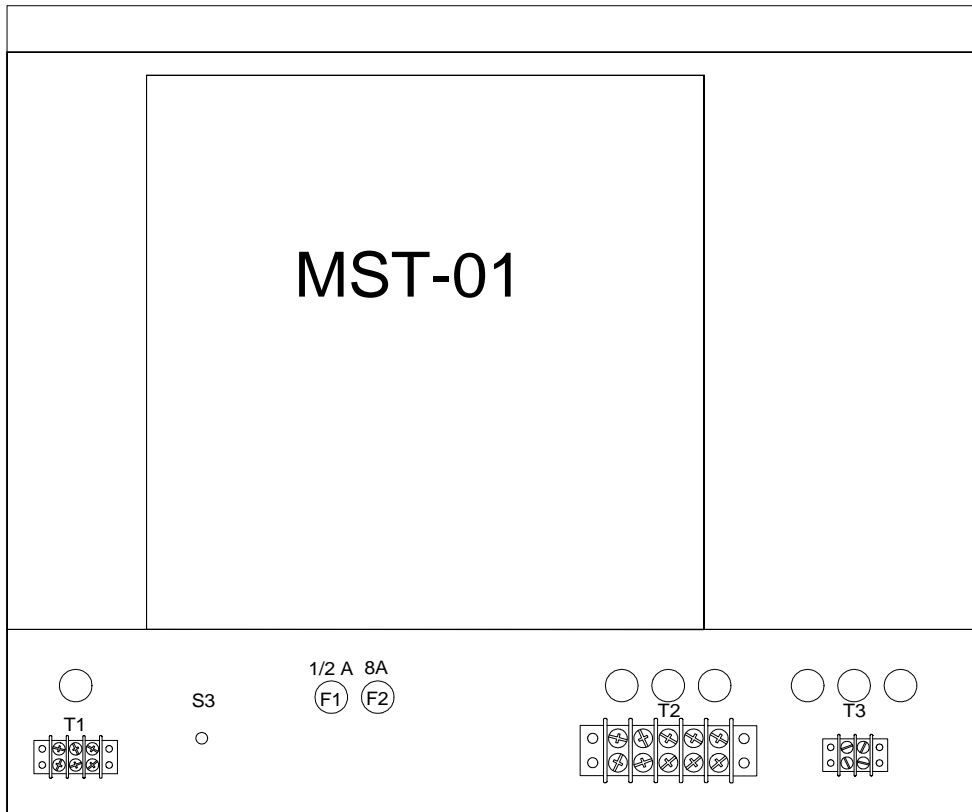


Figure 6 Access Panel Removed

2. Punch out the knockouts for the power and control cables.
3. Feed the power cable through a knockout.
4. Connect the AC line wire to position 1 and AC neutral wire to position 2 of terminal strip T3 on the junction chassis according to figure 7.

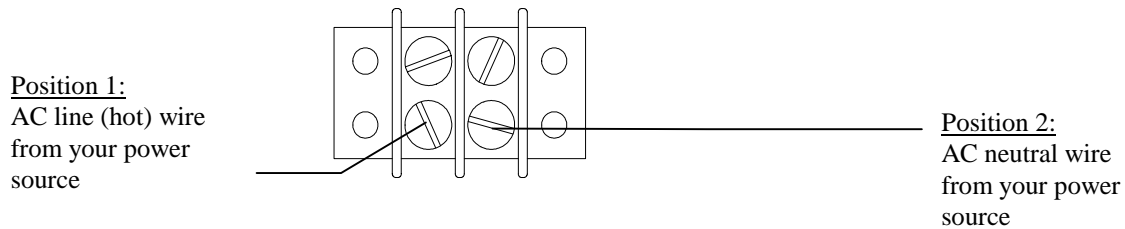


Figure 7 Power Connections

Electro-Mech Scoreboard Company suggests that you install a power cut-off switch and a NEMA 5-15R receptacle in a weatherproof box on the scoreboard post below the scoreboard. The cut-off switch provides a convenient way of turning the scoreboard off during maintenance or repairs. The NEMA 5-15R receptacle will allow a technician to easily plug in the control console and operate the scoreboard via the test jack S-3(a valuable trouble-shooting aid).

