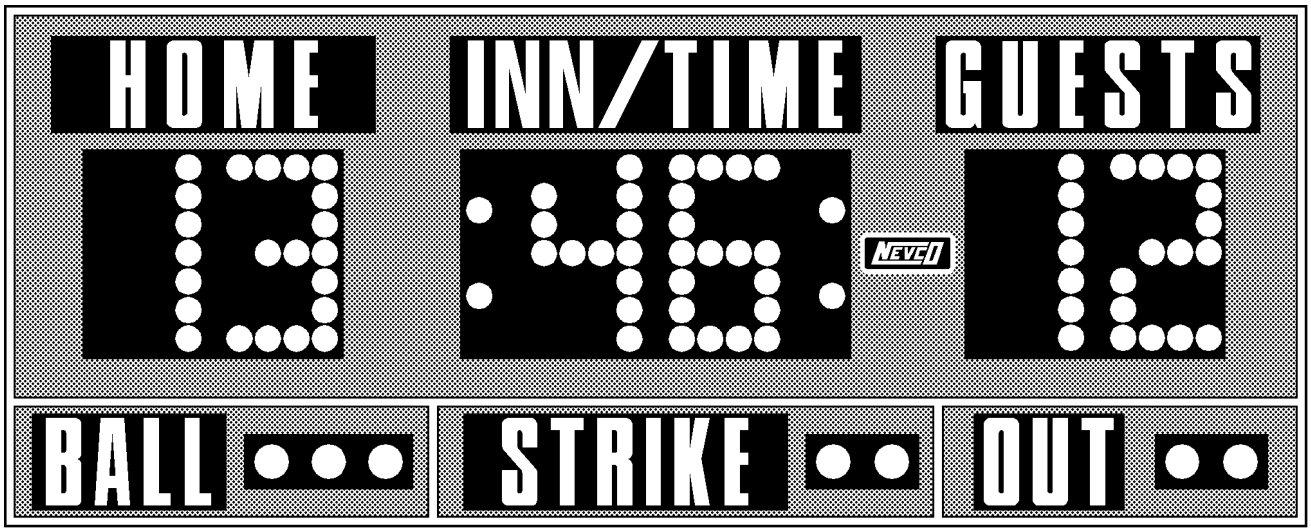
Nevco Scoreboard Company
Installation and Service Manual

Model 1020 **Serial No. _____**



Since 1934

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Introduction To Nevco Scoreboards

We at Nevco Scoreboard Company would like to introduce you to our latest Solid State Scoreboard. The universal MPC Microprocessor Control operates more than 500 Nevco scoreboard variations and is the heart of Nevco's reliability. Scoring from sport to sport is as easy as popping on a new keyboard overlay. Now, you can read and recall the inning, scores and all other game information on the control's bright display. Each control comes with keyboard overlay, operating instructions, TCS-1 time switch and 25 feet of control cable. An optional CC-2 carrying case is available at extra charge.

The model 1020 is small, yet the most economically priced baseball, softball and soccer scoreboard for any size facility. The model 1020 has the new 2 digit style clock which is also used to display the inning. Other features include team scores registering from 0-99 to cover the full range of scoring by different age groups, and single lamp indicators for the balls, strikes and outs. Numerals are 18" high with individual aluminum reflectors for each lamp to provide maximum figure clarity. Locate the scoreboard on the south or west side of the field (USA) for proper daytime visibility. Scoreboard cabinet is aluminum. Mounting brackets are supplied for mounting on your posts. Scoreboard is fully solid state and operates on a simple 2-WIRE cable. Scoreboard uses the MPC microprocessor based operator's control which has scoreboard lamp dimming capability.

Size: 10' x 4' x 8" (3.04 x 1.21 x .20 meters). Approx. hanging weight 160 lbs. (72 kg.).

The data from the operator's MPC control is transmitted to the scoreboard through a low voltage (class 2) coaxial, 2-WIRE control cable. All the scoreboard electronics are housed in one module located behind the rear service door. This module continuously receives, translates and displays the information sent from the operator's MPC control. The module switches all the power to the lamp displays to light the numbers and indicators on the scoreboard face.

In the following pages you will learn about the equipment you have received, pre-testing the equipment before installation, mounting procedure and connecting power to your equipment, with illustrations to assist you. Also included in the manual are installation precautions, a complete list of replaceable parts, a trouble shooting guide and Nevco's **FIVE** Year Guarantee.

Please read this manual completely and carefully before attempting any of the installation procedures. Always keep this manual in a safe place for future reference.

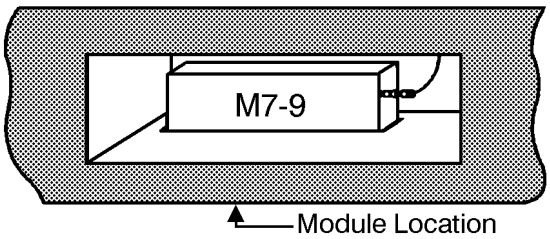
Installation Instructions

The system includes an operator's MPC control (if ordered), the scoreboard cabinet, "S" brackets, control junction box with cover and cables. To insure that your new scoreboard system has arrived safely, it is important to follow the steps below:

Step 1 Carefully remove the scoreboard from the crate making sure not to pry against the scoreboard in any way, and inspect for damage. Model 1020 comes in one section.

Step 2 Carefully remove the operator's MPC control from its packing carton and check for damage. Contact the carrier immediately if shipping damage is present either to the scoreboard or the control.

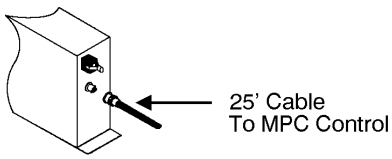
Step 3 Open the door labeled module location on print number D4624-1 and check the electronic module for loose connectors. To open the module location, use a standard screw driver to turn the latches. Should some cables come loose or disconnected refer to drawing B4626. This print is a module end view, which shows you where to plug the loose or disconnected cable(s) and the function of each module plug.



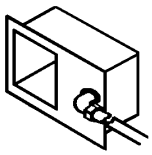
Step 4

Pre-mounting Test

Connect the 25 foot 2-WIRE control cable, which comes packaged in the control carton, from the operator's MPC control to the module.



Step 5 Connect the scoreboard to a temporary power service. See installation print D4624-2 for power requirements and wiring color code.



Step 6 Plug the MPC control power cord into any 120V, 60HZ grounded three wire outlet. Only 0.1A required.

Step 7 Follow the operating instructions supplied with the MPC operator's control to make sure the system operates properly before going on with the installation. Be sure to read the section titled **Two Digit Clock** before operation.

Step 8 If the scoreboard does not operate properly, refer to the section titled **Testing the MPC-4 Control** and the section titled **2-EM-2 or 2-EM-3 Module / Operation, Testing** before referring to the **Trouble Shooting Guide**.

Two Digit Clock

The new style clock displays both minutes and seconds using only 2 digits and 2 sets of colons.

When the time is running only the minutes are displayed with the colon on the right side being lit. The top light of the right colon blinks every second when more than 30 seconds are left in each minute. When less than 30 seconds, the bottom light of the right colon blinks.

Once the time remaining is less than one minute the right colon goes blank and the left colon lights, the seconds are now displayed.

When the time expires the time display goes completely blank.

