Nevco

Outdoor LED Scoreboard

Installation Manual

MAXIMIZE YOUR IMPACT™

Retain this manual in your permanent file.

Section 1: Installation Instructions

Installation consists of three steps (Unpacking the Equipment, Scoreboard mounting, and Electrical Connections). Be sure to read and understand all of the instructions before installing the equipment. Consult the "installer's troubleshooting guide" following this section for verification that each step has been completed correctly and that the scoreboard is working correctly.

Table 1: Column Requirements

Number of Columns	Scoreboard Models
1 Post	DGT-6, 9605
2 Post	1600, 1608, 1609, 1610, 1615, 1620, 1625, 1630, 1632, 1635, 1640, 1650, 3600, 3602, 3614, 3625, 3634, 3650, 3655, 3656, 3658, 3680, 5625, 5633, 5634, 5635, 7604, 7614, 7624, 7680, 9660, 9652
2 Post with Laterals	1604, 1606, 3615, 3617, 3618, 3619, 3685, 7605, 7615, 7625, 7630, 7631, 7632, 7685
3 Post	1604, 1606, 3615, 3617, 3618, 3619, 3685, 7605, 7615, 7625, 7630, 7631, 7632, 7685
3 Post with Laterals	1603, 3604, 3616, 3620, 3657, 3688, 7616, 7620
4 Post	1603, 3604, 3616, 3620, 3688, 3657, 7616, 7620

1.1   Unpacking the Equipment

- Inspect the shipping container for damage. If any damage can be seen, contact the carrier immediately.
- Carefully remove all equipment from its packing carton. **Do not** pry against the scoreboard in any way.

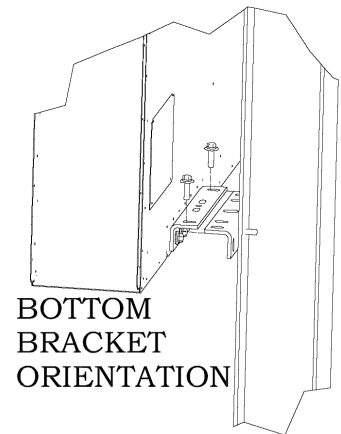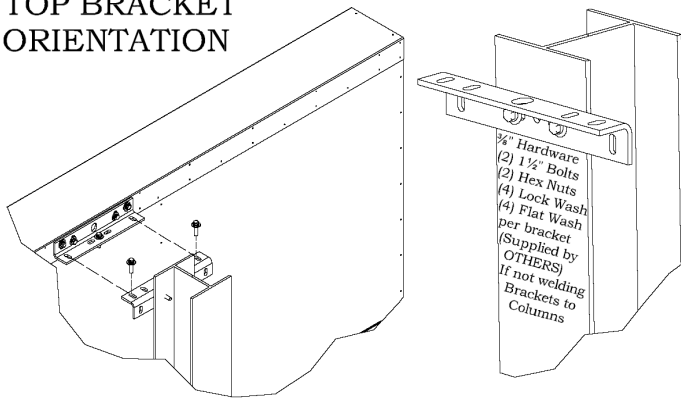## 3.2 Assembling Sectional Scoreboard

- **For scoreboards with multiple sections**, slide the pieces together aligning the pre-drilled holes. Fasten sections with the sheet metal screws provided. Make sure to install a screw in each hole of the splice flange (front and back). **Note:** The screws are shipped in the same box as the mounting brackets.

- Use clear silicon caulk and join vertical seams with screws provided. Always install bottom row of cabinets first and work upward.

- Locate and remove the access doors on the back of the scoreboard. Make sure all cables are connected as necessary at cabinet joints behind these access doors. Labels are located near connectors. Labels will be marked "1", "2", "3" or "4". While connecting cables from section to section, make sure to connect cables with matching labels.

- Check all electronic devices for loose connectors. See Installation Print for detail.

1.3   Scoreboard Mounting

Note: For scoreboards that are shipped in more than one section, doors on the back of the scoreboard provide access to cables that must be connected and routed between sections during installation.

• Refer to installation prints for mounting method, mounting dimensions, power service location, and cable routings.

• A wide flanged steel beam system (columns) is recommended by Nevco on the installation print. Recommendations for column and pier dimensions can be found on this print for 90, 130 and 150 mph wind regions. This may not be adequate for some locales. Nevco strongly encourages you to check local codes before beginning the installation. You may wish to contact a local engineer, architect, or sign installer for assistance. Your Nevco Sales Representative may be able to assist you in finding professional installers who are familiar with this type of equipment.