ScoreLink 300

The SCORELINK 300 RF MODEM SET is intended to eliminate the control cable between the scoreboard and the control console on Electro-Mech Scoreboard MM and MP series scoreboards. If you have purchased this option, disregard the next section of this manual. Refer to the SCORELINK 300 RF MODEM SET OWNER'S HANDBOOK for installation instructions.

Installing The Control Cable

The control cable connects the scoreboard to the control console. While the control cable is direct burial rated, Electro-Mech Scoreboard Company recommends that it is installed in conduit to protect it from being cut. A small junction box with a stereo jack mounted on the face plate is attached to the control cable at the point of operation of the scoreboard. This junction box should be securely mounted in a clean, dry area within ten feet of the rear of the control console. Most customers order the control cable with the junction box attached. Some customers prefer to attach the junction box after the cable is installed. Those customers must match their stereo jack to one of the stereo jacks in figure 8 in order to make the proper connections. These connections should be soldered.

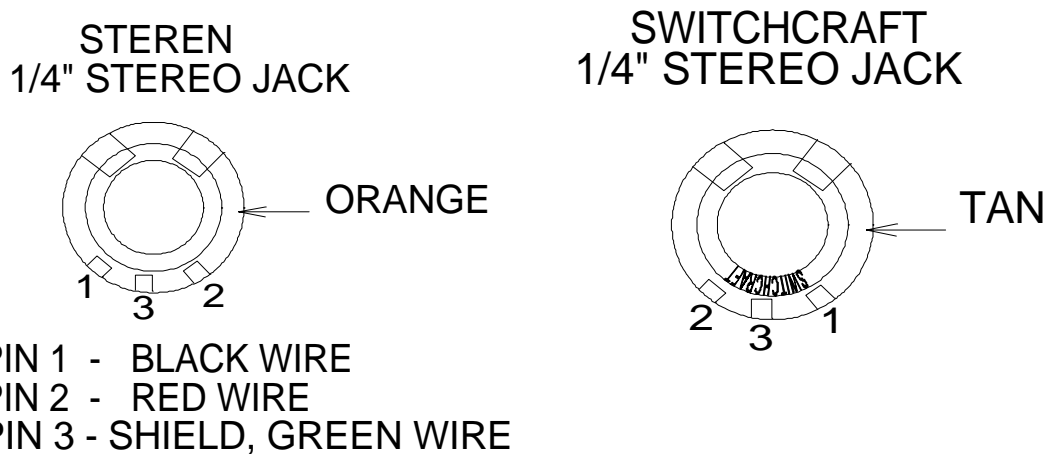


Figure 8 STEREO JACK WIRING DIAGRAM

The following steps describe how to connect the control cable to the scoreboard:

1. At the rear of the scoreboard feed the control cable through one of the knockouts below the access panel.
2. Crimp fork terminals to the control cable wires and the shield.
3. Connect the control cable to terminal strip T1 (located to the left of the test jack S3) according to the diagram in figure 9.

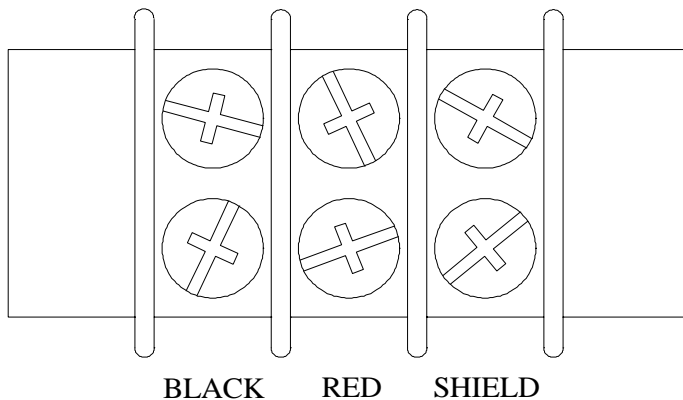


Figure 9 T1 WIRING DIAGRAM

Connecting The Control Console

The control console is normally connected to the junction box via the 10 ft. extension cable. This extra length of cable allows the scoreboard operator some mobility and the ability to store the control console after the game. The extension cable has two molded stereo plugs attached to it. One end of the extension cable is plugged into the junction box stereo jack and the other end is plugged into the stereo jack mounted on the control