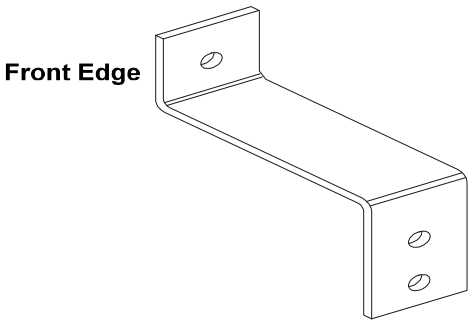
If the time is stopped the display alternates between the minutes and seconds letting you see the exact time remaining on the clock.

Also note that the time display may also be used as an inning indicator.

Step 9

Scoreboard Mounting

Drawing number D4624-1 and D4624-2 shows the mounting methods, mounting centers, power service location and the control cable inputs. Before mounting the supplied “S” brackets to the beam, measure



the slot locations on the scoreboard. Manufacturing tolerances, temperatures and other variables may affect the actual slot location. With the front edge pointing up, mount the bottom “S” bracket to the beam with two 5/8" bolts. After the bottom “S” brackets are secured, position the scoreboard with the holes in the front edge of the “S” brackets aligned with the 1 1/2" x 11/16" slots on the face of the scoreboard. Now, install the top “S” brackets securely against the top of the scoreboard, aligning the “S” bracket holes with the scoreboard slots. Once all “S” brackets are in place, insert the 5/8" bolt through the front of the “S” brackets, scoreboard and wide flange beam securing it with a flat washer and locking nut. Do not over tighten this bolt. A self locking nut must be used to prevent loosening.

Notice, the module location is on the rear of the scoreboard. **You must keep a three foot clearance behind the scoreboard to allow the module location door to open freely.**

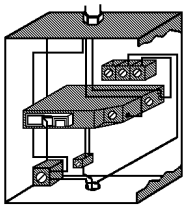
Always use good mechanical practices when mounting the scoreboard making sure the bolt or other type fastening device used has a flat washer, lock washer and or lock nut where specified to prevent vibration from loosening the fastening device. Use only plated fastening devices to prevent rust or corrosion. The distance between the mounting posts must maintain a tolerance of plus or minus 1/2".

The 6 x 6 x 15 lbs wide flange beam is for a nominal 75 m.p.h. wind loading, which may not be adequate for some locales. We strongly encourage you to check local codes before starting the installation. If you are unsure of how to go about this, contact a local architect, contractor, or sign installer for assistance. Your Nevco Sales Representative may also be able to assist you in finding professional installation companies who are familiar with this type of equipment.

Step 10

Scoreboard Power Service Connection

The required power service for this scoreboard is 120V, 20A, 60HZ. This allows a 20 per cent safety factor to eliminate nuisance tripping of the power service circuit breaker. To eliminate service problems at some future date and the possibility of overloading the circuit breaker, we suggest installing a dedicated service or circuit for the scoreboard.



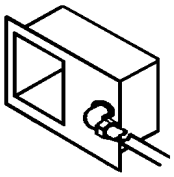
NOTE:
USE ONLY UL LISTED, CSA CERTIFIED 20 AMP GROUND FAULT INTERRUPTERS.

The contractor or installation personnel will determine length and size of the wire to maintain the voltage needed to support the circuit load. We recommend the power service maintain 120V at the scoreboard under maximum lamp load.

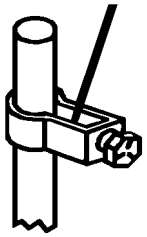
NOTE:
SAFETY GROUND (GREEN WIRE) MUST BE THE SAME GAUGE AS POWER SERVICE OR GREATER.

The contractor or installation personnel may bury the power service wire(s) and control cable in the same trench or non-conductive conduit. Consult the National Electrical Code and local codes before installing. Also see **Step 11** on 2-WIRE cable installation for detail.

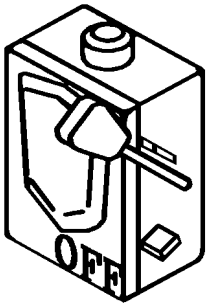
Make the final power service connection in the recessed entrance box located on the back of scoreboard. See drawing D4624-2 for detail and wiring color code.



For proper safety and protection of the scoreboard electronics from lightning and other electrical problems, attach the green ground wire to a separate ground stake at the scoreboard. See detail on drawing D4624-2 for ground stake installation.



You must install a UL Listed, CSA Certified power disconnect switch at the scoreboard.



Turn the disconnect off before you attempt any service to the scoreboard. You must also turn the disconnect off when the scoreboard is not in use to protect your scoreboard from lightning damage. Just as a reminder, your scoreboard guarantee does not cover lightning damage or other types of damage caused by natural disasters.

Step 11

Scoreboard Systems

The 2-WIRE cable, if ordered from Nevco Scoreboard Company, is specifically designed for underground burial with a dielectric strength of 300 volts or better and conforms to UL standard 1365.

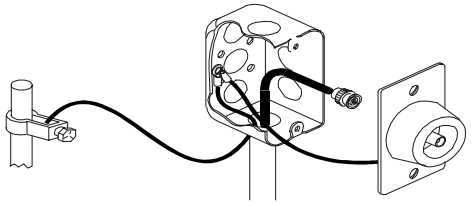
Consult the National Electrical Code and local codes for installation of Class 2 wiring. If buried above the freeze line, bury the cable with sand to provide drainage and prevent soil shifting from damaging the cable.

Drawing C5901 illustrates the 2-WIRE cable connection to the 4" x 2 1/8" x 2 1/8" dry location junction box.

If the junction box is not in a dry location, refer to drawing C5935 for protecting the junction box from outdoor weather conditions.

Please note you must ground this junction box regardless of the location. Use only an isolated ground stake. Do not use the ground stake for any other appliances.

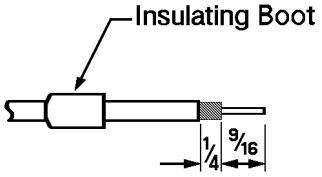
Contact the Nevco factory for system installations not covered in this manual.



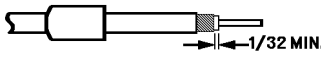
Step 12

Assembly Method for 2-WIRE Twist On Connector Part Number 210-0008

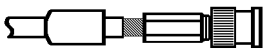
- NOTE: 2-WIRE cable from the Nevco factory comes without connectors attached.



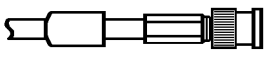
Slide insulating boot on the cable and trim cable as shown.



Twist the outer braid in a clockwise direction so at least 1/32" of the inner dielectric is bared and the braid is left flat.



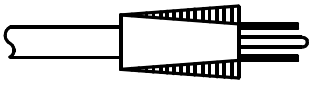
Insert the center conductor into the back of the connector, feeling it into the guide hole.



Push the cable as far as possible into connector, next screw the connector on to the cable in a clockwise direction until it stops. Then slip the insulating boot over the back of the connector.

Precautions

- Always use and store the operator's MPC control in a safe dry place.
- This model is not for use around swimming facilities.
- Protect all scoreboard power services with a UL Listed, CSA Certified **GROUND FAULT INTERRUPTER.**

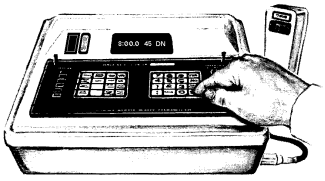


- The module located in the scoreboard cabinet is designed so it can remain in the scoreboard and withstand normal weather conditions. We suggest removing the module and storing it in a safe dry place during the off season. This will prevent damage by vandalism or extreme weather conditions.