• All scoreboards come with mounting brackets included in a box along with these instructions. Install one bracket on the back of the scoreboard using the provided 3/8" serrated flange bolts with integrated lock and flat washers in each location marked with the labels showing proper orientation of the bracket for both top/bottom brackets. Top/Bottom being relative to each individual section of the scoreboard cabinet.

TOP BRACKET
ORIENTATION

⅜" Hardware
(2) 1 ½" Bolts
(2) Hex Nuts
(4) Lock Wash
(4) Flat Wash
per bracket
(Supplied by OTHERS)
If not welding Brackets to Columns

BOTTOM
BRACKET
ORIENTATION

• Mount brackets by welding or bolting to columns using 3/8 bolts, nuts and washers (supplied by others). See detail above for bracket orientation.

Minimum Angle

45°   45°
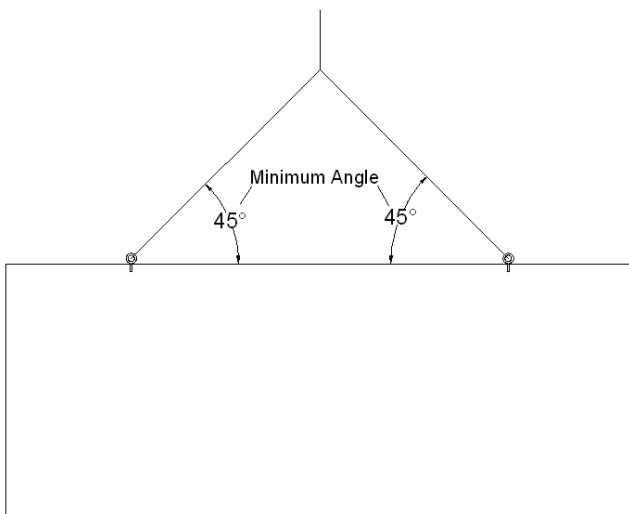
use of a spreader bar is recommended)

• Install 3/8 hanger bolt and nut (no washer) into top brackets on scoreboard. This bolt will act as a catch pin allowing you to hang the scoreboard section on the columns like a picture frame.

• Install 3/8 eye bolts (supplied by others) in top of board at threaded locations for lifting. Note the detail to lower right for using eye bolts. The lifting force must be in the same plane as the ring of the eye bolt. **(WARNING: Lifting cables can not be less than 45 degrees from top of cabinet to cable while lifting. See detail to right. The**

FORCE   FORCE
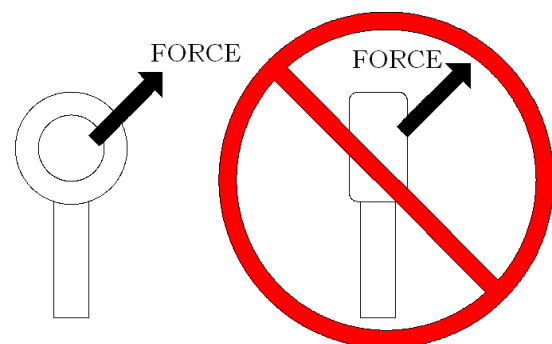
- Carefully lift scoreboard and set into place utilizing the hanger bolts as shown in the detail above. They will go into large holes on front of brackets attached to column. These should be used for alignment only. **(WARNING: Do not removed lifting device until all brackets have been bolted together)**

- Bolt all brackets together using 3/8 bolts removed from bracket sets during previous step.

Always use good mechanical practices when mounting the scoreboard:

- The distance between the vertical mounting posts (center to center) must be maintained within a tolerance of ±0.5 in. so that the mounting devices can be properly secured.

- Use only plated fastening devices to prevent rust or corrosion.

Section 2: Electrical & Signal Connections

3.2 Electrical Requirements

- Refer to installation prints for illustration of electrical connections.

- *This sign is intended to be installed in accordance with the requirements of Article 600 of the National Electrical Code and/or other applicable local codes. This includes proper grounding and bonding of the sign.*

- Consult Table 2 on sheet 4 for Full Load power requirements for your scoreboard model. Provide for a 30% safety factor when sizing wire and selecting breakers to guard against tripping of the circuit breaker under low line conditions.