console back plate. The control console power cord is plugged into a grounded NEMA 5-15R 120 VAC receptacle.

SCOREBOARD OPERATION

The MP-320 Scoreboard is normally operated at a site with a football scoreboard. If you have a Electro-Mech Scoreboard Company MP series football scoreboard, the MP-320 scoreboard can be programmed by that control console and operated by a hand held unit. If you do not have a MP series football scoreboard, it can be programmed by its own control console and operated by a hand held unit which interfaces with the control console. **No scoreboard functions will operate without connecting the control console.** Figure 10 shows the keypad layout on your control console. The keypad functions are described in the text below the figure.

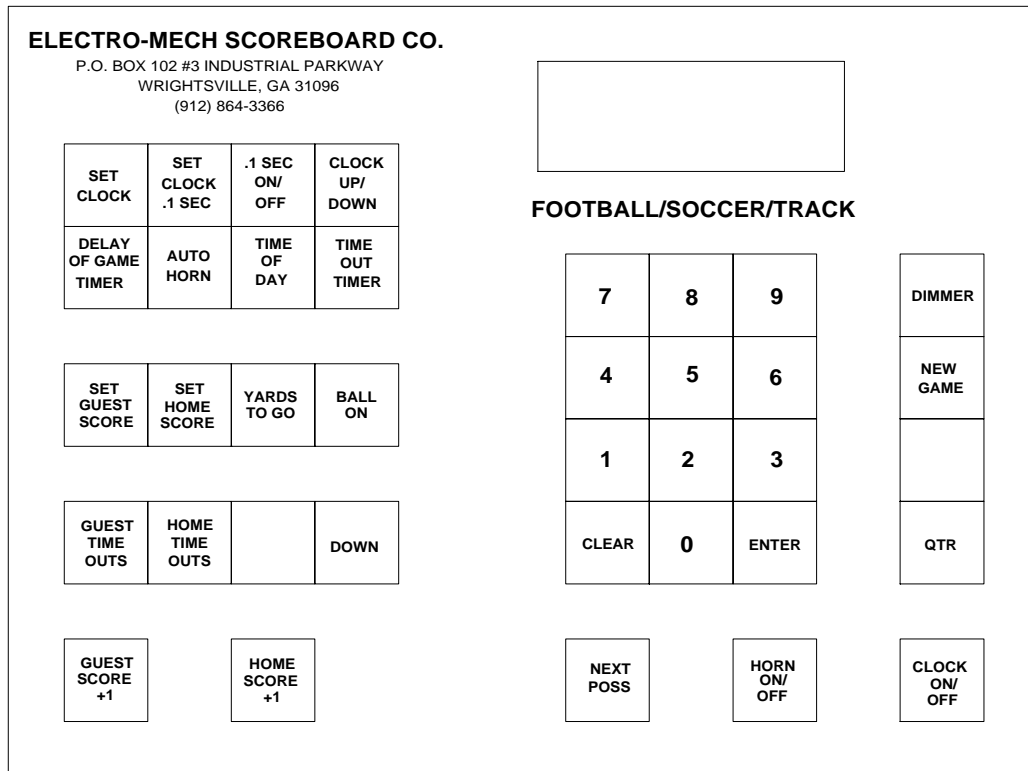


Figure 10 Keypad Layout

Control Console Key Functions

1. **DELAY OF GAME TIMER** – The delay of game timer should be set prior to the start of a game. The game timer default time is 30 seconds. To change this time, press [DELAY OF GAME TIMER]. The console LCD display will read:

DELAY TIME1 <30>

Press the keypad numbers for the time, [ENTER]. The LCD display will then read:

DELAY TIME2 <05>

This will allow you to change the second reset time. To change this time, press the keypad numbers for the time, [ENTER].