MPC Power Service Connection

The operator's MPC control requires a 120V, 0.1A, 60HZ. Use only a grounded three wire outlet.

Any other use of ground adapters or alterations to the control power cord may cause damage to the MPC control and **Void the Guarantee.**



Replaceable Parts List

Part No.	Description
M7-9	MODULE (SCOREBOARD)
MPC	CONTROL
K2-19	BASEBALL KEYBOARD OVERLAY
K2-27	FOOTBALL KEYBOARD OVERLAY
K2-31	SOCCER KEYBOARD OVERLAY
TCS-1	HAND-HELD TIME CONTROL SWITCH
CC-2	CONTROL CARRYING CASE
009-0084	COAXIAL CABLE - NO CONNECTORS (SPECIFY LENGTH)
010-0071	COAXIAL CONNECTOR, FEED-THRU ("J" BOX)
012-0060	LAMP 15 WATT FROSTED, MEDIUM BRASS BASE (USE BRASS ONLY)
012-0061	LAMP 25 WATT FROSTED, MEDIUM BRASS BASE (USE BRASS ONLY)
013-0016	REFLECTOR CUP, 2 1/2" DIAMETER
013-0019	REFLECTOR CUP, 3 1/4" DIAMETER
013-0039	MEDIUM BASE SOCKET
024-0673	RUBBER LAMP BULB REMOVER
031-0004	FUSE, 3 AMP (CONTROL AND MODULE)
031-0011	FUSE, 20 AMP (MODULE)
031-0013	FUSEHOLDER W/CAP
039-0045	2" X 4" JUNCTION BOX
210-0008	COAXIAL CABLE PLUG, (FIELD INSTALLABLE)
235-0327	CAPTION PLATE, HOME 30" X 9"
235-0328	CAPTION PLATE, GUESTS 30" X 9"
235-0330	CAPTION PLATE, BALL 18" X 9"
235-0331	CAPTION PLATE, STRIKE 30" X 9"
235-0332	CAPTION PLATE, OUT 14" X 9"
235-0448	CAPTION PLATE, INN/TIME 36" X 9"
603-1377	2" X 4" PLASTIC COVER ASSEMBLY

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READ THIS BEFORE INSTALLATION

The mechanical installation described on this drawing is a guide to the elementary concepts involved with the installation. This is not intended to be suitable for all conditions. We recommend consulting a professional engineer or architect before attempting the installation. They can verify that the selected mounting beams or posts along with the brackets, screws and other hardware items provided by you or Nevco are adequate for your local soil, wind, codes and other conditions. Calculations for "S" bracket stress analysis are available upon request.

If procedures are used or additional equipment added - such as signs - that are not covered by this drawing, careful analysis of the installation is urged.

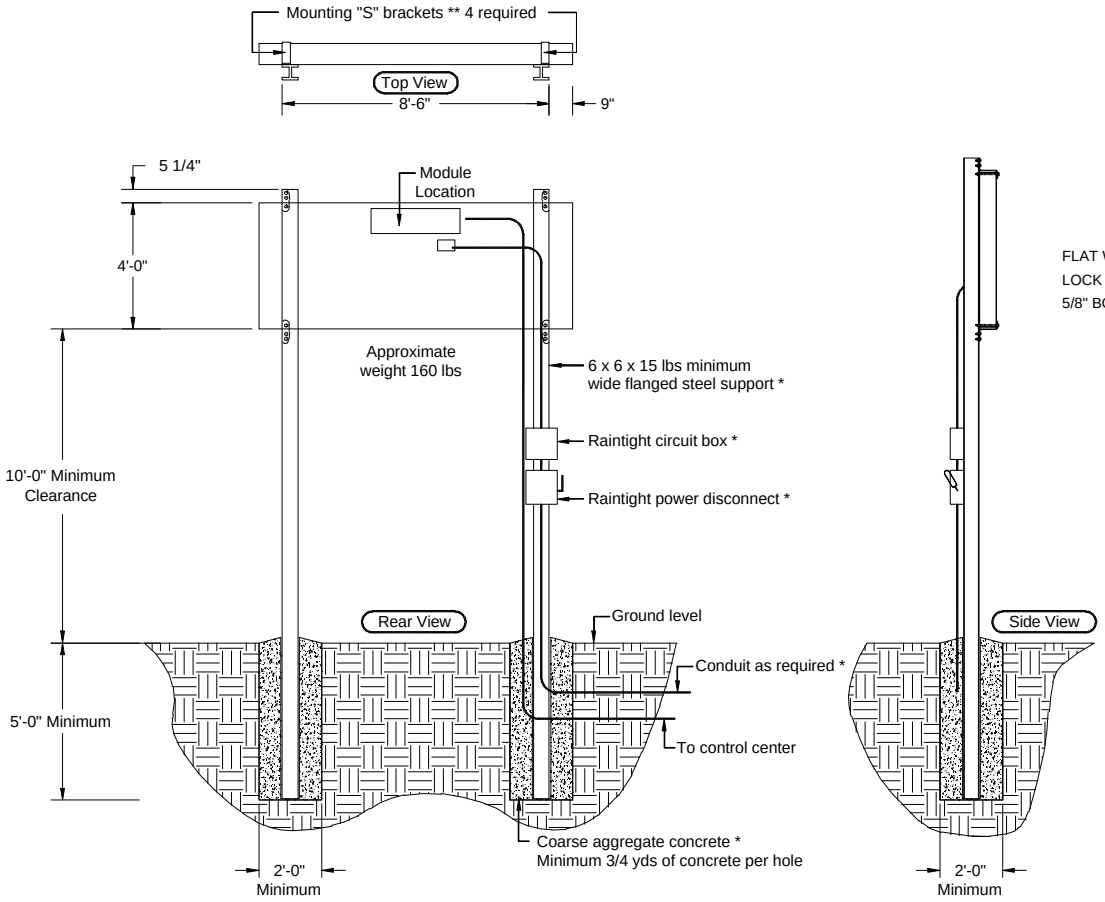
Regardless of the procedures, beams, posts, brackets, screws or hardware used for the installation, Nevco Scoreboard Company does not accept responsibility for scoreboards damaged by natural or other causes. Refer to the Nevco guarantee.

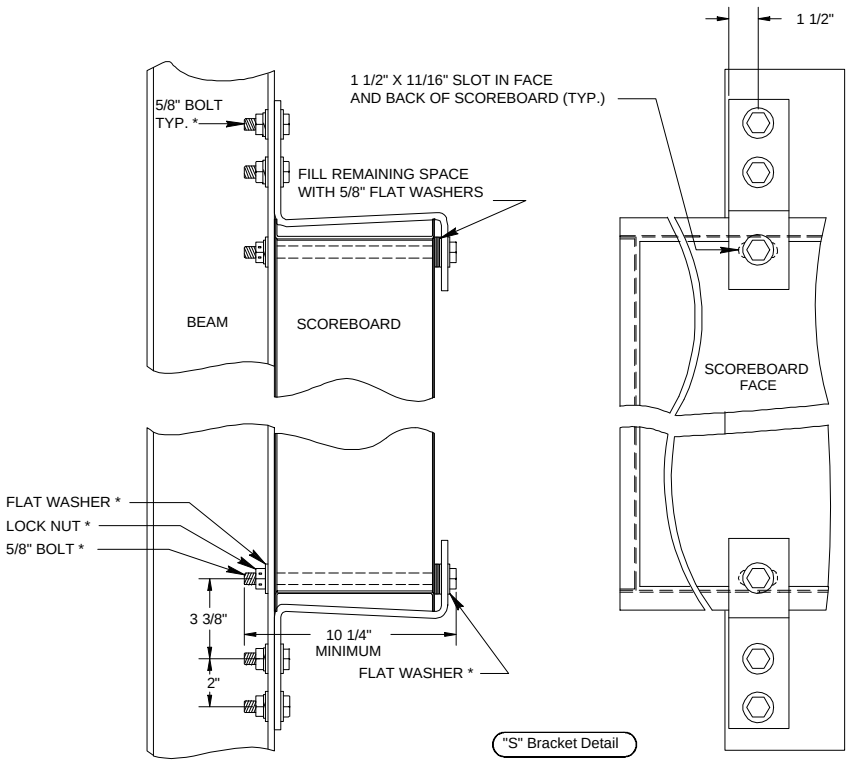
NOTES:

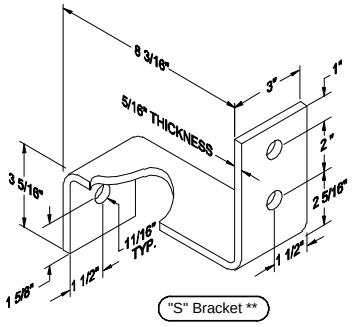
* Items supplied by owner

** Items supplied by Nevco

1. The outlet for the control is to be supplied by the owner. The outlet should be either a UL Listed, CSA Certified ground fault or an outlet that is connected to a UL Listed, CSA Certified ground fault breaker. The above should be installed per the National Electrical Code.







INSTALLATION 1020 MPC-4			NEVCO SCOREBOARD CO. GREENVILLE, ILLINOIS 62246
			DRAWING NO. D4624
DRAWN HW	DATE 3/3/89	SHEET 1	OF 2

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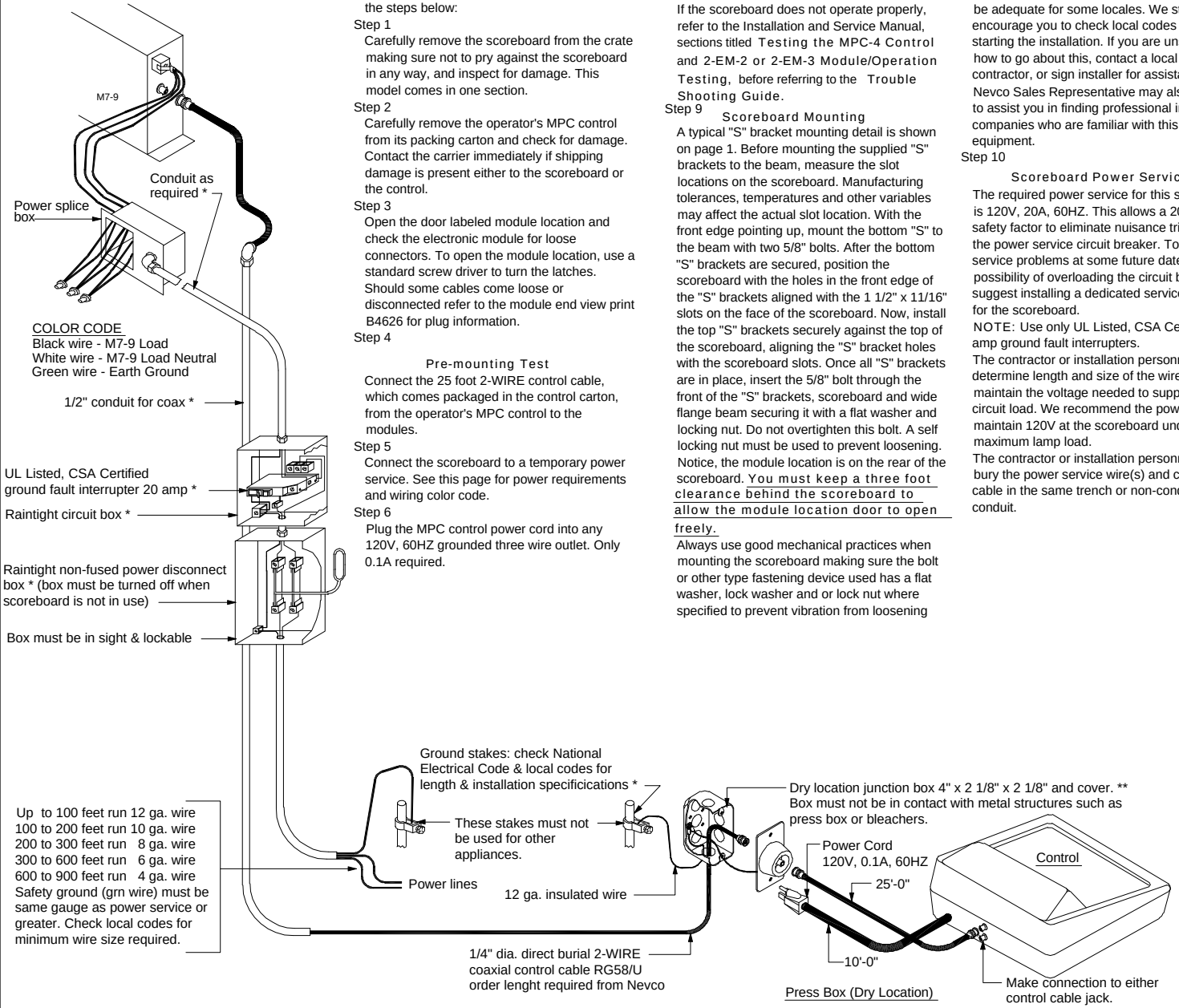


Installation Instructions

The standard system includes an operator's MPC control (if ordered), the scoreboard cabinet, "S" brackets, control junction box with cover and cables. To insure that your new scoreboard system has arrived safely, it is important to follow the steps below:

Step 1
Carefully remove the scoreboard from the crate making sure not to pry against the scoreboard in any way, and inspect for damage. This model comes in one section.

Step 2
Carefully remove the operator's MPC control from its packing carton and check for damage. Contact the carrier immediately if shipping damage is present either to the scoreboard or the control.

Step 3
Open the door labeled module location and check the electronic module for loose connectors. To open the module location, use a standard screw driver to turn the latches. Should some cables come loose or disconnected refer to the module end view print B4626 for plug information.

Step 4

Pre-mounting Test

Connect the 25 foot 2-WIRE control cable, which comes packaged in the control carton, from the operator's MPC control to the modules.

Step 5
Connect the scoreboard to a temporary power service. See this page for power requirements and wiring color code.

Step 6
Plug the MPC control power cord into any 120V, 60HZ grounded three wire outlet. Only 0.1A required.

Step 7
Follow the operating instructions supplied with the MPC operator's control to make sure the system operates properly before going on with the installation.

Step 8
If the scoreboard does not operate properly, refer to the Installation and Service Manual, sections titled Testing the MPC-4 Control and 2-EM-2 or 2-EM-3 Module/Operation Testing, before referring to the Trouble Shooting Guide.