- Be sure to include any lighted signs, and message centers when sizing the supply wiring necessary to support the circuit load.

- A disconnect switch should be lockable or within sight of the sign per NEC article 600.

- Two knockouts on the back of the scoreboard provide an entrance point for the power and the coax signal cable. You may make your own entry points if desired; take care not to drill into or damage any of the internal components of the scoreboard. A removable panel on the front of the scoreboard opposite the knockouts in the back allows access to an Electrical Enclosure box. Remove the cover of the Electrical Enclosure box to gain access to the power splice box where the scoreboard power connections are made. The coax signal cable terminates on a BNC connector on the bottom of the Electrical Enclosure box (see installation print for more details).

- If controlling the scoreboard wirelessly, do not remove knockout intended for wired coax signal.

- Electronic Team Names, on the large 3616 and 7616 require separate power to be run to each ETN (HOME and GUEST). Knockouts for incoming power are labeled and located directly behind each ETN.

- All other ETN model scoreboards do not require the installer to make any connections.

3.2 Rain Tight Enclosure Box

- **For scoreboards that will be operated wirelessly using an MPCX handheld control**, a rain tight enclosure box must be mounted on one of the posts that the scoreboard is mounted on or anywhere within 18' of the signal-in knockout on the back of the board. This rain tight box houses the wireless MPCX receiver and must be mounted on the same side of the post as the scoreboard (Clear line-of-sight, facing the operator's control) and must have power supplied to it (see installation print).

  Note: Wireless installations that use a MPCW control do not use this rain-tight box. See MPCW wireless installation print for details.

Table 2: Power Requirements

Model #	Amps @ 120 VAC W/ ETN Amps	Amps @ 120 VAC W/O ETN AMPS	Amps @ 240 VAC W/ ETN Amps	Amps @ 240 VAC W/O ETN AMPS
1600	1.7	0.8	0.9	0.4
1603	6.1	4.9	3.0	2.5
1604	4.1	3.0	2.1	1.5
1606	4.1	3.0	2.1	1.5
1608	3.1	1.9	1.5	1.0
1609	2.8	1.6	1.4	0.8
1610	N/A	0.7	N/A	0.3
1615	2.3	1.3	1.2	0.7
1620	N/A	0.8	N/A	0.4
1625	N/A	1.1	N/A	0.5
1630	3.1	2.0	1.6	1.0
1632	2.2	1.2	1.1	0.6
1635	1.8	1.1	0.9	0.5
1640	2.9	1.8	1.5	0.9
1650	N/A	0.4	N/A	0.2
3600	3.6	2.4	1.8	1.2
3602	2.2	1.2	1.1	0.6
3604	4.9	3.2	2.5	1.6
3614	3.9	2.7	1.9	1.4
3615	3.9	2.7	1.9	1.4
3616	8.0	4.5	4.0	2.2
3617	4.2	3.0	2.1	1.5
3618	3.9	2.8	2.0	1.4
3619	4.2	3.0	2.1	1.5
3620	4.6	3.4	2.3	1.7
3625	3.7	2.6	1.9	1.3
3634	4.0	2.8	2.0	1.4
3650	N/A	0.7	N/A	0.4
3655	2.7	1.7	1.3	0.9
3656	4.4	3.2	2.2	1.6
3657	5.3	5.3	2.7	2.7
3658	2.6	1.6	1.3	0.8
3680-EC	6.3	N/A	3.2	N/A
3685-EC	6.5	N/A	3.2	N/A
3688-EC	6.9	N/A	3.5	N/A
5625	N/A	2.8	N/A	1.4
5633	N/A	1.3	N/A	0.6
5634	3.7	2.5	1.8	1.3
5635	4.9	3.8	2.5	1.9
7604	4.5	3.3	2.2	1.6
7605	5.3	4.2	2.7	2.1
7614	4.3	3.1	2.1	1.6
7615	5.1	4.0	2.6	2.0
7616	8.6	5.0	4.3	2.5
7620	5.2	4.0	2.6	2.0
7624	4.1	2.9	2.0	1.5
7625	5.0	3.8	2.5	1.9
7630	4.4	3.2	2.2	1.6
7631	4.5	3.4	2.3	1.7
7632	4.7	3.5	2.4	1.8