2. **NEW GAME** – This key can be used to reset all scoreboard functions. Press **NEW GAME** and, within two seconds, press **CLOCK RESET**.
3. **CLOCK RESET** – This key is used only in conjunction with the **MASTER RESET** key.
4. **CLOCK ON/OFF** – This key is used to start and stop the clock. The clock must be on in order for the MP-320 to count down.

The other keys are not used with the MP-320 scoreboard, but may be used for a MP series football scoreboard.

You should reset the scoreboard each time that it is turned on. Test out all the functions to ensure that the scoreboard is operating properly. **Electro-Mech Scoreboard Company strongly advises that you unplug the control console, disconnect the extension cable at the control console, and turn the power to the scoreboard off when the scoreboard is not in use. The control console can not turn the scoreboard off.** This action will help protect the scoreboard and control console from power surges and lightning strikes.

DELAY OF GAME TIMER HAND HELD UNIT OPERATION

The delay of game hand held unit has an attached cable which is plugged into a jack on the control console back plate labeled **DBT/SC Hand held**. As seen in figure 11, the hand held unit has three buttons. The operation of the buttons is described in the text below the figure.

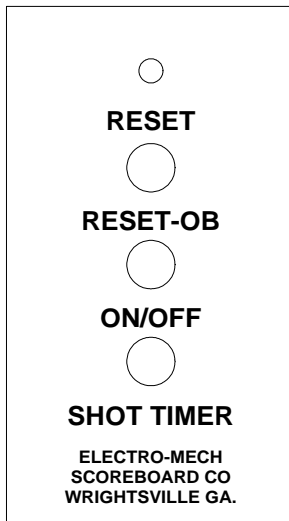


Figure 11 DELAY OF GAME TIMER HAND HELD UNIT

Control Console Key Functions

1. **RESET** – This button is used to reset the MP-320 to the time programmed in the console as DELAY TIME1. The default time is 30 seconds.
2. **RESET-OB** – This button is used to reset the MP-320 to the time programmed in the console as DELAY TIME2. The default time is 5 seconds. Press and hold this button to blank the scoreboard.
3. **ON/OFF** – Press and hold this button to pause the count.

SERVICING THE SCOREBOARD

While your scoreboard was designed for years of trouble-free operation, some problems may occasionally occur. Our trained personnel at Electro-Mech Scoreboard Company are ready to answer your questions from Monday to Friday during the hours of 8 AM to 5 PM Eastern Standard Time. Be sure to know your scoreboard model number when calling. Scoreboard replacement parts, including lamps, are always available. Electro-Mech Scoreboard Company can repair the control console and plug in module at a significant savings when compared to the price of new units. Our convenient toll free number is listed at the bottom of every page in this manual.

As seen in figure 12, the plug in module MST-01, fuses, connection points for the power and control cable, and a test jack are located behind the rear access panel.