Step 9

Scoreboard Mounting

A typical "S" bracket mounting detail is shown on page 1. Before mounting the supplied "S" brackets to the beam, measure the slot locations on the scoreboard. Manufacturing tolerances, temperatures and other variables may affect the actual slot location. With the front edge pointing up, mount the bottom "S" to the beam with two 5/8" bolts. After the bottom "S" brackets are secured, position the scoreboard with the holes in the front edge of the "S" brackets aligned with the 1 1/2" x 11/16" slots on the face of the scoreboard. Now, install the top "S" brackets securely against the top of the scoreboard, aligning the "S" bracket holes with the scoreboard slots. Once all "S" brackets are in place, insert the 5/8" bolt through the front of the "S" brackets, scoreboard and wide flange beam securing it with a flat washer and locking nut. Do not overtighten this bolt. A self locking nut must be used to prevent loosening. Notice, the module location is on the rear of the scoreboard. You must keep a three foot clearance behind the scoreboard to allow the module location door to open freely.

Always use good mechanical practices when mounting the scoreboard making sure the bolt or other type fastening device used has a flat washer, lock washer and or lock nut where specified to prevent vibration from loosening the fastening device. Use only plated fastening devices to prevent rust or corrosion. The distance between the mounting posts must maintain a tolerance of plus or minus 1/2". The 6 x 6 x 15 lbs wide flange beam is for a nominal 75 m.p.h. wind loading, which may not be adequate for some locales. We strongly encourage you to check local codes before starting the installation. If you are unsure of how to go about this, contact a local architect, contractor, or sign installer for assistance. Your Nevco Sales Representative may also be able to assist you in finding professional installation companies who are familiar with this type of equipment.

Step 10

Scoreboard Power Service

The required power service for this scoreboard is 120V, 20A, 60HZ. This allows a 20 per cent safety factor to eliminate nuisance tripping of the power service circuit breaker. To eliminate service problems at some future date and the possibility of overloading the circuit breaker, we suggest installing a dedicated service or circuit for the scoreboard.

NOTE: Use only UL Listed, CSA Certified 20 amp ground fault interrupters.

The contractor or installation personnel will determine length and size of the wire to maintain the voltage needed to support the circuit load. We recommend the power service maintain 120V at the scoreboard under maximum lamp load.

The contractor or installation personnel may bury the power service wire(s) and control cable in the same trench or non-conductive conduit.

The 2-WIRE cable, if ordered from Nevco Scoreboard Company, is specifically designed for underground burial with a dielectric strength of 300 volts or better and conforms to UL standard 1365. Consult the National Electrical Code and local codes before installing. Consult the National Electrical Code and local codes for installation of Class 2 wiring. If buried above the freeze line, bury the cable with sand to provide drainage and prevent soil shifting from damaging the cable.

Make the final power service connection in the recessed entrance box located on the back of scoreboard. See Power Splice Box on this page for detail and wiring color code.

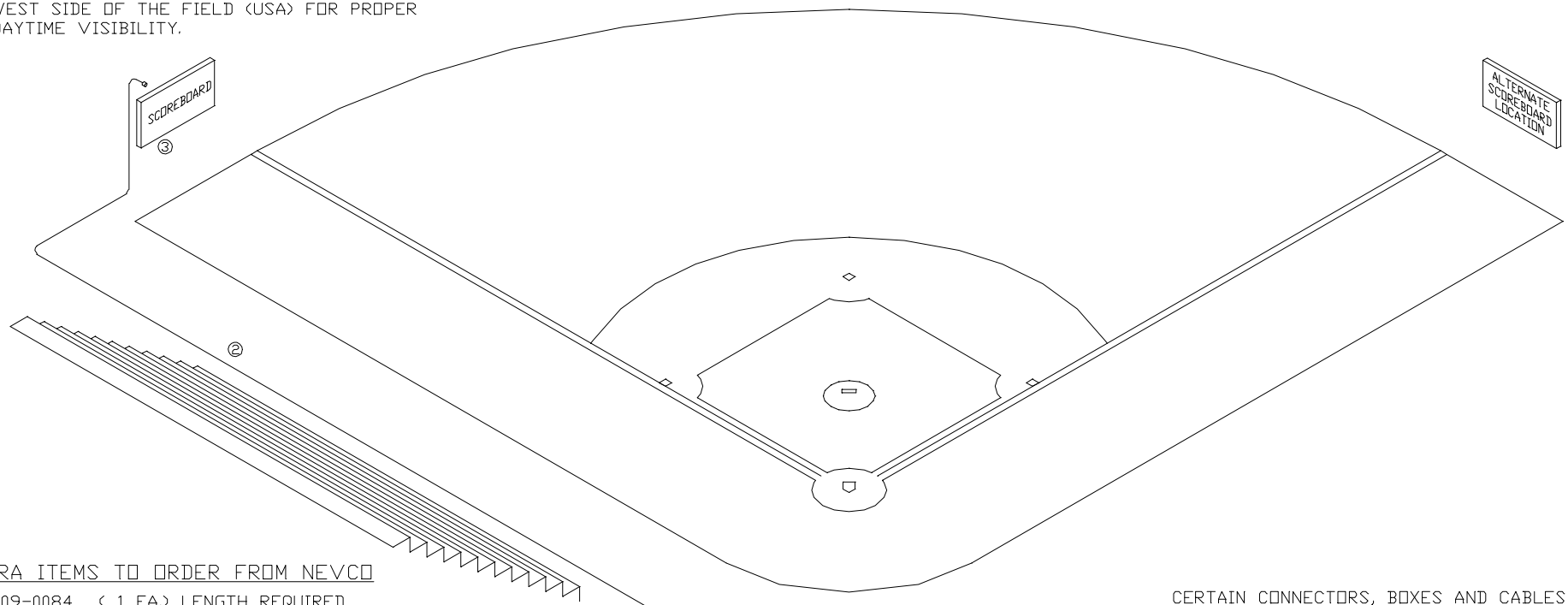
For proper safety and protection of the scoreboard electronics from lightning and other electrical problems, attach the green ground wire to a separate ground stake at the scoreboard. See detail on this page for ground stake installation.

You must install a UL Listed, CSA Certified power disconnect switch at the scoreboard. Turn the disconnect off before you attempt any service to the scoreboard. You must also turn the disconnect off when the scoreboard is not in use to protect your scoreboard from lightning damage. Just as a reminder, your scoreboard guarantee does not cover lightning damage or other types of damage caused by natural disasters.

INSTALLATION 1020 MPC-4		NEVCO SCOREBOARD CO. GREENVILLE, ILLINOIS 62246
		DRAWING NO. D4624
DRAWN PEF	DATE 1/2/94	SHEET 2 OF 2

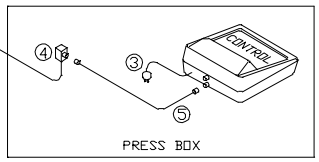
NOTES

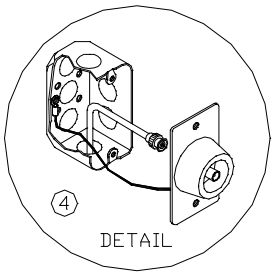
1. WALL BOXES MUST BE EARTH GROUNDED TO THE SAME GROUND OR GUARANTEE IS VOID. SYSTEM GROUND STAKES INFORMATION IS SHOWN ON INSTALLATION PRINTS.
2. CONTROL CABLE RG-58/U, 1/4" DIAMETER. IF ANY CABLE LENGTH EXCEEDS 1000' CONTACT THE NEVCO FACTORY. CABLE VOLTAGE IS 5 VOLTS. FOR CONDUIT INSTALLATION: 1/2" CONDUIT REQUIRED
3. FOR ELECTRICAL POWER REQUIREMENTS OF EACH ITEM REFER TO OTHER DRAWINGS OR SPECIFICATIONS.
4. WALL BOX 4" x 2 1/8" x 2 1/8" W/ COVER
5. CONTROL CABLE 25' W/ CONNECTORS
6. LOCATE THE SCOREBOARD ON THE SOUTH OR WEST SIDE OF THE FIELD (USA) FOR PROPER DAYTIME VISIBILITY.