Model #	Amps @ 120 VAC		Amps @ 240 VAC	
	W/ ETN Amps	W/O ETN AMPS	W/ ETN Amps	W/O ETN AMPS
7680-EC	7.0	N/A	3.5	N/A
7685-EC	7.0	N/A	3.5	N/A
7688-EC	7.0	N/A	3.5	N/A
8600 TOP	2.7	1.5	1.4	0.8
9605	N/A	0.5	N/A	0.3
9620	N/A	0.5	N/A	0.3
9651	N/A	0.4	N/A	0.2
9652	N/A	0.7	N/A	0.4
9650	N/A	2.8	N/A	1.4
9660	N/A	0.7	N/A	0.4
DGT-6/PSD	N/A	0.6	N/A	0.3
PCD-8,PCD-10,PCD-16,PCD-18	N/A	0.3	N/A	0.1

2.3   Signal Connections

2-Wire Coax Cable (RG58/U)

- All 2-WIRE cable ordered from Nevco is direct burial type. It has a minimum dielectric strength of 300V, and conforms to UL standard 1365.

- If the wiring is buried above the freeze line, bury the cable with sand to provide drainage and prevent damage from shifting soil.

Installing Cable Connectors

- The 2-WIRE cable that comes with your scoreboard does not have connectors attached. Refer to the detail and instructions below to install these connectors.

Instructions for installing connectors on each end of the cable:

1. Slide the insulating boot onto the cable and trim the cable as shown.
2. Twist the outer braid in a **clockwise** direction so that at least 1/32 in. of the inner dielectric is bared and the braid is left flat. Be sure no strands of the outer braid are touching the center conductor.
3. Insert the center conductor into the back of the connector, feeding it into the guide hole.
4. Push the cable as far as possible into the connector.
5. Screw the connector onto the cable in a clockwise direction until the connector stops turning.
6. Slip the insulating boot over the back of the connector.
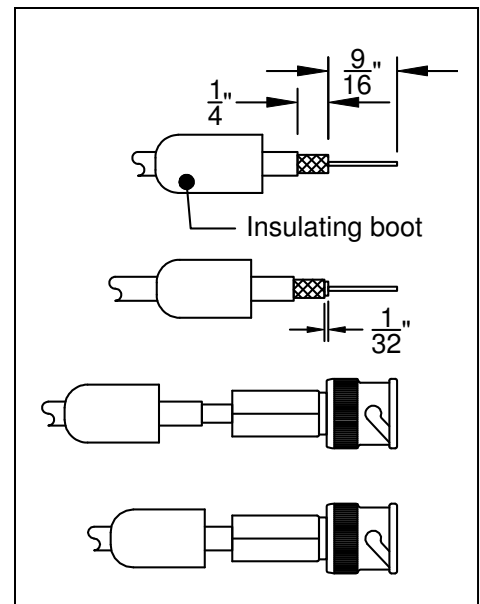
APPENDIX A: (TROUBLESHOOTING GUIDES)

WIRED TROUBLE SHOOTING GUIDE

The figure to the right labels the connections made by the installer from A &B as well as other useful internal connections C - J. The chart below lists the problem that can be identified should each connection be faulty. Check the control and service manual for more detailed information.
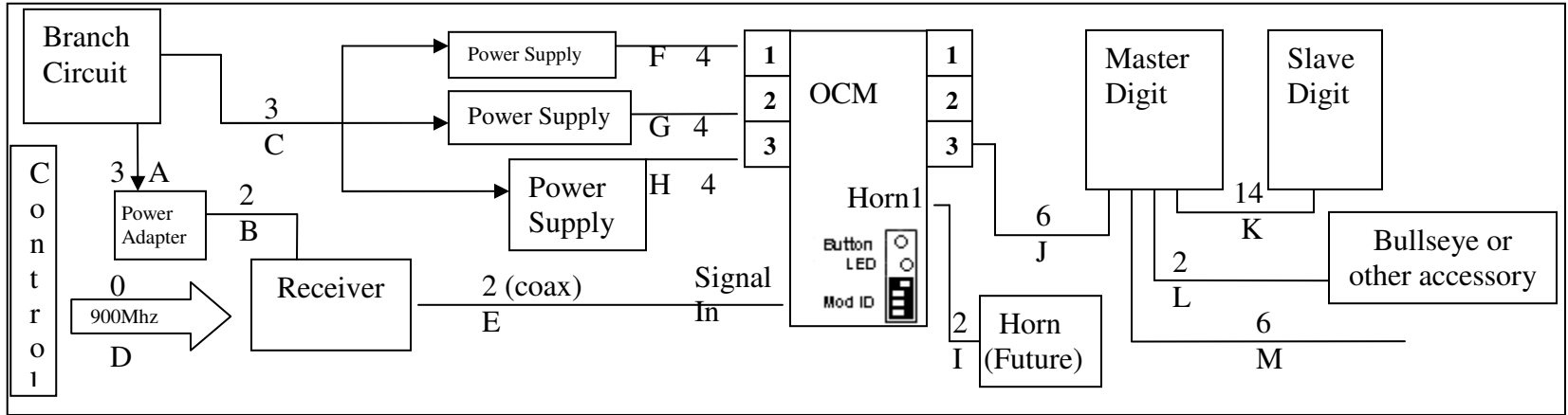