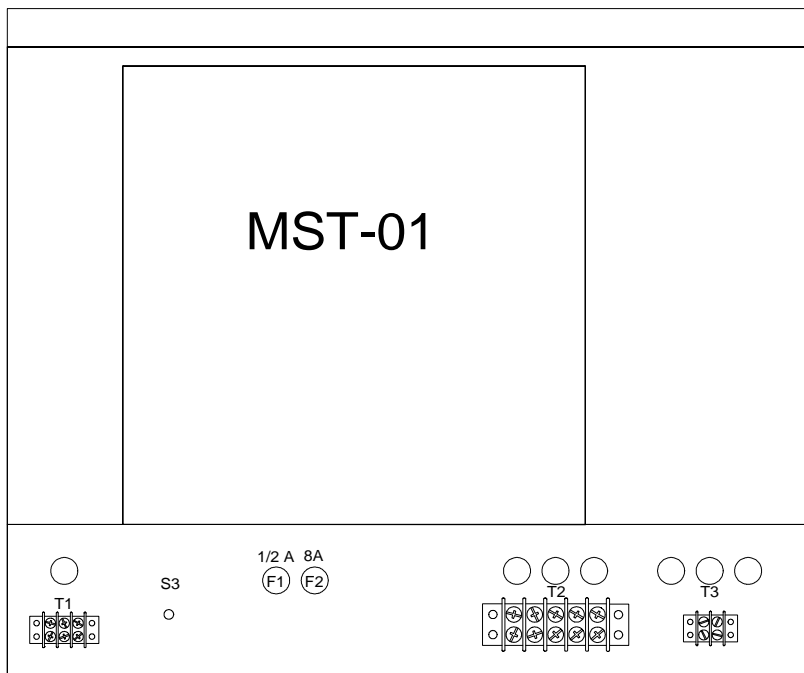


Figure 12 Rear Access Components

PLUG IN MODULE REPLACEMENT

The plug in module MST-01 performs all of the scoreboard functions. The module has two bottom plugs which mate with sockets in the scoreboard. A screw located at the top of the module holds it against the scoreboard cabinet. Simply remove the screw and pull the module upward to unseat the module. **To avoid damage to the plug in module, always turn off the power to the scoreboard when removing or replacing it.**

FUSES

FUSE	RATING	FUNCTION
F1	1/2 A 250 V	CONTROL LINE
F2	8 A 250 V	LAMPS

CONNECTION POINTS

TERMINAL STRIP	FUNCTION
T-1	control cable connection
T-2	MOV (surge protection)
T-3	power cable connection
S-3	test jack

LAMP REPLACEMENT

Replacing lamps may be the only service you ever perform on your Electro-Mech scoreboard. The lamps are accessed by removing the protective mask covering each lamp bank. **To avoid damage to the plug in module, always turn off the power to the scoreboard when changing lamps.** We recommend using a felt pen or tape to mark lamps that will not light. This scoreboard uses 15 watt medium base lamps (also called 15A15 lamps). **Never replace these with higher wattage lamps.**

ELECTRO-MECH SCOREBOARD CO. FIVE YEAR LIMITED WARRANTY

THE ELECTRICAL COMPONENTS OF ALL ELECTRO-MECH SCOREBOARDS ARE GUARANTEED FOR A PERIOD OF FIVE (5) YEARS FROM THE DATE OF INVOICE AGAINST DEFECTS IN WORKMANSHIP OR MATERIAL AND WILL BE REPLACED OR REPAIRED WITHOUT COST TO THE OWNER PROVIDED THE EQUIPMENT OR PARTS ARE RETURNED POSTAGE-PAID TO THE FACTORY IN WRIGHTSVILLE, GA. SHIPPING BACK TO THE OWNER WILL BE VIA UPS GROUND SERVICE EXCEPT WHEN AIR OR SPECIAL METHOD OF RETURN IS SPECIFIED BY THE OWNER, IN WHICH CASE SHIPPING WILL BE FREIGHT COLLECT.

EXCLUDED FROM THIS WARRANTY ARE LAMPS, FUSES AND SOCKETS.

THIS WARRANTY DOES NOT INCLUDE LABOR CHARGES INCURRED IN THE REMOVAL OF COMPONENT PARTS, SERVICE CALLS, OR DAMAGES RESULTING FROM IMPROPER INSTALLATION, IMPROPER OPERATION, OR PROBLEMS CAUSED BY ANY REPAIR, ALTERATION OR MODIFICATION OF THE SCOREBOARD NOT PERFORMED BY ELECTRO-MECH.

EQUIPMENT WHICH IS SUBJECTED TO ACCIDENT, NEGLIGENCE, ABUSE, MISUSE OR OTHER NATURAL DISASTERS, INCLUDING BUT NOT LIMITED TO FIRE, WIND, LIGHTNING, OR FLOOD, IS NOT COVERED BY THIS GUARANTEE.