EXTRA ITEMS TO ORDER FROM NEVCO

② 009-0084 (1 EA.) LENGTH REQUIRED





CERTAIN CONNECTORS, BOXES AND CABLES ARE FURNISHED WITH THE EQUIPMENT SHOWN. ONLY THE "EXTRA ITEMS" ARE NEEDED TO COMPLETE THIS SYSTEM.

BASEBALL
SINGLE
SCOREBOARD
SYSTEM

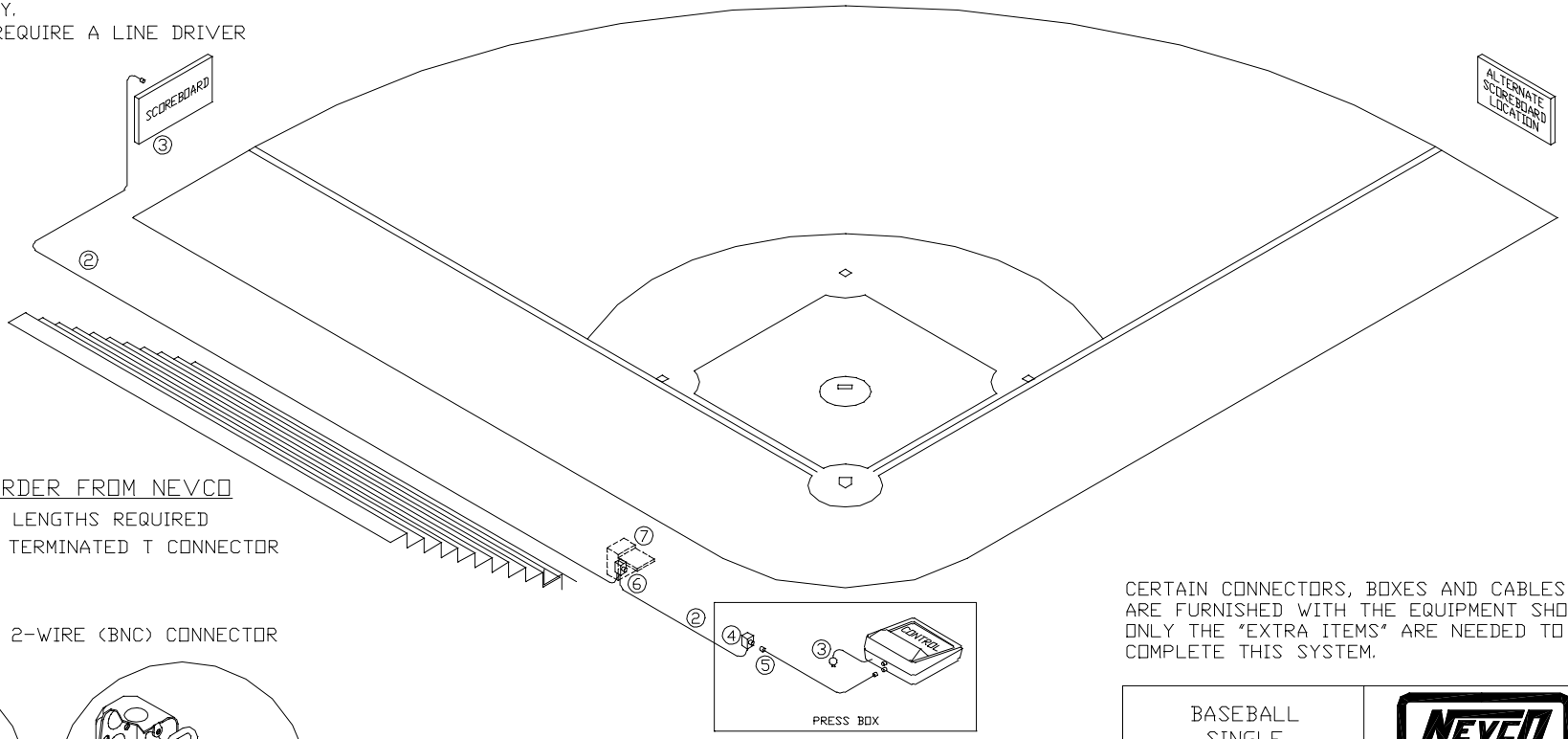
NEVCO SCOREBOARD CO.
GREENVILLE, ILLINOIS 62246

DRAWING NO. C5901

DRAWN HW | DATE 6/16/92 | SHEET 1 OF 1

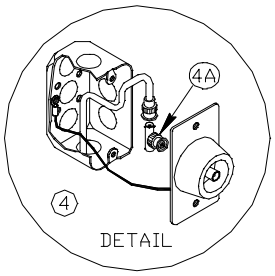
NOTES

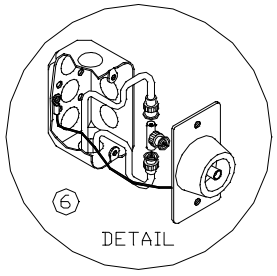
1. WALL BOXES MUST BE EARTH GROUNDED TO THE SAME GROUND OR GUARANTEE IS VOID. SYSTEM GROUND STAKES INFORMATION IS SHOWN ON INSTALLATION PRINTS.
2. CONTROL CABLE RG-58/U, 1/4" DIAMETER. IF ANY CABLE LENGTH EXCEEDS 1000' CONTACT THE NEVCO FACTORY. CABLE VOLTAGE IS 5 VOLTS. FOR CONDUIT INSTALLATION: 1/2" CONDUIT REQUIRED
3. FOR ELECTRICAL POWER REQUIREMENTS OF EACH ITEM REFER TO OTHER DRAWINGS OR SPECIFICATIONS.
4. WALL BOX 4" x 2 1/8" x 2 1/8" W/ COVER
5. CONTROL CABLE 25' W/ CONNECTORS
6. WALL BOX 4" x 2 1/8" x 2 1/8" W/ COVER
7. 6" x 8" x 4" RAINTIGHT JUNCTION BOX
8. LOCATE THE SCOREBOARD ON THE SOUTH OR WEST SIDE OF THE FIELD (USA) FOR PROPER DAYTIME VISIBILITY.
9. SCOREBOARD MAY REQUIRE A LINE DRIVER



EXTRA ITEMS TO ORDER FROM NEVCO

- 2 009-0084 (2 EA.) LENGTHS REQUIRED
- 4A 210-0007 (1 EA.) TERMINATED T CONNECTOR
- 6 239-0081 (1 EA.)
- 7 039-0040 (1 EA.)
- 210-0008 (2 EA.) 2-WIRE (BNC) CONNECTOR





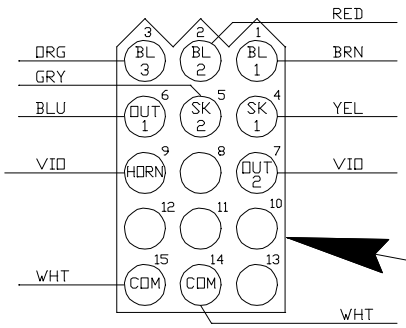
CERTAIN CONNECTORS, BOXES AND CABLES ARE FURNISHED WITH THE EQUIPMENT SHOWN. ONLY THE "EXTRA ITEMS" ARE NEEDED TO COMPLETE THIS SYSTEM.