Situation	Symptom	Connection	Solution
The Scoreboard has no digits illuminated	The fans on ALL the power supplies are not running	A	Check branch circuit breaker, connections, and disconnect switch external to scoreboard
			Check connections in disconnect box (power hookup)
			Check Power Switch on disconnect box inside scoreboard
			Replace Power supply
	OCM LED ON solid	B	Check Coax connections. Plug control directly into OCM to eliminate buried coax cable. If that works, the cable run or terminations are bad. Try the scoreboard test in the options menu, see control users manual on testing.
			Holding the Button on the OCM down for 4 seconds will display a test pattern on the scoreboard digits further confirming that the signal connection is bad
	OCM LED is flashing rapidly	None	Incompatible model code, check control model setting in options menu
		C or D	The power cable plugged into port 3 powers the OCM, but connections to power supplies on plug 1 & 2 power the digits/ETN's powered by 1 & 2 outputs
		G	Check connections on OCM outputs 1, 2, & 3 as well as first master digits
	OCM LED is completely OFF	E	OCM board has no power. Check connection E, power supply feeding E, and connections to the power supply E.
Some digits or indicators not illuminated	Only one digit	H	Check 14-pin connection on Driver card and 2-pin on segments
	Horn, colon, decimal, possession indicator, etc.	I	Check 2-pin connection on Driver card and on accessory
	More than one Digit, starts at one point in cabling	J	Check 6-pin connection from working driver card to next digit driver card
ETN or EC's not illuminated or not correct	Display incorrect Home/Guest data	R1/R2 on ELB	Verify that the home ribbon cable connects to R1 and Guest to R2 on the ELB card
	Electronic caption data not in correct location	Y jumper on ELB	Verify ELB 'Y' jumper and/or R1(R2) connections, see service manual
	ETN or EC's not lit at all	J	Check 6-pin connections going to ETN or EC, likely between on-site assembled sections