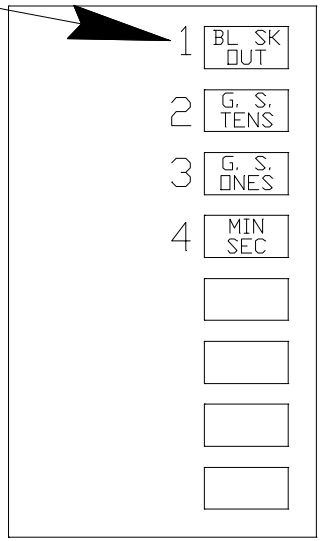
BASEBALL
SINGLE
SCOREBOARD
W/ ALTERNATE
CONTROL POINTS
SYSTEM

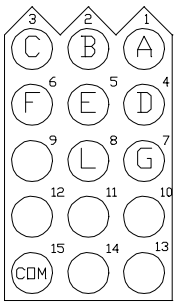
NEVCO SCOREBOARD CO.
GREENVILLE, ILLINOIS 62246

DRAWING NO. C5935

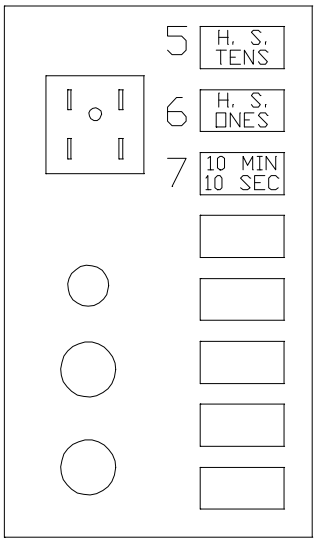
DRAWN HW | DATE 7/24/92 | SHEET 1 OF 1

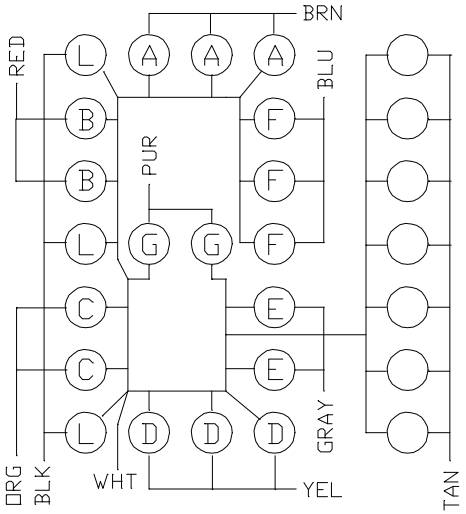




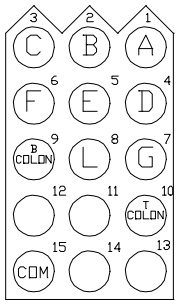


TYPICAL SOCKET

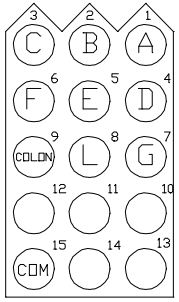




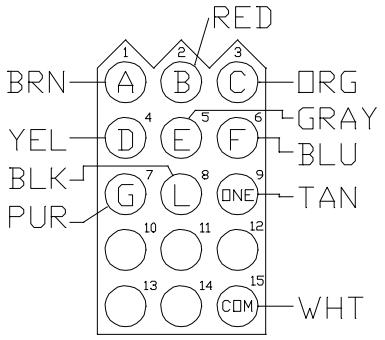
LAMP BANK
REAR VIEW



PLUG 4



PLUG 7



PLUG REAR VIEW

CABLE

MODULE END VIEW
M7-9

NEVCO SCOREBOARD CO.
GREENVILLE, ILLINOIS 62246

DRAWING NO. B4626

DRAWN HW | DATE 3/6/89 | SHEET 1 OF 1

Testing the MPC-4 Control

Disconnect the scoreboard control cable from the control. Turn on the control. If the running display does not appear, the control is malfunctioning.

The running display uses all segments (light bars) in the display. If any segment does not light, make careful note of its location.

Now disconnect any remote hand-held switches from the control. Enter the following model code:

- Press . . . 4 3 2 1 0 8 8

The display will now show:

MPC4 OK 0

The MPC4 OK in the display shows the test of the internal memory passed. If the test fails, make note of what the display reads and contact Nevco Service Department for help.

To test the (ALT TIME SWITCH), all hand-held switches must be disconnected. Pressing the switch to the ON position will make the display show:

MPC4 O K **A1**

Pressing the switch to the OFF position will make the display show:

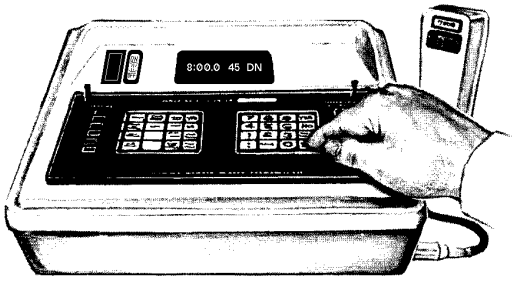
MPC4 O K **A2**

If either the TCS-1 or GJS-1 remote hand-held switches are plugged in to either side of the control they will disable the (ALT TIME SWITCH).

Plug the remote hand-held time switch TCS-1 into one of the sockets on either side of the control. With this switch in time ON, the number at the far right of the display should be a **1**. EXAMPLE:

MPC4 O K **1**

With the switch in the time OFF position the number should be a 2. Now, plug the hand-held switch into the other side of the control. You should get the same result. A broken wire in the hand-held switch may cause intermittent problems. Wiggle the cable of the hand-held switch. If the number changes while doing this, there is a broken wire. Try this in both switch positions.



All hand-held switches are tested the same way. The following is a list of Nevco hand-held switches and the correct test results.

TYPE	SWITCH	DISPLAY
TCS-1	ON	1
	OFF	2
SCS-1	TIME	4
	10 SEC.	8
SCS-2	TIME	4
	O.B.RESET	8
SCS-3	RESET	4
	TIME	8
SCS-4	O.B.	8
	S.T.	4
	HOLD	<
DGS-1	TIME	8
	RESET	4
GJS-1	ON	1
	OFF	2

To test the keyboard, just press one of the buttons. The display will show a number corresponding to the button pressed.

EXAMPLE:

MPC4 O K **14** 1

A chart of the button position numbers follows:

41 42 43 44 45 46 47 48
31 32 33 34 35 36 37 38
21 22 23 24 25 26 27 28
11 12 13 **14** 15 16 17 18

That completes the self test. If any of the tests fail, make careful note of the malfunction to include with the control when returned to Nevco Scoreboard Company.

2-EM-2 or 2-EM-3 Module / Operation, Testing

Operation

The 2-EM-2 or 2-EM-3 scoreboard lamp drive module located inside the scoreboard replaces the previously manufactured 2-EM and 2-EM-1 modules. The 2-EM-2 or 2-EM-3 modules are physically identical to their predecessors. Scoreboards originally equipped with 2-EM or 2-EM-1 modules may use the new 2-EM-2 or 2-EM-3 modules.

A microcomputer directs the functions of the 2-EM-2 or 2-EM-3 module making the scoreboard a “smart” system. Although the normal function of the scoreboard does not change, hidden “intelligence” is at work to improve the reliability of the system. Power monitoring within the module can prevent damage to the scoreboard face from harming the module and

keeps the undamaged portion operating. Self diagnostics built into the module program test the integrity of the scoreboard system.