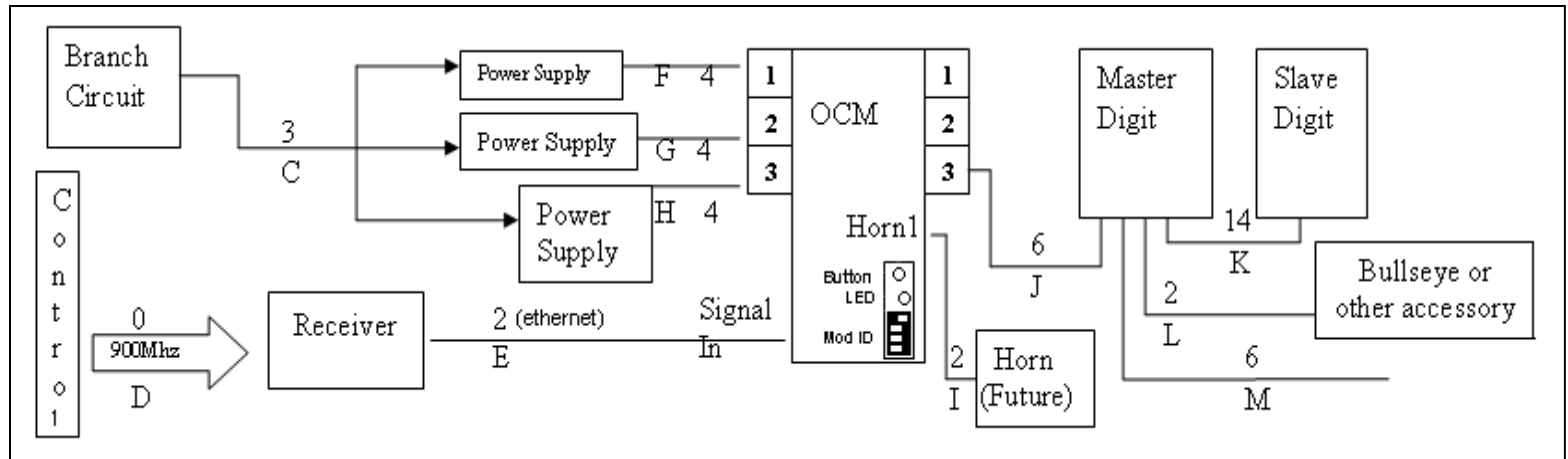**135-0213RA**

Wireless (MPCX) Trouble shooting Guide

The figure to the right labels the connections potentially made by the installer (A – E) and other internal connections (F – M) useful to troubleshooting. The chart below lists the problem that can be identified should each connection be faulty. Check the control and service manual for more detailed information.

Situation	Symptom	Connection	Solution
The Scoreboard has no digits illuminated	The fans on the ALL power supplies are not running	C	Check branch circuit breaker, connections, and disconnect switch external to scoreboard
			Check connections in disconnect box (power hookup)
			Check Power Switch on disconnect box inside scoreboard
			Replace Power supply
	Receiver has No LEDs illuminated during first 5 seconds after power up	A	Check branch circuit breaker, connections, duplex receptacle, and disconnect switch external to scoreboard
			If the duplex receptacle has power, but the adapter LED is OFF, replace adapter
		B	Ensure DC plug is fully seated in receiver DC jack and making good connection
			Replace Receiver
	Receiver LED Not ON solid		Follow control troubleshooting procedures, wrong wireless group, etc.
		D	Receiver should be in clear line of sight from control.
	OCM LED ON solid	E	Check Coax connections. Plug control directly into OCM to eliminate buried coax cable. If that works, the cable run or terminations are bad. Try the 301 Model code, see control users manual on testing.
			Holding the Button on the OCM down for 4 seconds will display a test pattern on the scoreboard digits further confirming that the signal connection is bad
	OCM LED is flashing rapidly	F or G	The power cable plugged into port 3 powers the OCM, but connections to power supplies on plug 1 & 2 power the digits/ETN's powered by 1 & 2 outputs
		G	Check connections on OCM outputs 1, 2, & 3 as well as first master digits
	OCM LED is completely OFF	H	OCM board has no power. Check connection H, power supply feeding H, and connections to the power supply H.
Some digits not illuminated, or non-working accessory	Only one digit	K	Check 14-pin connection on Driver card and 2-pin on segments
	Horn, colon, decimal, possession indicator, etc.	L	Check 2-pin connection on Driver card and on accessory
	More than one Digit, starts at one point in cabling	M	Check 6-pin connection from working driver card to next digit driver card

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Wireless (MPCW) Troubleshooting Guide

The figure to the right labels the connections potentially made by the installer (C – E) and other internal connections (F – M) useful to troubleshooting. The chart below lists the problem that can be identified should each connection be faulty. Check the control and service manual for more detailed information.

Situation	Symptom	Connection	Solution
The Scoreboard has no digits illuminated	The fans on the ALL power supplies are not running	C	Check branch circuit breaker, connections, and disconnect switch external to scoreboard
			Check connections in disconnect box (power hookup)
			Check Power Switch on disconnect box inside scoreboard
			Replace Power supply
	The Receiver ID number does not display on Scoreboard after power up swirl	E	Check Receiver to OCM cable E connection
	OCM LED ON solid		Follow control troubleshooting procedures, wrong wireless group, etc.
		D	Receiver should be in clear line of sight from control.
	OCM LED is flashing rapidly	F or G	The power cable plugged into port 3 powers the OCM, but connections to power supplies on plug 1 & 2 power the digits/ETN's powered by 1 & 2 outputs
		G	Check connections on OCM outputs 1, 2, & 3 as well as first master digits
	OCM LED is completely OFF	H	OCM board has no power. Check connection H, power supply feeding H, and connections to the power supply H.
Some digits not illuminated, or non-working accessory	Only one digit	K	Check 14-pin connection on Driver card and 2-pin on segments
	Horn, colon, decimal, possession indicator, etc.	L	Check 2-pin connection on Driver card and on accessory
	More than one Digit, starts at one point in cabling	M	Check 6-pin connection from working driver card to next digit driver card

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NEVCO GUARANTEE
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