After turn on there is a momentary delay before the scoreboard lights. This time is taken by the microcomputer to check the system before it goes to work. When the operator turns the control off, the scoreboard stays lit for a second before turning the lamps off. The microcomputer is waiting to be sure the signal from the control is gone. The module tolerates short disruptions of the control signal caused by something like a bad connector. Response time of the scoreboard is slower if signal disruptions are present but it will struggle on until corrections can be made.

A unique power sensor sends information to the microcomputer about the energy used by the scoreboard lamps. If a damaged lamp circuit causes excessive power consumption, the microcomputer searches for that circuit and locks it out. The scoreboard will then resume normal operation with only the affected circuit inoperative. Since a single digit on the scoreboard is made up of eight circuits (or segments), the loss of one circuit is small as compared with a total system failure. After repairs are made the microcomputer will restore the locked out circuit at power on.

2-EM-2 or 2-EM-3 Self Test

Because the microcomputer is capable of "masking" weaknesses in the scoreboard system, it is important that it reveal problems so corrections can be made before they get worse. A special command is sent from the control to start the scoreboard self test program. Only MPC-2, MPC-3, MPC-4 and MPCN series controls can send this special command.

MPC-4 Series Controls

The MPC-4 control has a self test of its own as described in the section titled **Testing the MPC-4 Control**. When the control is in this self test mode it is sending the special self test command to the scoreboard. After the control self test is complete, connect the scoreboard control cable to the control. Re-enter the control self test model code if control has been turned off.

Control Signal Test

If all is well a "0" will appear in the Home Score units position on the scoreboard. The "0" is an error counter. Each time the microcomputer finds an error in the signal it will increment this counter. This is a good time to wiggle the control cables to test for poor connections or damaged cables. When signal is lost an "E" will appear in the Guest Score units position on the scoreboard. If the "0" in the Home Score increments to a higher value and all cables seem good, contact the Nevco Service Department.

Lamp Circuit Test

The second phase of the self test is more interesting. Remove the control cable from the back of the control. The "E" described above will illuminate for about a second and then the lamp test will begin. If all is well the lamp test will illuminate each segment (a group of two or three lamps) in all digits in succession.

Remember the power monitor system described earlier? If the circuit (or segment) lock out is active, the lamp test will light all lamps in one digit at a time. It will look like an "8" traveling. This change in the lamp test sequence is to alert the operator that some of the lamps are out because the microcomputer has detected a short circuit and locked them off.

Make careful note of the lamps that are not illuminating. Turn the power to the scoreboard off by turning the breaker off or disconnecting the power cable. Replace all lamps that did not light and restore power to the scoreboard. Repeat the procedure above to restart the lamp test. If the traveling "8" sequence is still

Trouble Shooting Guide

Usually a scoreboard malfunction is a component failure or bad mechanical connection. The trouble shooting guide is a method of locating the failure. The owner can then make the information available to the Nevco Scoreboard Service Department.

PROBLEM

- Control seems to operate correctly, however, the scoreboard does not illuminate.

SOLUTION

- Switch the 2-WIRE cable to the other connector on the control.
- Check the circuit breakers associated with the scoreboard.
- Check the 2-WIRE cable connections at the scoreboard junction boxes and all control points.
- Check all fuses on the module(s) located inside the scoreboard cabinet.
- Use the 25 foot 2-WIRE cable to plug the control directly into the module(s). Refer to drawing D4624-1 and D4624-2 for module location. Use an extension cord to plug the control into a 120V, 60HZ three wire grounded outlet.

PROBLEM

- Control display does not illuminate when turned on and the scoreboard does not illuminate.

SOLUTION

- Check the fuse on the control.
- Check the power outlet for the control by plugging in another appliance.

PROBLEM

- Two or three lamps in a particular numeral do not light.

SOLUTION

- Turn the power service to the scoreboard off. Even with the control turned off, POWER is still applied to the scoreboard module(s).
- Refer to the Module End View print(s) which show the module plug numbers and their use. Locate the module and plug that are not working properly. Check the plug for firm connection.
- Check the metal pins in the nylon plug for full insertion.
- Interchange the plug in question with a plug that works to determine if the problem is in the module(s) or lamp bank(s). If the lamps light after exchanging the plugs, the problem is in the module. Return the module(s) to the Nevco Scoreboard Service Department for repair. If the same lamps still do not light, the trouble is in the lamp bank. Follow the colored wire to its connection on the back of the lamp bank. To comply with UL, you must reinstall the lamp bank with pop rivets.

PROBLEM

- Two or three lamps will not turn off even with the control turned off.

SOLUTION

- The problem is in the module(s). Make careful note of the location of the lamps and return the defective module(s) to the Nevco Scoreboard Service Department.

If the scoreboard fails to operate properly after following the trouble shooting procedure, contact the Nevco Scoreboard Service Department or return both the operator's MPC control and scoreboard module(s) to the Nevco Scoreboard Service Department. For your protection, insure your shipment for full value.

NOTES

Nevco Statement

The statement below is required by the FCC. Properly operating Nevco equipment should not interfere with any other equipment, nor should other equipment operating properly interfere with Nevco equipment. This statement is applicable for models built after Sept. 30, 1983.

Federal Communications Commission Required Statement

NOTE:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by Nevco Scoreboard Company can void the user's authority to operate the equipment.

Canadian Department of Communications (D.O.C.) Statement

This digital apparatus does not exceed the Class A limits for Radio noise emissions from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

Le présent appariel numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appariels numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

Five (5) Year Guarantee

Nevco 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 (which includes LED segments) are returned postage-paid to the Nevco factory. Shipping back to the owner will be surface postage prepaid except if air or special method of return is specified, then shipping will be freight collect. Lamp bulbs are excluded from this guarantee. No charges for time or material used by others in making repairs or corrections will be paid by Nevco Scoreboard Company. Guarantee void if: any alteration or service, other than unplugging modules or controls, is performed without Nevco factory authorization; or if the equipment shall have been connected to incorrect power, or is improperly grounded or improperly installed. Equipment which is subjected to accident, neglect, abuse, misuse or other natural disasters, including but not limited to: fire, wind, lightning, flood is not covered by this guarantee.

We encourage you to experiment with the scoreboard features to become familiar with them all. If you have any questions about the control or the scoreboard, you may call the Nevco Scoreboard Service Department at the numbers listed below.

NEVCO SCOREBOARD COMPANY
301 East Harris Avenue
P.O. Box 609
Greenville, IL 62246-0609 USA
Fax: (618) 664-0398
Telephone: (618) 664-0360

800-851-4040 TOLL-FREE
USA, all 50 states & Puerto Rico

— IN CANADA —
NEVCO SCOREBOARD COMPANY LTD.
Forestview Rd., P.O. Box 2629
Orillia, ON L3V 7C1 Canada
Fax: (705) 325-8891
Telephone: (800) 461-8550

REQUEST FOR SERVICE OR PARTS

Scoreboard Serial # _____

Service: Module(s) Serial # _____

Service: Control(s) Serial # _____

Person to Contact:_____ **Phone #** _____

Comments: _____

_____

_____

Parts Request

Quantity	Part No.	Description
1.		
2.		
3.		
4.		
5.		

Bill To:_____ **Purchase Order #** _____

P.O. Box #_____

Street _____

City _____**State**_____**Zip Code**_____

Return To: _____

Street _____

City _____**State**_____**Zip Code**_____

Ship Via _____

Make a copy of this form to order parts needed and / or to return with item to be serviced.